

**COs & POs**

**2018-19**

**ODD SEMESTER**



DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

379

|         |                           |              |        |
|---------|---------------------------|--------------|--------|
| SUBJECT | ELECTRIC CIRCUIT ANALYSIS | SUBJECT CODE | 17EE32 |
|---------|---------------------------|--------------|--------|

**COURSE OUTCOME**

- CO1. Understand the basic concepts, basic laws and methods of analysis of DC and AC networks and reduce the complexity of network using source shifting, source transformation and network reduction using transformations
- CO2. Solve complex electric circuits using network theorems
- CO3. Discuss resonance in series and parallel circuits and also the importance of initial conditions and their evaluation
- CO4. Synthesize typical waveforms using Laplace transformation
- CO5. Solve unbalanced three phase systems and also evaluate the performance of two port networks

18-19

**PROGRAM OUTCOMES**

- PO1 Engineering knowledge: An ability to apply knowledge of mathematics (including probability, statistics and discrete mathematics), science, and engineering for solving Engineering problems and Knowledge.
- PO2 Problem analysis: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- PO3 Design / development of solutions: An ability to design solution for engineering problems and design system components or process to meet desired specifications and needs.
- PO4 Conduct investigations of complex Problem: An ability to identify, formulate, comprehend, analyze, design synthesis of the information to solve complex engineering problems and provide valid conclusions.
- PO5 Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modeling to complex engineering activities.
- PO6 The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal, and cultural issues.
- PO7 Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- PO8 Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- PO9 Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- PO10 Communication: Communicate effectively on complex engineering activities with the engineering community and with the society.
- PO11 Project management and finance: An ability to use the modern engineering tools, techniques, skills and management principles to do work as a member and leader in a team, to manage projects in multidisciplinary environments.
- PO12 Life-long learning: A recognition of the need for, and an ability to engage in, to resolve contemporary issues and acquire lifelong learning.


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|                            |  |          |     |               |     |              |     |         |        |      |      |      |
|----------------------------|--|----------|-----|---------------|-----|--------------|-----|---------|--------|------|------|------|
| COLLEGE                    | SHRIDEVI INSTITUTE OF ENGINEERING & TECHNOLOGY |          |     |               |     |              |     |         |        |      |      |      |
| FACULTY NAME               | Mr. G.H. RAVIKUMAR                             |          |     |               |     |              |     |         |        |      |      |      |
| BRANCH                     | EEE  |          |     | ACADEMIC YEAR |     |              |     | 2018-19 |        |      |      |      |
| COURSE                     | B.E  | SEMESTER |     |               | III | SECTION      |     |         | EEE    |      |      |      |
| SUBJECT                    | ELECTRIC CIRCUIT ANALYSIS                      |          |     |               |     | SUBJECT CODE |     |         | 17EE32 |      |      |      |
| CO & PO MAPPING            |  |          |     |               |     |              |     |         |        |      |      |      |
|                            | PO1  | PO2      | PO3 | PO4           | PO5 | PO6          | PO7 | PO8     | PO9    | PO10 | PO11 | PO12 |
| CO1                        | 2  | 3        |     |               |     |              |     |         |        |      |      | 1    |
| CO2                        | 2  | 3        |     |               |     |              |     |         |        |      |      | 1    |
| CO3                        | 2  | 3        |     |               |     |              |     |         |        |      |      | 1    |
| CO4                        | 2  | 3        |     |               |     |              |     |         |        |      |      | 1    |
| CO5                        | 2  | 3        |     |               |     |              |     |         |        |      |      | 1    |
| AVERAGE                    | 2  | 3        |     |               |     |              |     |         |        |      |      | 1    |
| OVERALL MAPPING OF SUBJECT |  |          |     |               |     |              |     |         |        |      |      | 2    |

#### CO AND PO ATTAINMENT

|                        | CO%   | PO1   | PO2   | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12  |
|------------------------|-------|-------|-------|-----|-----|-----|-----|-----|-----|-----|------|------|-------|
| CO1                    | 46.00 | 0.92  | 1.38  |     |     |     |     |     |     |     |      |      | .460  |
| CO2                    | 41.55 | 0.831 | 1.246 |     |     |     |     |     |     |     |      |      | 0.415 |
| CO3                    | 49.25 | 0.985 | 1.477 |     |     |     |     |     |     |     |      |      | 0.492 |
| CO4                    | 46.82 | 0.936 | 1.404 |     |     |     |     |     |     |     |      |      | 0.468 |
| CO5                    | 45    | 0.9   | 1.35  |     |     |     |     |     |     |     |      |      | 0.45  |
| AVERAGE                |       | 0.914 | 1.371 |     |     |     |     |     |     |     |      |      | 0.457 |
| FINAL ATTAINMENT LEVEL |       |       |       |     |     |     |     |     |     |     |      |      | 0.914 |

  
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DEPARTMENT OF EEE

2018-19

|         |                         |              |        |
|---------|-------------------------|--------------|--------|
| SUBJECT | TRANSFORMER & GENERATOR | SUBJECT CODE | 17EE33 |
|---------|-------------------------|--------------|--------|

**COURSE OUTCOME**

- CO1. Understand the construction and operation of 1-phase, 3-Phase transformers and Autotransformer.
- CO2. Analyze the performance of transformers by polarity test, Sumpner's Test, phase conversion, 3-phase connection, and parallel operation.
- CO3. Understand the construction and working of AC and DC Generators.
- CO4. Analyze the performance of the AC Generators on infinite bus and parallel operation.
- CO5. Determine the regulation of AC Generator by Slip test, EMF, MMF, and ZPF Methods

**PROGRAM OUTCOMES**

- PO1 Engineering knowledge: An ability to apply knowledge of mathematics (including probability, statistics and discrete mathematics), science, and engineering for solving Engineering problems and Knowledge.
- PO2 Problem analysis: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- PO3 Design / development of solutions: An ability to design solution for engineering problems and design system components or process to meet desired specifications and needs.
- PO4 Conduct investigations of complex Problem: An ability to identify, formulate, comprehend, analyze, design synthesis of the information to solve complex engineering problems and provide valid conclusions.
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- PO6 The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal, and cultural issues.
- PO7 Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- PO8 Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
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- PO12 Life-long learning: A recognition of the need for, and an ability to engage in, to resolve contemporary issues and acquire lifelong learning.


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|                            |  |          |     |               |              |     |     |         |     |      |      |      |
|----------------------------|--|----------|-----|---------------|--------------|-----|-----|---------|-----|------|------|------|
| COLLEGE                    | SHRIDEVI INSTITUTE OF ENGINEERING & TECHNOLOGY |          |     |               |              |     |     |         |     |      |      |      |
| FACULTY NAME               | MRS. SHWETHA T M                               |          |     |               |              |     |     |         |     |      |      |      |
| BRANCH                     | EEE  |          |     | ACADEMIC YEAR |              |     |     | 2018-19 |     |      |      |      |
| COURSE                     | B.E  | SEMESTER |     | III           | SECTION      |     |     |         |     |      |      |      |
| SUBJECT                    | TRANSFORMER & GENERATOR                        |          |     |               | SUBJECT CODE |     |     | 17EE33  |     |      |      |      |
| CO & PO MAPPING            |  |          |     |               |              |     |     |         |     |      |      |      |
|                            | PO1  | PO2      | PO3 | PO4           | PO5          | PO6 | PO7 | PO8     | PO9 | PO10 | PO11 | PO12 |
| CO1                        | 3  | 3        | 3   | 2             |              |     | 2   |         |     |      | 2    | 1    |
| CO2                        | 2  | 3        | 3   | 2             |              |     | 2   |         |     |      | 2    | 1    |
| CO3                        | 1  | 3        | 3   | 1             |              |     | 2   |         |     |      | 2    | 1    |
| CO4                        | 2  | 3        | 3   | 2             |              |     | 2   |         |     |      | 2    | 1    |
| CO5                        | 2  | 3        | 3   | 2             |              |     | 2   |         |     |      | 2    | 1    |
| AVERAGE                    | 2  | 3        | 3   | 1.8           |              |     | 2   |         |     |      | 2    | 1    |
| OVERALL MAPPING OF SUBJECT |  |          |     |               |              |     |     |         |     |      |      | 2.11 |

#### CO AND PO ATTAINMENT

|                        | CO%   | PO1    | PO2    | PO3    | PO4   | PO5 | PO6 | PO7    | PO8 | PO9 | PO10 | PO11   | PO12   |
|------------------------|-------|--------|--------|--------|-------|-----|-----|--------|-----|-----|------|--------|--------|
| CO1                    | 45.1  | 1.353  | 1.353  | 1.353  | 0.902 |     |     | 0.902  |     |     |      | 0.902  | 0.451  |
| CO2                    | 44.7  | 0.894  | 1.341  | 1.341  | 0.894 |     |     | 0.894  |     |     |      | 0.894  | 0.447  |
| CO3                    | 46.9  | 0.469  | 1.407  | 1.407  | 0.469 |     |     | 0.938  |     |     |      | 0.938  | 0.469  |
| CO4                    | 46.1  | 0.922  | 1.383  | 1.383  | 0.922 |     |     | 0.922  |     |     |      | 0.922  | 0.461  |
| CO5                    | 44.9  | 0.898  | 1.347  | 1.347  | 0.898 |     |     | 0.898  |     |     |      | 0.898  | 0.449  |
| AVERAGE                | 45.54 | 0.9072 | 1.3662 | 1.3662 | 0.817 |     |     | 0.9108 |     |     |      | 0.9108 | 0.4554 |
| FINAL ATTAINMENT LEVEL |       |        |        |        |       |     |     |        |     |     |      |        | .9619  |

  
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DEPARTMENT OF EEE

2018-19

|         |                           |              |        |
|---------|---------------------------|--------------|--------|
| SUBJECT | ANALOG ELECTRONIC CIRCUIT | SUBJECT CODE | 17EE34 |
|---------|---------------------------|--------------|--------|

**COURSE OUTCOME**

- CO1. Obtain the output characteristics of clipper and clamper circuits.
- CO2. Design and compare biasing circuits for transistor amplifiers & explain the transistor switching.
- CO3. Explain the concept of feedback, its types and design of feedback circuits
- CO4. Design and analyze the power amplifier circuits and oscillators for different frequencies.
- CO5 Design and analysis of FET and MOSFET amplifiers

**PROGRAM OUTCOMES**

- PO1 Engineering knowledge: An ability to apply knowledge of mathematics (including probability, statistics and discrete mathematics), science, and engineering for solving Engineering problems and Knowledge.
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|----------------------------|--|----------|-----|---------------|--------------|-----|-----|-----------|-----|------|------|------|
| COLLEGE                    | SHRIDEVI INSTITUTE OF ENGINEERING & TECHNOLOGY |          |     |               |              |     |     |           |     |      |      |      |
| FACULTY NAME               | MRS. SHWETHA T M                               |          |     |               |              |     |     |           |     |      |      |      |
| BRANCH                     | EEE  |          |     | ACADEMIC YEAR |              |     |     | 2018-2019 |     |      |      |      |
| COURSE                     | B.E  | SEMESTER |     | III           | SECTION      |     |     |           |     |      |      |      |
| SUBJECT                    | ANALOG ELECTRONIC CIRCUIT                      |          |     |               | SUBJECT CODE |     |     | 17EE34    |     |      |      |      |
| CO & PO MAPPING            |  |          |     |               |              |     |     |           |     |      |      |      |
|                            | PO1  | PO2      | PO3 | PO4           | PO5          | PO6 | PO7 | PO8       | PO9 | PO10 | PO11 | PO12 |
| CO1                        | 2  | 3        | 2   | 2             |              | 1   | 1   |           |     |      |      | 1    |
| CO2                        | 3  | 3        | 2   | 2             |              | 1   | 1   |           |     |      |      | 1    |
| CO3                        | 3  | 3        | 2   | 2             |              | 1   | 1   |           |     |      |      | 1    |
| CO4                        | 2  | 3        | 2   | 2             |              | 1   | 1   |           |     |      |      | 1    |
| CO5                        | 2  | 3        | 2   | 2             |              | 1   | 1   |           |     |      |      | 1    |
| AVERAGE                    | 2.4  | 3        | 2   | 2             |              | 1   | 1   |           |     |      |      | 1    |
| OVERALL MAPPING OF SUBJECT |  |          |     |               |              |     |     |           |     |      |      | 1.77 |

#### CO AND PO ATTAINMENT

|                        | CO%   | PO1   | PO2   | PO3   | PO4   | PO5 | PO6   | PO7   | PO8 | PO9 | PO10 | PO11 | PO12  |
|------------------------|-------|-------|-------|-------|-------|-----|-------|-------|-----|-----|------|------|-------|
| CGI                    | 47.24 | 0.94  | 1.42  | 0.94  | 0.94  |     | 0.47  | 0.47  |     |     |      |      | 0.47  |
| CO2                    | 47.61 | 1.43  | 1.43  | 0.95  | 0.95  |     | 0.48  | 0.48  |     |     |      |      | 0.48  |
| CO3                    | 50.00 | 1.50  | 1.50  | 1.00  | 1.00  |     | 0.50  | 0.50  |     |     |      |      | 0.50  |
| CO4                    | 46.41 | 0.93  | 1.39  | 0.93  | 0.93  |     | 0.46  | 0.46  |     |     |      |      | 0.46  |
| CO5                    | 47.06 | 0.94  | 1.41  | 0.94  | 0.94  |     | 0.47  | 0.47  |     |     |      |      | 0.47  |
| AVERAGE                | 47.66 | 1.149 | 1.430 | 0.953 | 0.953 |     | 0.477 | 0.477 |     |     |      |      | 0.477 |
| FINAL ATTAINMENT LEVEL |       |       |       |       |       |     |       |       |     |     |      |      | 0.845 |

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6306 4002 309 - RESULTS

| Sl. No. | Roll No. | 19-20 | 20-21 | 21-22 | 22-23 | 23-24 | 24-25 | 25-26 | 26-27 | 27-28 | 28-29 | 29-30 | 30-31 | 31-32 | 32-33 | 33-34 | 34-35 | 35-36 | 36-37 | 37-38 | 38-39 | 39-40 | 40-41 | 41-42 | 42-43 | 43-44 | 44-45 | 45-46 | 46-47 | 47-48 | 48-49 | 49-50 | 50-51 | 51-52 | 52-53 | 53-54 | 54-55 | 55-56 | 56-57 | 57-58 | 58-59 | 59-60 | 60-61 | 61-62 | 62-63 | 63-64 | 64-65 | 65-66 | 66-67 | 67-68 | 68-69 | 69-70 | 70-71 | 71-72 | 72-73 | 73-74 | 74-75 | 75-76 | 76-77 | 77-78 | 78-79 | 79-80 | 80-81 | 81-82 | 82-83 | 83-84 | 84-85 | 85-86 | 86-87 | 87-88 | 88-89 | 89-90 | 90-91 | 91-92 | 92-93 | 93-94 | 94-95 | 95-96 | 96-97 | 97-98 | 98-99 | 99-100 | 100-101 | 101-102 | 102-103 | 103-104 | 104-105 | 105-106 | 106-107 | 107-108 | 108-109 | 109-110 | 110-111 | 111-112 | 112-113 | 113-114 | 114-115 | 115-116 | 116-117 | 117-118 | 118-119 | 119-120 | 120-121 | 121-122 | 122-123 | 123-124 | 124-125 | 125-126 | 126-127 | 127-128 | 128-129 | 129-130 | 130-131 | 131-132 | 132-133 | 133-134 | 134-135 | 135-136 | 136-137 | 137-138 | 138-139 | 139-140 | 140-141 | 141-142 | 142-143 | 143-144 | 144-145 | 145-146 | 146-147 | 147-148 | 148-149 | 149-150 | 150-151 | 151-152 | 152-153 | 153-154 | 154-155 | 155-156 | 156-157 | 157-158 | 158-159 | 159-160 | 160-161 | 161-162 | 162-163 | 163-164 | 164-165 | 165-166 | 166-167 | 167-168 | 168-169 | 169-170 | 170-171 | 171-172 | 172-173 | 173-174 | 174-175 | 175-176 | 176-177 | 177-178 | 178-179 | 179-180 | 180-181 | 181-182 | 182-183 | 183-184 | 184-185 | 185-186 | 186-187 | 187-188 | 188-189 | 189-190 | 190-191 | 191-192 | 192-193 | 193-194 | 194-195 | 195-196 | 196-197 | 197-198 | 198-199 | 199-200 | 200-201 | 201-202 | 202-203 | 203-204 | 204-205 | 205-206 | 206-207 | 207-208 | 208-209 | 209-210 | 210-211 | 211-212 | 212-213 | 213-214 | 214-215 | 215-216 | 216-217 | 217-218 | 218-219 | 219-220 | 220-221 | 221-222 | 222-223 | 223-224 | 224-225 | 225-226 | 226-227 | 227-228 | 228-229 | 229-230 | 230-231 | 231-232 | 232-233 | 233-234 | 234-235 | 235-236 | 236-237 | 237-238 | 238-239 | 239-240 | 240-241 | 241-242 | 242-243 | 243-244 | 244-245 | 245-246 | 246-247 | 247-248 | 248-249 | 249-250 | 250-251 | 251-252 | 252-253 | 253-254 | 254-255 | 255-256 | 256-257 | 257-258 | 258-259 | 259-260 | 260-261 | 261-262 | 262-263 | 263-264 | 264-265 | 265-266 | 266-267 | 267-268 | 268-269 | 269-270 | 270-271 | 271-272 | 272-273 | 273-274 | 274-275 | 275-276 | 276-277 | 277-278 | 278-279 | 279-280 | 280-281 | 281-282 | 282-283 | 283-284 | 284-285 | 285-286 | 286-287 | 287-288 | 288-289 | 289-290 | 290-291 | 291-292 | 292-293 | 293-294 | 294-295 | 295-296 | 296-297 | 297-298 | 298-299 | 299-300 | 300-301 | 301-302 | 302-303 | 303-304 | 304-305 | 305-306 | 306-307 | 307-308 | 308-309 | 309-310 | 310-311 | 311-312 | 312-313 | 313-314 | 314-315 | 315-316 | 316-317 | 317-318 | 318-319 | 319-320 | 320-321 | 321-322 | 322-323 | 323-324 | 324-325 | 325-326 | 326-327 | 327-328 | 328-329 | 329-330 | 330-331 | 331-332 | 332-333 | 333-334 | 334-335 | 335-336 | 336-337 | 337-338 | 338-339 | 339-340 | 340-341 | 341-342 | 342-343 | 343-344 | 344-345 | 345-346 | 346-347 | 347-348 | 348-349 | 349-350 | 350-351 | 351-352 | 352-353 | 353-354 | 354-355 | 355-356 | 356-357 | 357-358 | 358-359 | 359-360 | 360-361 | 361-362 | 362-363 | 363-364 | 364-365 | 365-366 | 366-367 | 367-368 | 368-369 | 369-370 | 370-371 | 371-372 | 372-373 | 373-374 | 374-375 | 375-376 | 376-377 | 377-378 | 378-379 | 379-380 | 380-381 | 381-382 | 382-383 | 383-384 | 384-385 | 385-386 | 386-387 | 387-388 | 388-389 | 389-390 | 390-391 | 391-392 | 392-393 | 393-394 | 394-395 | 395-396 | 396-397 | 397-398 | 398-399 | 399-400 | 400-401 | 401-402 | 402-403 | 403-404 | 404-405 | 405-406 | 406-407 | 407-408 | 408-409 | 409-410 | 410-411 | 411-412 | 412-413 | 413-414 | 414-415 | 415-416 | 416-417 | 417-418 | 418-419 | 419-420 | 420-421 | 421-422 | 422-423 | 423-424 | 424-425 | 425-426 | 426-427 | 427-428 | 428-429 | 429-430 | 430-431 | 431-432 | 432-433 | 433-434 | 434-435 | 435-436 | 436-437 | 437-438 | 438-439 | 439-440 | 440-441 | 441-442 | 442-443 | 443-444 | 444-445 | 445-446 | 446-447 | 447-448 | 448-449 | 449-450 | 450-451 | 451-452 | 452-453 | 453-454 | 454-455 | 455-456 | 456-457 | 457-458 | 458-459 | 459-460 | 460-461 | 461-462 | 462-463 | 463-464 | 464-465 | 465-466 | 466-467 | 467-468 | 468-469 | 469-470 | 470-471 | 471-472 | 472-473 | 473-474 | 474-475 | 475-476 | 476-477 | 477-478 | 478-479 | 479-480 | 480-481 | 481-482 | 482-483 | 483-484 | 484-485 | 485-486 | 486-487 | 487-488 | 488-489 | 489-490 | 490-491 | 491-492 | 492-493 | 493-494 | 494-495 | 495-496 | 496-497 | 497-498 | 498-499 | 499-500 | 500-501 | 501-502 | 502-503 | 503-504 | 504-505 | 505-506 | 506-507 | 507-508 | 508-509 | 509-510 | 510-511 | 511-512 | 512-513 | 513-514 | 514-515 | 515-516 | 516-517 | 517-518 | 518-519 | 519-520 | 520-521 | 521-522 | 522-523 | 523-524 | 524-525 | 525-526 | 526-527 | 527-528 | 528-529 | 529-530 | 530-531 | 531-532 | 532-533 | 533-534 | 534-535 | 535-536 | 536-537 | 537-538 | 538-539 | 539-540 | 540-541 | 541-542 | 542-543 | 543-544 | 544-545 | 545-546 | 546-547 | 547-548 | 548-549 | 549-550 | 550-551 | 551-552 | 552-553 | 553-554 | 554-555 | 555-556 | 556-557 | 557-558 | 558-559 | 559-560 | 560-561 | 561-562 | 562-563 | 563-564 | 564-565 | 565-566 | 566-567 | 567-568 | 568-569 | 569-570 | 570-571 | 571-572 | 572-573 | 573-574 | 574-575 | 575-576 | 576-577 | 577-578 | 578-579 | 579-580 | 580-581 | 581-582 | 582-583 | 583-584 | 584-585 | 585-586 | 586-587 | 587-588 | 588-589 | 589-590 | 590-591 | 591-592 | 592-593 | 593-594 | 594-595 | 595-596 | 596-597 | 597-598 | 598-599 | 599-600 | 600-601 | 601-602 | 602-603 | 603-604 | 604-605 | 605-606 | 606-607 | 607-608 | 608-609 | 609-610 | 610-611 | 611-612 | 612-613 | 613-614 | 614-615 | 615-616 | 616-617 | 617-618 | 618-619 | 619-620 | 620-621 | 621-622 | 622-623 | 623-624 | 624-625 | 625-626 | 626-627 | 627-628 | 628-629 | 629-630 | 630-631 | 631-632 | 632-633 | 633-634 | 634-635 | 635-636 | 636-637 | 637-638 | 638-639 | 639-640 | 640-641 | 641-642 | 642-643 | 643-644 | 644-645 | 645-646 | 646-647 | 647-648 | 648-649 | 649-650 | 650-651 | 651-652 | 652-653 | 653-654 | 654-655 | 655-656 | 656-657 | 657-658 | 658-659 | 659-660 | 660-661 | 661-662 | 662-663 | 663-664 | 664-665 | 665-666 | 666-667 | 667-668 | 668-669 | 669-670 | 670-671 | 671-672 | 672-673 | 673-674 | 674-675 | 675-676 | 676-677 | 677-678 | 678-679 | 679-680 | 680-681 | 681-682 | 682-683 | 683-684 | 684-685 | 685-686 | 686-687 | 687-688 | 688-689 | 689-690 | 690-691 | 691-692 | 692-693 | 693-694 | 694-695 | 695-696 | 696-697 | 697-698 | 698-699 | 699-700 | 700-701 | 701-702 | 702-703 | 703-704 | 704-705 | 705-706 | 706-707 | 707-708 | 708-709 | 709-710 | 710-711 | 711-712 | 712-713 | 713-714 | 714-715 | 715-716 | 716-717 | 717-718 | 718-719 | 719-720 | 720-721 | 721-722 | 722-723 | 723-724 | 724-725 | 725-726 | 726-727 | 727-728 | 728-729 | 729-730 | 730-731 | 731-732 | 732-733 | 733-734 | 734-735 | 735-736 | 736-737 | 737-738 | 738-739 | 739-740 | 740-741 | 741-742 | 742-743 | 743-744 | 744-745 | 745-746 | 746-747 | 747-748 | 748-749 | 749-750 | 750-751 | 751-752 | 752-753 | 753-754 | 754-755 | 755-756 | 756-757 | 757-758 | 758-759 | 759-760 | 760-761 | 761-762 | 762-763 | 763-764 | 764-765 | 765-766 | 766-767 | 767-768 | 768-769 | 769-770 | 770-771 | 771-772 | 772-773 | 773-774 | 774-775 | 775-776 | 776-777 | 777-778 | 778-779 | 779-780 | 780-781 | 781-782 | 782-783 | 783-784 | 784-785 | 785-786 | 786-787 | 787-788 | 788-789 | 789-790 | 790-791 | 791-792 | 792-793 | 793-794 | 794-795 | 795-796 | 796-797 | 797-798 | 798-799 | 799-800 | 800-801 | 801-802 | 802-803 | 803-804 | 804-805 | 805-806 | 806-807 | 807-808 | 808-809 | 809-810 | 810-811 | 811-812 | 812-813 | 813-814 | 814-815 | 815-816 | 816-817 | 817-818 | 818-819 | 819-820 | 820-821 | 821-822 | 822-823 | 823-824 | 824-825 | 825-826 | 826-827 | 827-828 | 828-829 | 829-830 | 830-831 | 831-832 | 832-833 | 833-834 | 834-835 | 835-836 | 836-837 | 837-838 | 838-839 | 839-840 | 840-841 | 841-842 | 842-843 | 843-844 | 844-845 | 845-846 | 846-847 | 847-848 | 848-849 | 849-850 | 850-851 | 851-852 | 852-853 | 853-854 | 854-855 | 855-856 | 856-857 | 857-858 | 858-859 | 859-860 | 860-861 | 861-862 | 862-863 | 863-864 | 864-865 | 865-866 | 866-867 | 867-868 | 868-869 | 869-870 | 870-871 | 871-872 | 872-873 | 873-874 | 874-875 | 875-876 | 876-877 | 877-878 | 878-879 | 879-880 | 880-881 | 881-882 | 882-883 | 883-884 | 884-885 | 885-886 | 886-887 | 887-888 | 888-889 | 889-890 | 890-891 | 891-892 | 892-893 | 893-894 | 894-895 | 895-896 | 896-897 | 897-898 | 898-899 | 899-900 | 900-901 | 901-902 | 902-903 | 903-904 | 904-905 | 905-906 | 906-907 | 907-908 | 908-909 | 909-910 | 910-911 | 911-912 | 912-913 | 913-914 | 914-915 | 915-916 | 916-917 | 917-918 | 918-919 | 919-920 | 920-921 | 921-922 | 922-923 | 923-924 | 924-925 | 925-926 | 926-927 | 927-928 | 928-929 | 929-930 | 930-931 | 931-932 | 932-933 | 933-934 | 934-935 | 935-936 | 936-937 | 937-938 | 938-939 | 939-940 | 940-941 | 941-942 | 942-943 | 943-944 | 944-945 | 945-946 | 946-947 | 947-948 | 948-949 | 949-950 | 950-951 | 951-952 | 952-953 | 953-954 | 954-955 | 955-956 | 956-957 | 957-958 | 958-959 | 959-960 | 960-961 | 961-962 | 962-963 | 96 |
|---------|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------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**DEPARTMENT OF EEE**

|                |                              |                     |               |
|----------------|------------------------------|---------------------|---------------|
| <b>SUBJECT</b> | <b>DIGITAL SYSTEM DESIGN</b> | <b>SUBJECT CODE</b> | <b>17EE35</b> |
|----------------|------------------------------|---------------------|---------------|

**COURSE OUTCOME**

|            |  |
|------------|--|
| <b>CO1</b> | Develop simplified switching equation using Karnaugh Maps and Quine McClusky techniques.                           |
| <b>CO2</b> | Design Multiplexer, Encoder, Decoder, Adder, Subtractors and Comparator as digital combinational control circuits. |
| <b>CO3</b> | Design flip flops, counters, shift registers as sequential control circuits.                                       |
| <b>CO4</b> | Develop Mealy/Moore Models and state diagrams for the given clocked sequential circuits.                           |
| <b>CO5</b> | Explain the functioning of Read only and Read/Write Memories, Programmable ROM EPROM and Flash memory              |

**PROGRAM OUTCOME**

- PO1** Engineering knowledge: An ability to apply knowledge of mathematics (including probability, statistics and discrete mathematics), science, and engineering for solving Engineering problems and Knowledge.
- PO2** Problem analysis: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- PO3** Design / development of solutions: An ability to design solution for engineering problems and design system components or process to meet desired specifications and needs.
- PO4** Conduct investigations of complex Problem: An ability to identify, formulate, comprehend, analyze, design synthesis of the information to solve complex engineering problems and provide valid conclusions.
- PO5** Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modeling to complex engineering activities.
- PO6** The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal, and cultural issues.
- PO7** Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- PO8** Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- PO9** Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- PO10** Communication: Communicate effectively on complex engineering activities with the engineering community and with the society.
- PO11** Project management and finance: An ability to use the modern engineering tools, techniques, skills and management principles to do work as a member and leader in a team, to manage projects in multidisciplinary environments.
- PO12** Life-long learning: A recognition of the need for, and an ability to engage in, to resolve contemporary issues and acquire lifelong learning.


*G. H. Ramani*  
Head of the Department  
Electrical & Electronics Engineering  
Shridevi Institute of Engineering & Technology  
TUMKUR-572108.

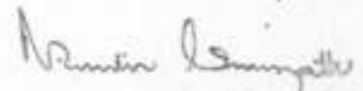
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|                            |  |          |     |               |     |         |              |           |        |      |      |      |
|----------------------------|--|----------|-----|---------------|-----|---------|--------------|-----------|--------|------|------|------|
| COLLEGE                    | SHRIDEVI INSTITUTE OF ENGINEERING & TECHNOLOGY |          |     |               |     |         |              |           |        |      |      |      |
| FACULTY NAME               | MR. MADHU B. C                                 |          |     |               |     |         |              |           |        |      |      |      |
| BRANCH                     | EEE  |          |     | ACADEMIC YEAR |     |         |              | 2018-2019 |        |      |      |      |
| COURSE                     | B.E  | SEMESTER |     |               | VI  | SECTION |              |           |        |      |      |      |
| SUBJECT                    | DIGITAL SYSTEM DESIGN                          |          |     |               |     |         | SUBJECT CODE |           | 17EE35 |      |      |      |
| CO & PO MAPPING            |  |          |     |               |     |         |              |           |        |      |      |      |
|                            | PO1  | PO2      | PO3 | PO4           | PO5 | PO6     | PO7          | PO8       | PO9    | PO10 | PO11 | PO12 |
| CO1                        | 3  | 3        | -   | -             | -   | -       | -            | -         | -      | -    | -    | 3    |
| CO2                        | 2  | 3        | 3   | -             | -   | -       | -            | -         | -      | -    | -    | 2    |
| CO3                        | 2  | 2        | 3   | -             | -   | -       | -            | -         | -      | -    | -    | 2    |
| CO4                        | 2  | 2        | -   | -             | -   | -       | -            | -         | -      | -    | -    | 2    |
| CO5                        | -  | -        | 3   | -             | -   | -       | -            | -         | -      | -    | -    | 2    |
| AVERAGE                    | 2.25   | 2.5      | 3   | -             | -   | -       | -            | -         | -      | -    | -    | 2.2  |
| OVERALL MAPPING OF SUBJECT |  |          |     |               |     |         |              |           |        |      |      | 2.48 |

#### CO AND PO ATTAINMENT

|                        | CO%   | PO1   | PO2   | PO3   | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12  |
|------------------------|-------|-------|-------|-------|-----|-----|-----|-----|-----|-----|------|------|-------|
| CO1                    | 36.47 | 1.09  | 1.09  |       | -   | -   | -   | -   | -   | -   | -    | -    | 1.09  |
| CO2                    | 35.56 | 0.711 | 1.06  | 1.06  | -   | -   | -   | -   | -   | -   | -    | -    | 0.711 |
| CO3                    | 36.47 | 0.729 | 0.729 | 1.094 | -   | -   | -   | -   | -   | -   | -    | -    | 0.729 |
| CO4                    | 36.47 | 0.729 | 0.729 |       | -   | -   | -   | -   | -   | -   | -    | -    | 0.729 |
| CO5                    | 36.85 |       |       | 1.105 | -   | -   | -   | -   | -   | -   | -    | -    | 0.737 |
| AVERAGE                |       | 0.814 | 0.902 | 1.086 | -   | -   | -   | -   | -   | -   | -    | -    | 0.799 |
| FINAL ATTAINMENT LEVEL |       |       |       |       |     |     |     |     |     |     |      |      | 0.9   |

  
 Head of the Department  
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 Shridevi Institute of Engineering & Technology  
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 SIET, TUMAKURU



## DEPARTMENT OF EEE

|                |  |                     |               |
|----------------|--|---------------------|---------------|
| <b>SUBJECT</b> | <b>Electrical &amp; Electronic Measurement</b> | <b>SUBJECT CODE</b> | <b>17EE36</b> |
|----------------|--|---------------------|---------------|

### COURSE OUTCOME

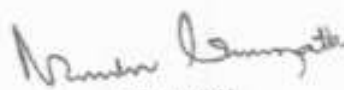
2018-19

|            |  |
|------------|--|
| <b>CO1</b> | Measure resistance, inductance and capacitance using bridges and determine earth resistance.   |
| <b>CO2</b> | Explain the working of various meters used for measurement of Power, Energy & understand the adjustments, calibration & errors in energy meters. |
| <b>CO3</b> | Understand methods of extending the range of instruments & instrument transformers.  |
| <b>CO4</b> | Explain the working of different electronic instruments.   |
| <b>CO5</b> | Explain the working of different display and recording devices.  |

### PROGRAM OUTCOME

- PO1** Engineering knowledge: An ability to apply knowledge of mathematics (including probability, statistics and discrete mathematics), science, and engineering for solving Engineering problems and Knowledge.
- PO2** Problem analysis: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- PO3** Design / development of solutions: An ability to design solution for engineering problems and design system components or process to meet desired specifications and needs.
- PO4** Conduct investigations of complex Problem: An ability to identify, formulate, comprehend, analyze, design synthesis of the information to solve complex engineering problems and provide valid conclusions.
- PO5** Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modeling to complex engineering activities.
- PO6** The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal, and cultural issues.
- PO7** Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- PO8** Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- PO9** Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- PO10** Communication: Communicate effectively on complex engineering activities with the engineering community and with the society.
- PO11** Project management and finance: An ability to use the modern engineering tools, techniques, skills and management principles to do work as a member and leader in a team, to manage projects in multidisciplinary environments.
- PO12** Life-long learning: A recognition of the need for, and an ability to engage in, to resolve contemporary issues and acquire lifelong learning.

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Electrical & Electronics Engineering  
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|                            |  |          |     |               |         |     |              |           |        |      |      |      |
|----------------------------|--|----------|-----|---------------|---------|-----|--------------|-----------|--------|------|------|------|
| COLLEGE                    | SHRIDEVI INSTITUTE OF ENGINEERING & TECHNOLOGY |          |     |               |         |     |              |           |        |      |      |      |
| FACULTY NAME               | UMABAI   |          |     |               |         |     |              |           |        |      |      |      |
| BRANCH                     | EEE  |          |     | ACADEMIC YEAR |         |     |              | 2018-2019 |        |      |      |      |
| COURSE                     | B.E  | SEMESTER |     | III           | SECTION |     |              |           |        |      |      |      |
| SUBJECT                    | Electrical & Electronic Measurement            |          |     |               |         |     | SUBJECT CODE |           | 17EE36 |      |      |      |
| CO & PO MAPPING            |  |          |     |               |         |     |              |           |        |      |      |      |
|                            | PO1  | PO2      | PO3 | PO4           | PO5     | PO6 | PO7          | PO8       | PO9    | PO10 | PO11 | PO12 |
| CO1                        | 3  | 2        | 2   | 2             | 2       | 2   |              |           |        |      |      | 1    |
| CO2                        | 3  | 2        | 2   | 2             | 2       | 2   |              |           |        |      |      | 1    |
| CO3                        | 3  | 2        | 3   | 2             | 2       | 2   |              |           |        |      |      | 1    |
| CO4                        | 3  | 2        | 2   | 2             | 2       | 2   |              |           |        |      |      | 1    |
| CO5                        | 3  | 2        | 2   | 2             | 2       | 2   |              |           |        |      |      | 2    |
| AVERAGE                    | 3  | 2        | 2.2 | 2             | 2       | 2   |              |           |        |      |      | 1.2  |
| OVERALL MAPPING OF SUBJECT |  |          |     |               |         |     |              |           |        |      |      | 2.05 |

### CO AND PO ATTAINMENT

|                        | CO%   | PO1  | PO2  | PO3  | PO4  | PO5  | PO6  | PO7 | PO8 | PO9 | PO10 | PO11 | PO12  |
|------------------------|-------|------|------|------|------|------|------|-----|-----|-----|------|------|-------|
| CO1                    | 48.0  | 1.44 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |     |     |     |      |      | 0.48  |
| CO2                    | 48.4  | 1.45 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |     |     |     |      |      | 0.48  |
| CO3                    | 50.8  | 1.52 | 1.01 | 1.52 | 1.01 | 1.01 | 1.01 |     |     |     |      |      | 0.50  |
| CO4                    | 46.9  | 1.40 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |     |     |     |      |      | 0.46  |
| CO5                    | 47.8  | 1.43 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |     |     |     |      |      | 0.47  |
| AVERAGE                | 48.38 | 1.44 | 0.96 | 1.06 | 0.96 | 0.96 | 0.96 |     |     |     |      |      | 0.47  |
| FINAL ATTAINMENT LEVEL |       |      |      |      |      |      |      |     |     |     |      |      | 0.974 |

G. H. B. Rao  
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*Principals Signature*  
 PRINCIPAL  
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**DEPARTMENT OF EEE**


|                |   |                     |               |
|----------------|---|---------------------|---------------|
| <b>SUBJECT</b> | <b>MANAGEMENT &amp;<br/>ENTREPRENEURSHIP(M&amp;E)</b> | <b>SUBJECT CODE</b> | <b>15EE51</b> |
|----------------|---|---------------------|---------------|


**COURSE OUTCOME**

- CO1.** Explain the field of management, task of the manager, planning and steps in decision making
- CO2.** Discuss the structure of organization, importance of staffing, leadership styles, modes of communication, techniques of coordination and importance of managerial control in business
- CO3.** Explain the concepts of entrepreneurship and a businessman's social responsibilities towards different groups
- CO4.** Show an understanding of role of SSI's in the development of country and state/central level institutions/agencies supporting business enterprises
- CO5.** Discuss the concepts of project management, capital budgeting, project feasibility studies, need for project report and new control techniques

**PROGRAM OUTCOMES**

- PO1** Engineering knowledge: An ability to apply knowledge of mathematics (including probability, statistics and discrete mathematics), science, and engineering for solving Engineering problems and Knowledge.
- PO2** Problem analysis: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- PO3** Design / development of solutions: An ability to design solution for engineering problems and design system components or process to meet desired specifications and needs.
- PO4** Conduct investigations of complex Problem: An ability to identify, formulate, comprehend, analyze, design synthesis of the information to solve complex engineering problems and provide valid conclusions.
- PO5** Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modeling to complex engineering activities.
- PO6** The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal, and cultural issues.
- PO7** Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- PO8** Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- PO9** Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- PO10** Communication: Communicate effectively on complex engineering activities with the engineering community and with the society.
- PO11** Project management and finance: An ability to use the modern engineering tools, techniques, skills and management principles to do work as a member and leader in a team, to manage projects in multidisciplinary environments.
- PO12** Life-long learning: A recognition of the need for, and an ability to engage in, to resolve contemporary issues and acquire lifelong learning.


  
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TUMKUR-572106.

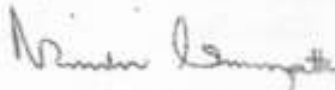
  
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SIET, TUMAKURU

|                            |  |          |     |               |         |     |              |         |        |      |      |      |
|----------------------------|--|----------|-----|---------------|---------|-----|--------------|---------|--------|------|------|------|
| COLLEGE                    | SHRIDEVI INSTITUTE OF ENGINEERING & TECHNOLOGY |          |     |               |         |     |              |         |        |      |      |      |
| FACULTY NAME               | MISS. SUCHITRA                                 |          |     |               |         |     |              |         |        |      |      |      |
| BRANCH                     | EEE  |          |     | ACADEMIC YEAR |         |     |              | 2018-19 |        |      |      |      |
| COURSE                     | B.E  | SEMESTER |     | V             | SECTION |     |              |         |        |      |      |      |
| SUBJECT                    | MANAGEMENT & ENTREPRENEURSHIP(M&E)             |          |     |               |         |     | SUBJECT CODE |         | 15EE51 |      |      |      |
| <b>CO &amp; PO MAPPING</b> |  |          |     |               |         |     |              |         |        |      |      |      |
|                            | PO1  | PO2      | PO3 | PO4           | PO5     | PO6 | PO7          | PO8     | PO9    | PO10 | PO11 | PO12 |
| CO1                        | -  | -        | -   | -             | -       | -   | -            | 3       | 2      | 3    | -    | 2    |
| CO2                        | -  | -        | -   | -             | -       | 2   | -            | 2       | 3      | 3    | -    | 2    |
| CO3                        | -  | -        | -   | -             | -       | 3   | -            | 2       | 3      | 2    | -    | 2    |
| CO4                        | -  | -        | -   | -             | -       | -   | -            | 2       | 2      | 2    | -    | 3    |
| CO5                        | -  | -        | -   | -             | -       | -   | -            | 2       | 3      | 3    | 2    | 2    |
| AVERAGE                    | -  | -        | -   | -             | -       | 2.5 | -            | 2.2     | 2.6    | 2.6  | 2    | 2.2  |
| OVERALL MAPPING OF SUBJECT |  |          |     |               |         |     |              |         |        |      |      | 2.35 |

### CO AND PO ATTAINMENT

|                        | CO%  | PO1 | PO2 | PO3 | PO4 | PO5 | PO6  | PO7 | PO8  | PO9  | PO10 | PO11 | PO12 |
|------------------------|------|-----|-----|-----|-----|-----|------|-----|------|------|------|------|------|
| CO1                    | 44.4 | -   | -   | -   | -   | -   | -    | -   | 1.33 | 0.89 | 1.33 | -    | 0.89 |
| CO2                    | 41.5 | -   | -   | -   | -   | -   | 0.83 | -   | 0.83 | 1.25 | 1.25 | -    | 0.83 |
| CO3                    | 58.5 | -   | -   | -   | -   | -   | 1.76 | -   | 1.17 | 1.76 | 1.17 | -    | 1.17 |
| CO4                    | 41.2 | -   | -   | -   | -   | -   | -    | -   | 0.82 | 0.82 | 0.82 | -    | 1.24 |
| CO5                    | 21.8 | -   | -   | -   | -   | -   | -    | -   | 0.44 | 0.65 | 0.65 | 0.44 | 0.44 |
| AVERAGE                |      | -   | -   | -   | -   | -   | 1.71 | -   | 0.92 | 1.07 | 1.04 | 0.44 | 0.91 |
| FINAL ATTAINMENT LEVEL |      |     |     |     |     |     |      |     |      |      |      |      | 1.02 |

  
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| Academic year | 2018-19        |     |       | SEM            | Sub | STUDENTS=13 |                |     |       |                         | Subject | M&E |     |     |               |      | Subject Code | ISEE31 |      |                      |       |       |       |       |                    |      |      | SEE Tot |      |         |
|---------------|----------------|-----|-------|----------------|-----|-------------|----------------|-----|-------|-------------------------|---------|-----|-----|-----|---------------|------|--------------|--------|------|----------------------|-------|-------|-------|-------|--------------------|------|------|---------|------|---------|
| SEM-IV        | IA TEST (115M) |     |       | IA TEST (115M) |     |             | IA TEST (115M) |     |       | ASSIGNMENT / QUIZ (5 M) |         |     |     |     | SEE MARKS(80) |      |              |        |      | Total Cse ATTAINMENT |       |       |       |       | % of individual CO |      |      |         |      | SEE Tot |
| USN           | CO1            | CO2 | TOTAL | CO2            | CO3 | TOTAL       | CO4            | CO5 | TOTAL | CO1                     | CO2     | CO3 | CO4 | CO5 | CO1           | CO2  | CO3          | CO4    | CO5  | CO1-1                | CO2-1 | CO3-1 | CO4-1 | CO5-1 | CO1                | CO2  | CO3  | CO4     | CO5  | 80M     |
| 15V14EE001    | 5              | 5   | 10    | 6              | 4   | 10          | 6              | 4   | 10    | 1                       | 1       | 1   | 1   | 1   | 8.8           | 8.8  | 8.8          | 8.8    | 8.8  | 15                   | 21    | 10    | 15    | 20    | 60.4               | 65.0 | 40.0 | 60.4    | 80.8 | 44      |
| 15V14EE004    | 6              | 6   | 12    | 7              | 5   | 12          | 6              | 6   | 12    | 1                       | 1       | 1   | 1   | 1   | 7.4           | 7.4  | 7.4          | 7.4    | 7.4  | 14                   | 13    | 8     | 14    | 21    | 53.3               | 49.6 | 70.0 | 53.3    | 24.6 | 37      |
| 15V14EE010    | 6              | 3   | 9     | 5              | 4   | 9           | 4              | 5   | 9     | 1                       | 1       | 1   | 1   | 1   | 10.2          | 10.2 | 10.2         | 10.2   | 10.2 | 17                   | 15    | 11    | 14    | 21    | 63.7               | 56.3 | 93.3 | 52.6    | 24.4 | 51      |
| 15V15EE001    | 6              | 4   | 10    | 6              | 4   | 10          | 5              | 5   | 10    | 1                       | 1       | 1   | 1   | 1   | 6.2           | 6.2  | 6.2          | 6.2    | 6.2  | 13                   | 11    | 7     | 11    | 18    | 48.9               | 41.5 | 60.0 | 41.5    | 20.9 | 31      |
| 15V15EE004    | 6              | 6   | 12    | 7              | 5   | 12          | 5              | 7   | 12    | 1                       | 1       | 1   | 1   | 1   | 8.2           | 8.2  | 8.2          | 8.2    | 8.2  | 15                   | 14    | 9     | 15    | 23    | 56.3               | 52.6 | 76.7 | 56.3    | 26.7 | 41      |
| 15V15EE010    | 4              | 5   | 9     | 5              | 4   | 9           | 5              | 4   | 9     | 1                       | 1       | 1   | 1   | 1   | 8.6           | 8.6  | 8.6          | 8.6    | 8.6  | 14                   | 14    | 10    | 15    | 19    | 50.4               | 50.4 | 80.0 | 54.1    | 21.4 | 43      |
| 15V15EE011    | 4              | 5   | 9     | 4              | 5   | 9           | 5              | 4   | 9     | 1                       | 1       | 1   | 1   | 1   | 7.2           | 7.2  | 7.2          | 7.2    | 7.2  | 12                   | 13    | 8     | 13    | 16    | 45.2               | 48.9 | 68.3 | 48.9    | 18.6 | 36      |
| 15V15EE014    | 6              | 4   | 10    | 6              | 4   | 10          | 5              | 5   | 10    | 1                       | 1       | 1   | 1   | 1   | 6.4           | 6.4  | 6.4          | 6.4    | 6.4  | 13                   | 11    | 7     | 11    | 18    | 49.6               | 42.2 | 61.7 | 42.2    | 21.1 | 32      |
| 15V15EE016    | 6              | 6   | 12    | 7              | 5   | 12          | 6              | 6   | 12    | 1                       | 1       | 1   | 1   | 1   | 9             | 9    | 9            | 9      | 9    | 16                   | 15    | 10    | 16    | 23    | 59.3               | 55.6 | 83.3 | 59.3    | 26.4 | 45      |
| 15V15EE022    | 7              | 5   | 12    | 7              | 5   | 12          | 8              | 4   | 12    | 1                       | 1       | 1   | 1   | 1   | 10.2          | 10.2 | 10.2         | 10.2   | 10.2 | 18                   | 16    | 11    | 16    | 22    | 67.4               | 60.0 | 93.3 | 60.0    | 25.5 | 51      |
| 15V15EE023    | 6              | 4   | 10    | 5              | 5   | 10          | 7              | 3   | 10    | 1                       | 1       | 1   | 1   | 1   | 6.6           | 6.6  | 6.6          | 6.6    | 6.6  | 14                   | 13    | 8     | 12    | 16    | 50.4               | 46.7 | 63.3 | 43.0    | 17.9 | 33      |
| 15V15EE030    | 7              | 3   | 10    | 6              | 4   | 10          | 4              | 6   | 10    | 1                       | 1       | 1   | 1   | 1   | 6.8           | 6.8  | 6.8          | 6.8    | 6.8  | 15                   | 12    | 8     | 11    | 20    | 54.8               | 43.7 | 65.0 | 40.0    | 22.8 | 34      |
| 15V15EE039    | 4              | 3   | 7     | 3              | 4   | 7           | 4              | 3   | 7     | 1                       | 1       | 1   | 1   | 1   | 8.8           | 8.8  | 8.8          | 8.8    | 8.8  | 14                   | 14    | 10    | 13    | 16    | 51.1               | 51.1 | 81.7 | 47.4    | 18.2 | 44      |
| AVERAGE       |                |     |       |                |     |             |                |     |       |                         |         |     |     |     |               |      |              |        |      |                      |       |       |       |       | 44.4               | 41.5 | 58.5 | 41.2    | 21.8 |         |

STAFF

G. H. R.  
 HOD  
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 TUMKUR-572108.

*[Signature]*  
 PRINCIPAL  
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 SREE TUMAKURU.

**DEPARTMENT OF EEE**

|                |                        |                     |               |
|----------------|------------------------|---------------------|---------------|
| <b>SUBJECT</b> | <b>MICROCONTROLLER</b> | <b>SUBJECT CODE</b> | <b>15EE52</b> |
|----------------|------------------------|---------------------|---------------|

**COURSE OUTCOME**

- CO1.** Outline the 8051 architecture, registers, internal memory organization, addressing modes
- CO2.** Discuss 8051 addressing modes, instruction set of 8051, accessing data and I/O port programming
- CO3.** Develop 8051C programs for time delay, I/O operations, I/O bit manipulation, logic and arithmetic operations, data conversion and timer/counter programming.
- CO4.** Summarize the basics of serial communication and interrupts, also develop 8051 programs for serial Data communication and interrupt programming
- CO5.** Program 8051 to work with external devices for ADC, DAC

**PROGRAM OUTCOMES**

- PO1** Engineering knowledge: An ability to apply knowledge of mathematics (including probability, statistics and discrete mathematics), science, and engineering for solving Engineering problems and Knowledge.
- PO2** Problem analysis: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- PO3** Design / development of solutions: An ability to design solution for engineering problems and design system components or process to meet desired specifications and needs.
- PO4** Conduct investigations of complex Problem: An ability to identify, formulate, comprehend, analyze, design synthesis of the information to solve complex engineering problems and provide valid conclusions.
- PO5** Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modeling to complex engineering activities.
- PO6** The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal, and cultural issues.
- PO7** Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- PO8** Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- PO9** Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- PO10** Communication: Communicate effectively on complex engineering activities with the engineering community and with the society.
- PO11** Project management and finance: An ability to use the modern engineering tools, techniques, skills and management principles to do work as a member and leader in a team, to manage projects in multidisciplinary environments.
- PO12** Life-long learning: A recognition of the need for, and an ability to engage in, to resolve contemporary issues and acquire lifelong learning.

*G. H. Ramesh*  
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*Ramesh Kumar*  
PRINCIPAL  
S.I.E.T. TUMAKURU

|                            |  |          |     |               |         |     |              |         |        |      |      |      |
|----------------------------|--|----------|-----|---------------|---------|-----|--------------|---------|--------|------|------|------|
| COLLEGE                    | SHRIDEVI INSTITUTE OF ENGINEERING & TECHNOLOGY |          |     |               |         |     |              |         |        |      |      |      |
| FACULTY NAME               | MR. MALLESH H L                                |          |     |               |         |     |              |         |        |      |      |      |
| BRANCH                     | EEE  |          |     | ACADEMIC YEAR |         |     |              | 2018-19 |        |      |      |      |
| COURSE                     | B.E  | SEMESTER |     | V             | SECTION |     |              |         |        |      |      |      |
| SUBJECT                    | MICROCONTROLLER                                |          |     |               |         |     | SUBJECT CODE |         | 15EE52 |      |      |      |
| CO & PO MAPPING            |  |          |     |               |         |     |              |         |        |      |      |      |
|                            | PO1  | PO2      | PO3 | PO4           | PO5     | PO6 | PO7          | PO8     | PO9    | PO10 | PO11 | PO12 |
| CO1                        | 2  | -        | -   | -             | -       | -   | -            | -       | -      | -    | -    | 2    |
| CO2                        | 2  | 2        | -   | -             | 2       | -   | -            | -       | -      | -    | -    | 2    |
| CO3                        | 3  | 2        | -   | -             | 2       | -   | -            | -       | -      | -    | -    | 2    |
| CO4                        | 3  | 2        | -   | -             | -       | -   | -            | -       | -      | -    | -    | 2    |
| CO5                        | 3  | 3        | -   | -             | -       | -   | -            | -       | -      | -    | -    | 2    |
| AVERAGE                    | 2.6  | 2.25     | -   | -             | 2       | -   | -            | -       | -      | -    | -    | 2    |
| OVERALL MAPPING OF SUBJECT |  |          |     |               |         |     |              |         |        |      |      | 2.21 |

### CO AND PO ATTAINMENT

|                        | CO%  | PO1  | PO2  | PO3 | PO4 | PO5  | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
|------------------------|------|------|------|-----|-----|------|-----|-----|-----|-----|------|------|------|
| CO1                    | 43.9 | 0.88 | -    | -   | -   | -    | -   | -   | -   | -   | -    | -    | 0.88 |
| CO2                    | 36.7 | 0.73 | 0.73 | -   | -   | 0.73 | -   | -   | -   | -   | -    | -    | 0.73 |
| CO3                    | 39.0 | 1.17 | 0.78 | -   | -   | 0.78 | -   | -   | -   | -   | -    | -    | 0.78 |
| CO4                    | 36.1 | 1.08 | 0.72 | -   | -   | -    | -   | -   | -   | -   | -    | -    | 0.72 |
| CO5                    | 23.2 | 0.70 | 0.70 | -   | -   | -    | -   | -   | -   | -   | -    | -    | 0.46 |
| AVERAGE                |      | 0.91 | 0.73 | -   | -   | 0.76 | -   | -   | -   | -   | -    | -    | 0.71 |
| FINAL ATTAINMENT LEVEL |      |      |      |     |     |      |     |     |     |     |      |      | 0.78 |

G. H. Prasad  
 Head of the Department  
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 Shridevi Institute of Engineering & Technology  
 TUMKUR-572106

*Principals Signature*  
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 SIET, TUMAKURU.





SHRIDEVI INSTITUTE OF ENGINEERING & TECHNOLOGY

SIRA ROAD, TUMKUR- 572 106.

DEPARTMENT OF EEE

|         |                   |              |        |
|---------|-------------------|--------------|--------|
| SUBJECT | POWER ELECTRONICS | SUBJECT CODE | 15EE53 |
|---------|-------------------|--------------|--------|

**COURSE OUTCOME**

- CO1. To give an overview of applications power electronics, different types of power semiconductor devices, their switching characteristics
- CO2. To explain power diode characteristics, types, their operation and the effects of power diodes on RL circuits.
- CO3. To explain the techniques for design and analysis of single phase diode rectifier circuits
- CO4. To explain different power transistors, their steady state and switching characteristics and limitations.
- CO5. To explain different types of Thyristors, their gate characteristics and gate control requirements.

**PROGRAM OUTCOMES**

- PO1 Engineering knowledge: An ability to apply knowledge of mathematics (including probability, statistics and discrete mathematics), science, and engineering for solving Engineering problems and Knowledge.
- PO2 Problem analysis: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- PO3 Design / development of solutions: An ability to design solution for engineering problems and design system components or process to meet desired specifications and needs.
- PO4 Conduct investigations of complex Problem: An ability to identify, formulate, comprehend, analyze, design synthesis of the information to solve complex engineering problems and provide valid conclusions.
- PO5 Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modeling to complex engineering activities.
- PO6 The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal, and cultural issues.
- PO7 Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- PO8 Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- PO9 Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- PO10 Communication: Communicate effectively on complex engineering activities with the engineering community and with the society.
- PO11 Project management and finance: An ability to use the modern engineering tools, techniques, skills and management principles to do work as a member and leader in a team, to manage projects in multidisciplinary environments.
- PO12 Life-long learning: A recognition of the need for, and an ability to engage in, to resolve contemporary issues and acquire lifelong learning.

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|                            |  |          |     |               |     |         |              |         |        |      |      |      |
|----------------------------|--|----------|-----|---------------|-----|---------|--------------|---------|--------|------|------|------|
| COLLEGE                    | SHRIDEVI INSTITUTE OF ENGINEERING & TECHNOLOGY |          |     |               |     |         |              |         |        |      |      |      |
| FACULTY NAME               | MRS. THEJASWINI R                              |          |     |               |     |         |              |         |        |      |      |      |
| BRANCH                     | EEE  |          |     | ACADEMIC YEAR |     |         |              | 2018-19 |        |      |      |      |
| COURSE                     | B.E  | SEMESTER |     |               | V   | SECTION |              |         |        |      |      |      |
| SUBJECT                    | POWER ELECTRONICS                              |          |     |               |     |         | SUBJECT CODE |         | 15EE53 |      |      |      |
| CO & PO MAPPING            |  |          |     |               |     |         |              |         |        |      |      |      |
|                            | PO1  | PO2      | PO3 | PO4           | PO5 | PO6     | PO7          | PO8     | PO9    | PO10 | PO11 | PO12 |
| CO1                        | 2  | -        | -   | -             | -   | -       | -            | -       | -      | -    | -    | 2    |
| CO2                        | 2  | -        | -   | -             | -   | -       | -            | -       | -      | -    | -    | 2    |
| CO3                        | 2  | 2        | -   | -             | -   | -       | -            | -       | -      | -    | -    | 2    |
| CO4                        | 2  | 2        | -   | -             | -   | -       | -            | -       | -      | -    | -    | -    |
| CO5                        | 2  | 2        | -   | -             | -   | -       | -            | -       | -      | -    | -    | -    |
| AVERAGE                    | 2  | 2        | -   | -             | -   | -       | -            | -       | -      | -    | -    | 2    |
| OVERALL MAPPING OF SUBJECT |  |          |     |               |     |         |              |         |        |      |      | 2    |

### CO AND PO ATTAINMENT

|                        | CO%  | PO1  | PO2  | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
|------------------------|------|------|------|-----|-----|-----|-----|-----|-----|-----|------|------|------|
| CO1                    | 43.0 | 0.86 | -    | -   | -   | -   | -   | -   | -   | -   | -    | -    | 0.86 |
| CO2                    | 39.2 | 0.78 | -    | -   | -   | -   | -   | -   | -   | -   | -    | -    | 0.78 |
| CO3                    | 54.6 | 1.09 | 1.09 | -   | -   | -   | -   | -   | -   | -   | -    | -    | 1.09 |
| CO4                    | 39.0 | 0.78 | 0.78 | -   | -   | -   | -   | -   | -   | -   | -    | -    | -    |
| CO5                    | 20.7 | 0.41 | 0.41 | -   | -   | -   | -   | -   | -   | -   | -    | -    | -    |
| AVERAGE                |      | 0.78 | 0.76 | -   | -   | -   | -   | -   | -   | -   | -    | -    | 0.91 |
| FINAL ATTAINMENT LEVEL |      |      |      |     |     |     |     |     |     |     |      |      | 0.82 |

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G. H. Ramesh

| Analytic year | 2018-19        |     |       | SEM             | 5th | STUDENTS-13 |                  |     |       |                          | Subject | POWER ELECTRONICS |     |     |               |     | Subject Code | ISEEM |     |                      |       |       |       |       |                    |      |      | SEE Tot |      |         |
|---------------|----------------|-----|-------|-----------------|-----|-------------|------------------|-----|-------|--------------------------|---------|-------------------|-----|-----|---------------|-----|--------------|-------|-----|----------------------|-------|-------|-------|-------|--------------------|------|------|---------|------|---------|
| SEM-IV        | IA TEST I(15M) |     |       | IA TEST II(15M) |     |             | IA TEST III(15M) |     |       | ASSIGNMENT / (QUESTIONS) |         |                   |     |     | SEE MARKS(80) |     |              |       |     | Total Cos ATTAINMENT |       |       |       |       | % of individual CO |      |      |         |      | SEE Tot |
| UNN           | CO1            | CO2 | TOTAL | CO2             | CO3 | TOTAL       | CO4              | CO5 | TOTAL | CO1                      | CO2     | CO3               | CO4 | CO5 | CO1           | CO2 | CO3          | CO4   | CO5 | CO1-1                | CO2-1 | CO3-1 | CO4-1 | CO5-1 | CO1                | CO2  | CO3  | CO4     | CO5  | 80M     |
| 15V14EE001    | 6              | 4   | 10    | 5               | 5   | 10          | 5                | 5   | 10    | 1                        | 1       | 1                 | 1   | 1   | 7.4           | 7.4 | 7.4          | 7.4   | 7.4 | 14                   | 17    | 8     | 12    | 18    | 58.8               | 54.4 | 34.3 | 50.6    | 75.1 | 37      |
| 15V14EE004    | 7              | 5   | 12    | 6               | 6   | 12          | 8                | 4   | 12    | 1                        | 1       | 1                 | 1   | 1   | 7.2           | 7.2 | 7.2          | 7.2   | 7.2 | 15                   | 14    | 8     | 13    | 18    | 56.3               | 52.6 | 68.3 | 48.9    | 20.9 | 36      |
| 15V14EE010    | 6              | 3   | 9     | 5               | 4   | 9           | 5                | 4   | 9     | 1                        | 1       | 1                 | 1   | 1   | 4.2           | 4.2 | 4.2          | 4.2   | 4.2 | 11                   | 9     | 5     | 8     | 14    | 41.5               | 34.1 | 43.3 | 30.4    | 16.3 | 21      |
| 15V15EE001    | 5              | 5   | 10    | 7               | 3   | 10          | 6                | 4   | 10    | 1                        | 1       | 1                 | 1   | 1   | 7.2           | 7.2 | 7.2          | 7.2   | 7.2 | 13                   | 11    | 8     | 13    | 19    | 48.9               | 41.5 | 68.3 | 48.9    | 22.1 | 36      |
| 15V15EE004    | 5              | 5   | 10    | 7               | 3   | 10          | 5                | 5   | 10    | 1                        | 1       | 1                 | 1   | 1   | 9.2           | 9.2 | 9.2          | 9.2   | 9.2 | 15                   | 13    | 10    | 15    | 22    | 56.3               | 48.9 | 85.0 | 56.3    | 25.5 | 46      |
| 15V15EE010    | 6              | 4   | 10    | 3               | 7   | 10          | 5                | 5   | 10    | 1                        | 1       | 1                 | 1   | 1   | 5.6           | 5.6 | 5.6          | 5.6   | 5.6 | 13                   | 14    | 7     | 11    | 15    | 46.7               | 50.4 | 55.0 | 39.3    | 16.8 | 28      |
| 15V15EE011    | 6              | 4   | 10    | 7               | 3   | 10          | 5                | 5   | 10    | 1                        | 1       | 1                 | 1   | 1   | 6.2           | 6.2 | 6.2          | 6.2   | 6.2 | 13                   | 10    | 7     | 11    | 19    | 48.9               | 37.8 | 60.0 | 41.5    | 22.1 | 31      |
| 15V15EE014    | 6              | 5   | 11    | 7               | 4   | 11          | 7                | 4   | 11    | 1                        | 1       | 1                 | 1   | 1   | 8             | 8   | 8            | 8     | 8   | 15                   | 13    | 9     | 14    | 20    | 55.6               | 48.1 | 75.0 | 51.9    | 23.0 | 40      |
| 15V15EE016    | 5              | 5   | 10    | 6               | 4   | 10          | 6                | 4   | 10    | 1                        | 1       | 1                 | 1   | 1   | 9.8           | 9.8 | 9.8          | 9.8   | 9.8 | 16                   | 15    | 11    | 16    | 21    | 58.5               | 54.8 | 90.0 | 58.5    | 23.9 | 49      |
| 15V15EE022    | 7              | 5   | 12    | 5               | 7   | 12          | 6                | 6   | 12    | 1                        | 1       | 1                 | 1   | 1   | 8.4           | 8.4 | 8.4          | 8.4   | 8.4 | 16                   | 16    | 9     | 14    | 20    | 60.7               | 60.7 | 78.3 | 53.3    | 23.4 | 42      |
| 15V15EE023    | 5              | 4   | 9     | 4               | 5   | 9           | 5                | 4   | 9     | 1                        | 1       | 1                 | 1   | 1   | 8.8           | 8.8 | 8.8          | 8.8   | 8.8 | 15                   | 15    | 10    | 14    | 18    | 54.8               | 54.8 | 81.7 | 51.1    | 20.5 | 44      |
| 15V15EE030    | 6              | 4   | 10    | 7               | 3   | 10          | 5                | 5   | 10    | 1                        | 1       | 1                 | 1   | 1   | 5.8           | 5.8 | 5.8          | 5.8   | 5.8 | 13                   | 10    | 7     | 11    | 19    | 47.4               | 36.3 | 56.7 | 40.0    | 21.6 | 29      |
| 15V15EE039    | 5              | 5   | 10    | 5               | 5   | 10          | 7                | 3   | 10    | 1                        | 1       | 1                 | 1   | 1   | 8.4           | 8.4 | 8.4          | 8.4   | 8.4 | 14                   | 14    | 9     | 14    | 17    | 53.3               | 53.3 | 78.3 | 53.3    | 20.0 | 42      |
| AVERAGE       |                |     |       |                 |     |             |                  |     |       |                          |         |                   |     |     |               |     |              |       |     |                      |       |       |       |       | 43.0               | 39.2 | 54.6 | 39.0    | 20.7 |         |

STAFF

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SIRA ROAD, TUMKUR- 572 106.

**DEPARTMENT OF EEE**

|                |                              |                     |               |
|----------------|------------------------------|---------------------|---------------|
| <b>SUBJECT</b> | <b>SIGNALS &amp; SYSTEMS</b> | <b>SUBJECT CODE</b> | <b>15EE54</b> |
|----------------|------------------------------|---------------------|---------------|

**COURSE OUTCOME**

- CO1.** Explain the generation of signals, behavior of system and the basic operations that can be performed on signals and properties of systems.
- CO2.** Apply convolution in both continuous and discrete domain for the analysis of systems given impulse response of a system.
- CO3.** Solve the continuous time and discrete time systems by various methods and their representation by block diagram
- CO4.** Perform Fourier analysis for continuous and discrete time, linear time invariant systems.
- CO5.** Apply Z-transform and properties of Z transform for the analysis of discrete time systems

**PROGRAM OUTCOMES**

- PO1** Engineering knowledge: An ability to apply knowledge of mathematics (including probability, statistics and discrete mathematics), science, and engineering for solving Engineering problems and Knowledge.
- PO2** Problem analysis: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- PO3** Design / development of solutions: An ability to design solution for engineering problems and design system components or process to meet desired specifications and needs.
- PO4** Conduct investigations of complex Problem: An ability to identify, formulate, comprehend, analyze, design synthesis of the information to solve complex engineering problems and provide valid conclusions.
- PO5** Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modeling to complex engineering activities.
- PO6** The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal, and cultural issues.
- PO7** Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- PO8** Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- PO9** Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- PO10** Communication: Communicate effectively on complex engineering activities with the engineering community and with the society.
- PO11** Project management and finance: An ability to use the modern engineering tools, techniques, skills and management principles to do work as a member and leader in a team, to manage projects in multidisciplinary environments.
- PO12** Life-long learning: A recognition of the need for, and an ability to engage in, to resolve contemporary issues and acquire lifelong learning.

G. H. R. Rao  
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Principal  
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11/10/11

|                            |  |          |     |               |         |     |              |         |        |      |      |      |
|----------------------------|--|----------|-----|---------------|---------|-----|--------------|---------|--------|------|------|------|
| COLLEGE                    | SHRIDEVI INSTITUTE OF ENGINEERING & TECHNOLOGY |          |     |               |         |     |              |         |        |      |      |      |
| FACULTY NAME               | MR. G H RAVIKUMAR                              |          |     |               |         |     |              |         |        |      |      |      |
| BRANCH                     | EEE  |          |     | ACADEMIC YEAR |         |     |              | 2018-19 |        |      |      |      |
| COURSE                     | B.E  | SEMESTER |     | V             | SECTION |     |              |         |        |      |      |      |
| SUBJECT                    | SIGNALS & SYSTEMS                              |          |     |               |         |     | SUBJECT CODE |         | 15EE54 |      |      |      |
| CO & PO MAPPING            |  |          |     |               |         |     |              |         |        |      |      |      |
|                            | PO1  | PO2      | PO3 | PO4           | PO5     | PO6 | PO7          | PO8     | PO9    | PO10 | PO11 | PO12 |
| CO1                        | 2  | 3        | -   | -             | -       | -   | -            | -       | -      | -    | -    | 2    |
| CO2                        | 2  | 3        | -   | -             | -       | -   | -            | -       | -      | -    | -    | -    |
| CO3                        | 3  | 3        | -   | -             | 2       | -   | -            | -       | -      | -    | -    | 2    |
| CO4                        | 2  | 3        | -   | -             | 2       | -   | -            | -       | -      | -    | -    | -    |
| CO5                        | 2  | 3        | -   | -             | 2       | -   | -            | -       | -      | -    | -    | -    |
| AVERAGE                    | 2.2  | 3        | -   | -             | 2       | -   | -            | -       | -      | -    | -    | 2    |
| OVERALL MAPPING OF SUBJECT |  |          |     |               |         |     |              |         |        |      |      | 2.3  |

#### CO AND PO ATTAINMENT


|                        | CO%  | PO1  | PO2  | PO3 | PO4 | PO5  | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
|------------------------|------|------|------|-----|-----|------|-----|-----|-----|-----|------|------|------|
| CO1                    | 34.9 | 0.70 | 1.05 | -   | -   | -    | -   | -   | -   | -   | -    | -    | 0.70 |
| CO2                    | 32.1 | 0.64 | 0.96 | -   | -   | -    | -   | -   | -   | -   | -    | -    | -    |
| CO3                    | 38.6 | 1.16 | 1.16 | -   | -   | 0.77 | -   | -   | -   | -   | -    | -    | 0.77 |
| CO4                    | 31.9 | 0.64 | 0.96 | -   | -   | 0.64 | -   | -   | -   | -   | -    | -    | -    |
| CO5                    | 17.7 | 0.35 | 0.53 | -   | -   | 0.35 | -   | -   | -   | -   | -    | -    | -    |
| AVERAGE                |      | 0.70 | 0.93 | -   | -   | 0.59 | -   | -   | -   | -   | -    | -    | 0.74 |
| FINAL ATTAINMENT LEVEL |      |      |      |     |     |      |     |     |     |     |      |      | 0.74 |

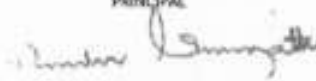
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| Academic year | 2018-19        |     | SEM   | Pa            | STUDENTS-13 |       |               |     |       | Subject                  | SIGNALS & SYSTEMS |     |     |     |              | Subject Code | ISEEM |      |      |                      |       |       |       |       |                     |      | SEE Tot |      |      |         |  |
|---------------|----------------|-----|-------|---------------|-------------|-------|---------------|-----|-------|--------------------------|-------------------|-----|-----|-----|--------------|--------------|-------|------|------|----------------------|-------|-------|-------|-------|---------------------|------|---------|------|------|---------|--|
| SEM-IV        | IA TEST (11PM) |     |       | IA TEST (3PM) |             |       | IA TEST (5PM) |     |       | ASSIGNMENT / QUIZ(S) (M) |                   |     |     |     | SEE MARKS(M) |              |       |      |      | Total Cos ATTAINMENT |       |       |       |       | No of individual CO |      |         |      |      | SEE Tot |  |
| UNN           | CO1            | CO2 | TOTAL | CO1           | CO2         | TOTAL | CO1           | CO2 | TOTAL | CO1                      | CO2               | CO3 | CO4 | CO5 | CO1          | CO2          | CO3   | CO4  | CO5  | CO1-1                | CO2-1 | CO3-1 | CO4-1 | CO5-1 | CO1                 | CO2  | CO3     | CO4  | CO5  | 80M     |  |
| 15V14EE001    | 5              | 4   | 9     | 4             | 5           | 9     | 3             | 6   | 9     | 1                        | 1                 | 1   | 1   | 1   | 1.2          | 1.2          | 1.2   | 1.2  | 1.2  | 7                    | 10    | 2     | 6     | 12    | 29.4                | 31.9 | 9.0     | 25.3 | 49.8 | 6       |  |
| 15V14EE004    | 5              | 6   | 11    | 7             | 4           | 11    | 6             | 5   | 11    | 1                        | 1                 | 1   | 1   | 1   | 3.6          | 3.6          | 3.6   | 3.6  | 3.6  | 10                   | 9     | 5     | 11    | 17    | 35.6                | 31.9 | 38.3    | 39.3 | 19.1 | 18      |  |
| 15V14EE010    | 4              | 3   | 7     | 4             | 3           | 7     | 4             | 3   | 7     | 1                        | 1                 | 1   | 1   | 1   | 1.8          | 1.8          | 1.8   | 1.8  | 1.8  | 7                    | 6     | 3     | 6     | 10    | 25.2                | 21.5 | 23.3    | 21.5 | 11.3 | 9       |  |
| 15V15EE001    | 5              | 2   | 7     | 4             | 3           | 7     | 3             | 4   | 7     | 1                        | 1                 | 1   | 1   | 1   | 3.6          | 3.6          | 3.6   | 3.6  | 3.6  | 10                   | 8     | 5     | 7     | 13    | 35.6                | 28.1 | 38.3    | 24.4 | 14.5 | 18      |  |
| 15V15EE004    | 5              | 6   | 11    | 5             | 6           | 11    | 6             | 5   | 11    | 1                        | 1                 | 1   | 1   | 1   | 6.2          | 6.2          | 6.2   | 6.2  | 6.2  | 12                   | 13    | 7     | 13    | 17    | 45.2                | 48.9 | 60.0    | 48.9 | 19.8 | 31      |  |
| 15V15EE010    | 7              | 7   | 14    | 8             | 6           | 14    | 9             | 5   | 14    | 1                        | 1                 | 1   | 1   | 1   | 7.2          | 7.2          | 7.2   | 7.2  | 7.2  | 15                   | 14    | 8     | 15    | 21    | 56.3                | 52.6 | 68.3    | 56.3 | 24.4 | 36      |  |
| 15V15EE011    | 6              | 6   | 12    | 7             | 5           | 12    | 6             | 6   | 12    | 1                        | 1                 | 1   | 1   | 1   | 2.6          | 2.6          | 2.6   | 2.6  | 2.6  | 10                   | 9     | 4     | 10    | 17    | 35.6                | 31.9 | 30.0    | 35.6 | 19.1 | 13      |  |
| 15V15EE014    | 7              | 4   | 11    | 6             | 5           | 11    | 6             | 5   | 11    | 1                        | 1                 | 1   | 1   | 1   | 6.6          | 6.6          | 6.6   | 6.6  | 6.6  | 15                   | 13    | 8     | 12    | 19    | 54.1                | 46.7 | 63.3    | 43.0 | 21.4 | 33      |  |
| 15V15EE016    | 8              | 6   | 14    | 7             | 7           | 14    | 9             | 5   | 14    | 1                        | 1                 | 1   | 1   | 1   | 5.8          | 5.8          | 5.8   | 5.8  | 5.8  | 15                   | 14    | 7     | 13    | 19    | 54.8                | 51.1 | 56.7    | 47.4 | 21.6 | 29      |  |
| 15V15EE022    | 9              | 4   | 13    | 8             | 5           | 13    | 6             | 7   | 13    | 1                        | 1                 | 1   | 1   | 1   | 10.6         | 10.6         | 10.6  | 10.6 | 10.6 | 21                   | 17    | 12    | 16    | 27    | 76.3                | 61.5 | 96.7    | 57.8 | 30.6 | 53      |  |
| 15V15EE023    | 4              | 4   | 8     | 5             | 3           | 8     | 4             | 4   | 8     | 1                        | 1                 | 1   | 1   | 1   | 2            | 2            | 2     | 2    | 2    | 7                    | 6     | 3     | 7     | 12    | 25.9                | 22.2 | 25.0    | 25.9 | 13.8 | 10      |  |
| 15V15EE030    | 4              | 4   | 8     | 5             | 3           | 8     | 4             | 4   | 8     | 1                        | 1                 | 1   | 1   | 1   | 4            | 4            | 4     | 4    | 4    | 9                    | 8     | 5     | 9     | 14    | 33.3                | 29.6 | 41.7    | 33.3 | 16.1 | 20      |  |
| 15V15EE039    | 6              | 6   | 12    | 5             | 7           | 12    | 6             | 6   | 12    | 1                        | 1                 | 1   | 1   | 1   | 7            | 7            | 7     | 7    | 7    | 14                   | 15    | 8     | 14    | 19    | 51.9                | 55.6 | 66.7    | 51.9 | 21.8 | 35      |  |
| AVERAGE       |                |     |       |               |             |       |               |     |       |                          |                   |     |     |     |              |              |       |      |      |                      |       |       |       |       |                     |      |         |      |      |         |  |

STAFF

HOD  
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SIRA ROAD, TUMKUR- 572 106.

DEPARTMENT OF EEE

|         |                             |              |         |
|---------|-----------------------------|--------------|---------|
| SUBJECT | SPECIAL ELECTRICAL MACHINES | SUBJECT CODE | 15EE554 |
|---------|-----------------------------|--------------|---------|

**COURSE OUTCOME**

- CO1. Explain the performance and control of stepper motors, and their applications.
- CO2. Explain theory of operation and control of switched reluctance motor and permanent magnet brushless D.C. motors.
- CO3. Explain theory of operation and control of permanent magnet synchronous motors and synchronous reluctance motor.
- CO4. Explain operation of single phase special machines and servo motors.
- CO5. Explain operation of linear electrical machine and permanent magnet axial flux machines.

**PROGRAM OUTCOMES**

- PO1 Engineering knowledge: An ability to apply knowledge of mathematics (including probability, statistics and discrete mathematics), science, and engineering for solving Engineering problems and Knowledge.
- PO2 Problem analysis: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- PO3 Design / development of solutions: An ability to design solution for engineering problems and design system components or process to meet desired specifications and needs.
- PO4 Conduct investigations of complex Problem: An ability to identify, formulate, comprehend, analyze, design synthesis of the information to solve complex engineering problems and provide valid conclusions.
- PO5 Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modeling to complex engineering activities.
- PO6 The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal, and cultural issues.
- PO7 Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- PO8 Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- PO9 Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- PO10 Communication: Communicate effectively on complex engineering activities with the engineering community and with the society.
- PO11 Project management and finance: An ability to use the modern engineering tools, techniques, skills and management principles to do work as a member and leader in a team, to manage projects in multidisciplinary environments.
- PO12 Life-long learning: A recognition of the need for, and an ability to engage in, to resolve contemporary issues and acquire lifelong learning.

G. H. Gowda  
Head of the Department

Electrical & Electronics Engineering  
Shridevi Institute of Engineering & Technology  
TUMKUR-572106.

*[Signature]*  
HEAD OF THE DEPARTMENT

|                            |  |          |     |               |         |              |     |         |     |      |      |      |
|----------------------------|--|----------|-----|---------------|---------|--------------|-----|---------|-----|------|------|------|
| COLLEGE                    | SHRIDEVI INSTITUTE OF ENGINEERING & TECHNOLOGY |          |     |               |         |              |     |         |     |      |      |      |
| FACULTY NAME               | MRS. SOWMYA T C                                |          |     |               |         |              |     |         |     |      |      |      |
| BRANCH                     | EEE  |          |     | ACADEMIC YEAR |         |              |     | 2018-19 |     |      |      |      |
| COURSE                     | B.E  | SEMESTER |     | V             | SECTION |              |     |         |     |      |      |      |
| SUBJECT                    | SPECIAL ELECTRICAL MACHINES                    |          |     |               |         | SUBJECT CODE |     | 15EE554 |     |      |      |      |
| CO & PO MAPPING            |  |          |     |               |         |              |     |         |     |      |      |      |
|                            | PO1  | PO2      | PO3 | PO4           | PO5     | PO6          | PO7 | PO8     | PO9 | PO10 | PO11 | PO12 |
| CO1                        | 2  | 2        | 2   | -             | -       | -            | -   | -       | -   | -    | -    | 2    |
| CO2                        | 2  | 2        | 2   | -             | -       | -            | -   | -       | -   | -    | -    | 2    |
| CO3                        | 2  | 2        | 2   | -             | -       | 3            | -   | -       | -   | -    | -    | 2    |
| CO4                        | 2  | 2        | 2   | -             | -       | -            | -   | -       | -   | -    | -    | 2    |
| CO5                        | 2  | 2        | 2   | -             | -       | -            | -   | -       | -   | -    | -    | 2    |
| AVERAGE                    | 2  | 2        | 2   | -             | -       | 3            | -   | -       | -   | -    | -    | 2    |
| OVERALL MAPPING OF SUBJECT |  |          |     |               |         |              |     |         |     |      |      | 2.2  |

### CO AND PO ATTAINMENT

|                        | CO%  | PO1  | PO2  | PO3  | PO4 | PO5 | PO6  | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
|------------------------|------|------|------|------|-----|-----|------|-----|-----|-----|------|------|------|
| CO1                    | 42.6 | 0.85 | 0.85 | 0.85 | -   | -   | -    | -   | -   | -   | -    | -    | 0.85 |
| CO2                    | 40.6 | 0.81 | 0.81 | 0.81 | -   | -   | -    | -   | -   | -   | -    | -    | 0.81 |
| CO3                    | 55.2 | 1.10 | 1.10 | 1.10 | -   | -   | 1.66 | -   | -   | -   | -    | -    | 1.10 |
| CO4                    | 40.2 | 0.80 | 0.80 | 0.80 | -   | -   | -    | -   | -   | -   | -    | -    | 0.80 |
| CO5                    | 20.8 | 0.45 | 0.45 | 0.45 | -   | -   | -    | -   | -   | -   | -    | -    | 0.45 |
| AVERAGE                |      | 0.80 | 0.80 | 0.80 | -   | -   | 1.66 | --- | -   | -   | -    | -    | 0.80 |
| FINAL ATTAINMENT LEVEL |      |      |      |      |     |     |      |     |     |     |      |      | 0.97 |

G. S. Ramesh  
 Head of the Department  
 Electrical & Electronics Engineering  
 Shridevi Institute of Engineering & Technology  
 TUMKUR-572108

*Sowmya T C*  
 PRINCIPAL  
 SIET, TUMAKURU





18-19



**SHRIDEVI INSTITUTE OF ENGINEERING & TECHNOLOGY**

**SIRA ROAD, TUMKUR- 572 106.**

**DEPARTMENT OF EEE**

|                |                                 |                     |                |
|----------------|---------------------------------|---------------------|----------------|
| <b>SUBJECT</b> | <b>RENEWABLE ENERGY SOURCES</b> | <b>SUBJECT CODE</b> | <b>15EE563</b> |
|----------------|---------------------------------|---------------------|----------------|

**COURSE OUTCOME**

- CO1.** Discuss causes of energy scarcity and its solution, energy resources and availability of renewable energy.
- CO2.** Discuss energy from sun, energy reaching the Earth's surface and solar thermal energy applications.
- CO3.** Discuss types of solar collectors, their configurations, solar cell system, its characteristics and their applications.
- CO4.** Discuss generation of energy from hydrogen, wind, geothermal system, solid waste and agriculture refuse.
- CO5.** Discuss production of energy from biomass, biogas, sea wave and ocean thermal energy.

**PROGRAM OUTCOMES**

- PO1** Engineering knowledge: An ability to apply knowledge of mathematics (including probability, statistics and discrete mathematics), science, and engineering for solving Engineering problems and Knowledge.
- PO2** Problem analysis: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- PO3** Design / development of solutions: An ability to design solution for engineering problems and design system components or process to meet desired specifications and needs.
- PO4** Conduct investigations of complex Problem: An ability to identify, formulate, comprehend, analyze, design synthesis of the information to solve complex engineering problems and provide valid conclusions.
- PO5** Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modeling to complex engineering activities.
- PO6** The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal, and cultural issues.
- PO7** Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- PO8** Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- PO9** Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- PO10** Communication: Communicate effectively on complex engineering activities with the engineering community and with the society.
- PO11** Project management and finance: An ability to use the modern engineering tools, techniques, skills and management principles to do work as a member and leader in a team, to manage projects in multidisciplinary environments.
- PO12** Life-long learning: A recognition of the need for, and an ability to engage in, to resolve contemporary issues and acquire new knowledge and skills.

*G. V. R. Rao*  
 PRINCIPAL  
 SIET, TUMAKURU

|                            |  |          |     |               |         |              |     |         |         |      |      |      |
|----------------------------|--|----------|-----|---------------|---------|--------------|-----|---------|---------|------|------|------|
| COLLEGE                    | SHRIDEVI INSTITUTE OF ENGINEERING & TECHNOLOGY |          |     |               |         |              |     |         |         |      |      |      |
| FACULTY NAME               | DR. H B PHANIRAJU                              |          |     |               |         |              |     |         |         |      |      |      |
| BRANCH                     | EEE  |          |     | ACADEMIC YEAR |         |              |     | 2018-19 |         |      |      |      |
| COURSE                     | B.E  | SEMESTER |     | V             | SECTION |              |     |         |         |      |      |      |
| SUBJECT                    | RENEWABLE ENERGY SOURCES                       |          |     |               |         | SUBJECT CODE |     |         | 15EE563 |      |      |      |
| <b>CO &amp; PO MAPPING</b> |  |          |     |               |         |              |     |         |         |      |      |      |
|                            | PO1  | PO2      | PO3 | PO4           | PO5     | PO6          | PO7 | PO8     | PO9     | PO10 | PO11 | PO12 |
| CO1                        | 2  | 2        | 2   | -             | -       | 2            | -   | -       | -       | -    | -    | 2    |
| CO2                        | 2  | 2        | 2   | -             | -       | 2            | -   | -       | -       | -    | -    | 2    |
| CO3                        | 2  | 2        | 2   | -             | -       | -            | -   | 2       | -       | -    | -    | 2    |
| CO4                        | 2  | 2        | 2   | -             | -       | 2            | -   | -       | -       | -    | -    | 2    |
| CO5                        | 2  | 2        | 2   | -             | -       | 2            | -   | -       | 2       | -    | -    | 2    |
| AVERAGE                    | 2  | 2        | 2   | -             | -       | 2            | -   | 2       | 2       | -    | -    | 2    |
| OVERALL MAPPING OF SUBJECT |  |          |     |               |         |              |     |         |         |      |      | 2    |

#### CO AND PO ATTAINMENT

|                        | CO%  | PO1  | PO2  | PO3  | PO4 | PO5 | PO6  | PO7 | PO8  | PO9  | PO10 | PO11 | PO12 |
|------------------------|------|------|------|------|-----|-----|------|-----|------|------|------|------|------|
| CO1                    | 47.9 | 0.96 | 0.96 | 0.96 | -   | -   | 0.96 | -   | -    | -    | -    | -    | 0.96 |
| CO2                    | 44.1 | 0.88 | 0.88 | 0.88 | -   | -   | 0.88 | -   | -    | -    | -    | -    | 0.88 |
| CO3                    | 61.4 | 1.23 | 1.23 | 1.23 | -   | -   | -    | -   | 1.23 | -    | -    | -    | 1.23 |
| CO4                    | 44.0 | 0.88 | 0.88 | 0.88 | -   | -   | 0.88 | -   | -    | -    | -    | -    | 0.88 |
| CO5                    | 23.1 | 0.46 | 0.46 | 0.46 | -   | -   | 0.46 | -   | -    | -    | -    | -    | 0.46 |
| AVERAGE                |      | 0.88 | 0.88 | 0.88 | -   | -   | 0.80 | -   | 1.23 | 0.46 | -    | -    | 0.88 |
| FINAL ATTAINMENT LEVEL |      |      |      |      |     |     |      |     |      |      |      |      | 0.86 |

G. U. Rama  
Head of the Department  
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TUMKUR





SHRIDEVI INSTITUTE OF ENGINEERING & TECHNOLOGY

SIRA ROAD, TUMKUR- 572 106.

**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGG**

|         |                         |              |        |
|---------|-------------------------|--------------|--------|
| SUBJECT | POWER SYSTEM ANALYSIS 2 | SUBJECT CODE | ISEE71 |
|---------|-------------------------|--------------|--------|

**COURSE OUTCOME**

|     |   |
|-----|---|
| CO1 | Formulate network matrices and models for solving load flow problems.                           |
| CO2 | Perform steady state power flow analysis of power systems using numerical iterative techniques. |
| CO3 | Solve issues of economic load dispatch and unit commitment problems.                            |
| CO4 | Analyze short circuit faults in power system networks using bus impedance matrix.               |
| CO5 | Apply Point by Point method and Runge Kutta Method to solve Swing Equation                      |

**PROGRAM OUTCOMES**

- PO1** Engineering knowledge: An ability to apply knowledge of mathematics (including probability, statistics and discrete mathematics), science, and engineering for solving Engineering problems and Knowledge.
- PO2** Problem analysis: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- PO3** Design / development of solutions: An ability to design solution for engineering problems and design system components or process to meet desired specifications and needs.
- PO4** Conduct investigations of complex Problem: An ability to identify, formulate, comprehend, analyze, design synthesis of the information to solve complex engineering problems and provide valid conclusions.
- PO5** Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modeling to complex engineering activities.
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- PO10** Communication: Communicate effectively on complex engineering activities with the engineering community and with the society.
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*G. D. Ganes*  
Head of the Department  
Electrical & Electronics Engineering  
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*Ramesh Kumar*  
PRINCIPAL  
SIET, TUMAKURU

|                            |  |          |     |               |     |              |     |         |        |      |      |      |
|----------------------------|--|----------|-----|---------------|-----|--------------|-----|---------|--------|------|------|------|
| COLLEGE                    | SHRIDEVI INSTITUTE OF ENGINEERING & TECHNOLOGY |          |     |               |     |              |     |         |        |      |      |      |
| FACULTY NAME               | TANUJA KS                                      |          |     |               |     |              |     |         |        |      |      |      |
| BRANCH                     | EEE  |          |     | ACADEMIC YEAR |     |              |     | 2018-19 |        |      |      |      |
| COURSE                     | B.E  | SEMESTER |     |               | VII | SECTION      |     |         | EEE    |      |      |      |
| SUBJECT                    | POWER SYTEM ANALYSIS 2                         |          |     |               |     | SUBJECT CODE |     |         | 18EE71 |      |      |      |
| CO & PO MAPPING            |  |          |     |               |     |              |     |         |        |      |      |      |
|                            | PO1  | PO2      | PO3 | PO4           | PO5 | PO6          | PO7 | PO8     | PO9    | PO10 | PO11 | PO12 |
|                            | 1  | 2        | 3   | 4             | 5   | 6            | 7   | 8       | 9      | 10   | 11   | 12   |
| CO1                        | 1  | 3        | 3   | 2             | 3   | 3            |     |         |        |      | 3    | 3    |
| CO2                        | 1  | 3        | 3   | 2             | 3   | 3            |     |         |        |      | 3    | 3    |
| CO3                        | 1  | 3        | 3   | 2             | 3   | 3            |     |         |        |      | 3    | 3    |
| CO4                        | 1  | 3        | 3   | 2             | 3   | 3            |     |         |        |      | 3    | 3    |
| CO5                        | 1  | 3        | 3   | 2             | 3   | 3            |     |         |        |      | 3    | 3    |
| AVERAGE                    | 1  | 3        | 3   | 2             | 3   | 3            |     |         |        |      | 3    | 3    |
| OVERALL MAPPING OF SUBJECT |  |          |     |               |     |              |     |         |        |      |      | 1.75 |

#### CO AND PO ATTAINMENT

|                        | CO%   | PO1  | PO2  | PO3  | PO4  | PO5  | PO6  | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
|------------------------|-------|------|------|------|------|------|------|-----|-----|-----|------|------|------|
| CO1                    | 40.22 | 0.40 | 0.81 | 0.81 | 0.80 | 0.81 | 0.81 |     |     |     |      | 0.81 | 0.81 |
| CO2                    | 35.58 | 0.35 | 1.17 | 1.17 | 0.71 | 1.17 | 1.17 |     |     |     |      | 1.17 | 1.17 |
| CO3                    | 40.22 | 0.40 | 0.80 | 0.80 | 0.80 | 0.81 | 0.81 |     |     |     |      | 0.81 | 0.81 |
| CO4                    | 40.22 | 0.40 | 0.80 | 0.80 | 0.80 | 0.81 | 0.81 |     |     |     |      | 0.81 | 0.81 |
| CO5                    | 40.22 | 0.40 | 0.80 | 0.80 | 0.80 | 0.81 | 0.81 |     |     |     |      | 0.81 | 0.81 |
| AVERAGE                | 39.29 | 0.39 | 0.87 | 0.87 | 0.78 | 0.87 | 0.87 |     |     |     |      | 0.87 | 0.87 |
| FINAL ATTAINMENT LEVEL |       |      |      |      |      |      |      |     |     |     |      |      | 0.79 |

  
 Head of the Department  
 Electrical & Electronics Engineering  
 Shridevi Institute of Engineering & Technology  
 TUMKUR-572108.

  
 P. A. K. R.  
 AKURU.

| S.No | NAME     | I SEM  |          |          | II SEM |          |          | III SEM |          |          | IV SEM |          |          | TOTAL | GRADE | REMARKS |
|------|----------|--------|----------|----------|--------|----------|----------|---------|----------|----------|--------|----------|----------|-------|-------|---------|
|      |          | THEORY | PRACTICE | INTERNAL | THEORY | PRACTICE | INTERNAL | THEORY  | PRACTICE | INTERNAL | THEORY | PRACTICE | INTERNAL |       |       |         |
| 1    | ABHIRAM  | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 2    | ADARSH   | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 3    | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 4    | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 5    | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 6    | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 7    | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 8    | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 9    | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 10   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 11   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 12   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 13   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 14   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 15   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 16   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 17   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 18   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 19   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 20   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 21   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 22   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 23   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 24   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 25   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 26   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 27   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 28   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 29   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 30   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 31   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 32   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 33   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 34   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 35   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 36   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 37   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 38   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 39   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 40   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 41   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 42   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 43   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 44   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 45   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 46   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 47   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 48   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 49   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 50   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 51   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 52   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 53   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 54   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 55   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 56   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 57   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 58   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 59   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 60   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 61   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 62   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 63   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 64   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 65   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 66   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 67   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 68   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 69   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 70   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 71   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 72   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 73   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 74   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 75   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 76   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 77   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 78   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 79   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |
| 80   | ADITHYAN | 80     | 80       | 80       | 80     | 80       | 80       | 80      | 80       | 80       | 80     | 80       | 80       | 80    |       |         |

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SHRIDEVI INSTITUTE OF ENGINEERING & TECHNOLOGY

SIRA ROAD, TUMKUR- 572 106.

**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGG**


|                |                                |                     |               |
|----------------|--------------------------------|---------------------|---------------|
| <b>SUBJECT</b> | <b>POWER SYSTEM PROTECTION</b> | <b>SUBJECT CODE</b> | <b>15EE72</b> |
|----------------|--------------------------------|---------------------|---------------|

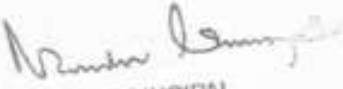
**COURSE OUTCOME**

|            |  |
|------------|--|
| <b>CO1</b> | Discuss performance of protective relays, components of protection scheme and relay terminology over current protection.   |
| <b>CO2</b> | Explain the working of distance relays and the effects of arc resistance, power swings, line length and source impedance on performance of distance relays.                            |
| <b>CO3</b> | Discuss pilot protection, construction, operating principles and performance of differential relays and discuss protection of generators, motors, transformer and Bus Zone Protection. |
| <b>CO4</b> | Explain the construction and operation of different types of circuit breakers.   |
| <b>CO5</b> | Outline features of fuse, causes of overvoltages and its protection, also modern trends in Power System Protection   |

**PROGRAM OUTCOMES**

- PO1** Engineering knowledge: An ability to apply knowledge of mathematics (including probability, statistics and discrete mathematics), science, and engineering for solving Engineering problems and Knowledge.
- PO2** Problem analysis: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- PO3** Design / development of solutions: An ability to design solution for engineering problems and design system components or process to meet desired specifications and needs.
- PO4** Conduct investigations of complex Problem: An ability to identify, formulate, comprehend, analyze, design synthesis of the information to solve complex engineering problems and provide valid conclusions.
- PO5** Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modeling to complex engineering activities.
- PO6** The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal, and cultural issues.
- PO7** Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- PO8** Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- PO9** Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- PO10** Communication: Communicate effectively on complex engineering activities with the engineering community and with the society.
- PO11** Project management and finance: An ability to use the modern engineering tools, techniques, skills and management principles to do work as a member and leader in a team, to manage projects in multidisciplinary environments.
- PO12** Life-long learning: A recognition of the need for, and an ability to engage in, to resolve contemporary issues and acquire lifelong learning.

  
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SIET, TUMAKURU.



|                            |  |          |     |               |     |              |     |         |        |      |      |      |
|----------------------------|--|----------|-----|---------------|-----|--------------|-----|---------|--------|------|------|------|
| COLLEGE                    | SHRIDEVI INSTITUTE OF ENGINEERING & TECHNOLOGY |          |     |               |     |              |     |         |        |      |      |      |
| FACULTY NAME               | UMA BAI  |          |     |               |     |              |     |         |        |      |      |      |
| BRANCH                     | EEE  |          |     | ACADEMIC YEAR |     |              |     | 2018-19 |        |      |      |      |
| COURSE                     | B.E  | SEMESTER |     |               | VII | SECTION      |     |         | EEE    |      |      |      |
| SUBJECT                    | POWER SYSTEM PROTECTION                        |          |     |               |     | SUBJECT CODE |     |         | 15EE72 |      |      |      |
| CO & PO MAPPING            |  |          |     |               |     |              |     |         |        |      |      |      |
|                            | PO1  | PO2      | PO3 | PO4           | PO5 | PO6          | PO7 | PO8     | PO9    | PO10 | PO11 | PO12 |
|                            | 1  | 2        | 3   | 4             | 5   | 6            | 7   | 8       | 9      | 10   | 11   | 12   |
| CO1                        | 3  |          | 2   |               |     |              |     |         |        |      |      |      |
| CO2                        | 2  | 2        | 3   |               |     | 2            |     |         | 2      |      |      |      |
| CO3                        | 3  |          | 2   |               |     | 2            |     |         |        |      |      |      |
| CO4                        | 3  |          | 3   |               |     | 2            |     |         | 2      |      |      |      |
| CO5                        | 2  | 2        | 3   |               |     | 2            | 2   |         | 2      |      |      | 2    |
| AVERAGE                    | 2.6  | 2        | 2.6 |               |     | 2            | 2   |         | 2      |      |      | 2    |
| OVERALL MAPPING OF SUBJECT |  |          |     |               |     |              |     |         |        |      |      | 2.12 |

#### CO AND PO ATTAINMENT

|                        | CO%   | PO1  | PO2  | PO3  | PO4 | PO5 | PO6  | PO7  | PO8 | PO9  | PO10 | PO11 | PO12 |
|------------------------|-------|------|------|------|-----|-----|------|------|-----|------|------|------|------|
| CO1                    | 47.61 | 1.23 |      | 1.23 |     |     |      |      |     |      |      |      |      |
| CO2                    | 41.60 | 1.08 | 0.83 | 1.08 |     |     | 0.83 |      |     | 0.83 |      |      |      |
| CO3                    | 47.61 | 1.23 |      | 1.23 |     |     | 0.95 |      |     |      |      |      |      |
| CO4                    | 47.61 | 1.23 |      | 1.23 |     |     | 0.95 |      |     | 0.95 |      |      |      |
| CO5                    | 47.61 | 1.23 | 0.95 | 1.23 |     |     | 0.95 | 0.95 |     | 0.95 |      |      | 0.95 |
| AVERAGE                | 46.4  | 1.2  | 0.89 | 1.2  |     |     | 0.92 | 0.95 |     | 0.91 |      |      | 0.95 |
| FINAL ATTAINMENT LEVEL |       |      |      |      |     |     |      |      |     |      |      |      | 1.00 |

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*[Handwritten Signature]*  
*[Handwritten Name]*





**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGG**

|         |                          |              |        |
|---------|--------------------------|--------------|--------|
| SUBJECT | HIGH VOLTAGE ENGINEERING | SUBJECT CODE | 15EE73 |
|---------|--------------------------|--------------|--------|

**COURSE OUTCOME**

|     |   |
|-----|---|
| CO1 | Explain conduction and breakdown phenomenon in gases, liquid dielectrics and breakdown Phenomenon in solid dielectrics. |
| CO2 | Summarize generation of high voltages and currents  |
| CO3 | Outline measurement techniques for high voltages and currents   |
| CO4 | Summarize overvoltage phenomenon and insulation coordination in electric power systems.                                 |
| CO5 | Explain non-destructive testing of materials and electric apparatus, high-voltage testing of electric apparatus         |

**PROGRAM OUTCOMES**

- PO1 Engineering knowledge: An ability to apply knowledge of mathematics (including probability, statistics and discrete mathematics), science, and engineering for solving Engineering problems and Knowledge.
- PO2 Problem analysis: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- PO3 Design / development of solutions: An ability to design solution for engineering problems and design system components or process to meet desired specifications and needs.
- PO4 Conduct investigations of complex Problem: An ability to identify, formulate, comprehend, analyze, design synthesis of the information to solve complex engineering problems and provide valid conclusions.
- PO5 Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modeling to complex engineering activities.
- PO6 The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal, and cultural issues.
- PO7 Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- PO8 Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- PO9 Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- PO10 Communication: Communicate effectively on complex engineering activities with the engineering community and with the society.
- PO11 Project management and finance: An ability to use the modern engineering tools, techniques, skills and management principles to do work as a member and leader in a team, to manage projects in multidisciplinary environments.
- PO12 Life-long learning: A recognition of the need for, and an ability to engage in, to resolve contemporary issues and acquire lifelong learning.

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Principal  
PRINCIPAL  
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|                            |  |          |     |               |     |              |     |         |        |      |      |      |
|----------------------------|--|----------|-----|---------------|-----|--------------|-----|---------|--------|------|------|------|
| COLLEGE                    | SHRIDEVI INSTITUTE OF ENGINEERING & TECHNOLOGY |          |     |               |     |              |     |         |        |      |      |      |
| FACULTY NAME               | SHWETHA T M                                    |          |     |               |     |              |     |         |        |      |      |      |
| BRANCH                     | EEE  |          |     | ACADEMIC YEAR |     |              |     | 2018-19 |        |      |      |      |
| COURSE                     | B.E.   | SEMESTER |     |               | VII | SECTION      |     |         | EEE    |      |      |      |
| SUBJECT                    | HIGH VOLTAGE ENGINEERING                       |          |     |               |     | SUBJECT CODE |     |         | 15EE73 |      |      |      |
| CO & PO MAPPING            |  |          |     |               |     |              |     |         |        |      |      |      |
|                            | PO1  | PO2      | PO3 | PO4           | PO5 | PO6          | PO7 | PO8     | PO9    | PO10 | PO11 | PO12 |
|                            | 1  | 2        | 3   | 4             | 5   | 6            | 7   | 8       | 9      | 10   | 11   | 12   |
| CO1                        | 2  | 3        | 2   | 2             | 1   |              |     |         |        |      | 2    | 1    |
| CO2                        | 2  | 2        | 3   | 1             | 2   |              |     |         |        |      | 2    | 1    |
| CO3                        | 2  | 3        | 3   | 2             | 1   |              |     |         |        |      | 2    | 1    |
| CO4                        | 2  | 2        | 2   | 2             | 2   |              |     |         |        |      | 2    | 1    |
| CO5                        | 2  | 3        | 3   | 1             | 1   |              |     |         |        |      | 2    | 1    |
| AVERAGE                    | 2  | 2.6      | 2.6 | 1.6           | 1.4 |              |     |         |        |      | 2    | 1    |
| OVERALL MAPPING OF SUBJECT |  |          |     |               |     |              |     |         |        |      |      | 1.88 |

#### CO AND PO ATTAINMENT

|                        | CO%   | PO1  | PO2  | PO3  | PO4  | PO5  | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
|------------------------|-------|------|------|------|------|------|-----|-----|-----|-----|------|------|------|
| CO1                    | 37.89 | 0.75 | 0.98 | 0.98 | 0.60 | 0.53 |     |     |     |     |      | 0.75 | 0.37 |
| CO2                    | 34.56 | 0.69 | 0.89 | 0.89 | 0.54 | 0.48 |     |     |     |     |      | 0.69 | 0.34 |
| CO3                    | 37.89 | 0.75 | 0.98 | 0.98 | 0.60 | 0.53 |     |     |     |     |      | 0.75 | 0.37 |
| CO4                    | 37.89 | 0.75 | 0.98 | 0.98 | 0.60 | 0.53 |     |     |     |     |      | 0.75 | 0.37 |
| CO5                    | 37.89 | 0.75 | 0.98 | 0.98 | 0.60 | 0.53 |     |     |     |     |      | 0.75 | 0.37 |
| AVERAGE                | 37.22 | 0.73 | 0.96 | 0.96 | 0.58 | 0.52 |     |     |     |     |      | 0.73 | 0.36 |
| FINAL ATTAINMENT LEVEL |       |      |      |      |      |      |     |     |     |     |      |      | 0.69 |

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SIET, TUMKURU.



**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGG**

|                |  |                     |                |
|----------------|--|---------------------|----------------|
| <b>SUBJECT</b> | <b>UTILIZATION OF ELECTRICAL POWER</b> | <b>SUBJECT CODE</b> | <b>15EE724</b> |
|----------------|--|---------------------|----------------|

**COURSE OUTCOME**

|            |   |
|------------|---|
| <b>CO1</b> | Discuss different methods of electric heating & welding.  |
| <b>CO2</b> | Discuss the laws of electrolysis, extraction, refining of metals and electro deposition process.                          |
| <b>CO3</b> | Discuss the laws of illumination, different types of lamps, lighting schemes and design of lighting systems.              |
| <b>CO4</b> | Analyze systems of electric traction, speed time curves and mechanics of train movement.                                  |
| <b>CO5</b> | Explain the motors used for electric traction, their control & braking and power supply system used for electric traction |

**PROGRAM OUTCOMES**

- PO1** Engineering knowledge: An ability to apply knowledge of mathematics (including probability, statistics and discrete mathematics), science, and engineering for solving Engineering problems and Knowledge.
- PO2** Problem analysis: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- PO3** Design / development of solutions: An ability to design solution for engineering problems and design system components or process to meet desired specifications and needs.
- PO4** Conduct investigations of complex Problem: An ability to identify, formulate, comprehend, analyze, design synthesis of the information to solve complex engineering problems and provide valid conclusions.
- PO5** Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modeling to complex engineering activities.
- PO6** The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal, and cultural issues.
- PO7** Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
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*G. U. Ram*  
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*N. Srinivasan*  
PRINCIPAL  
SIRA ROAD, TUMKUR

|                            |  |            |      |      |               |              |     |     |         |      |      |       |
|----------------------------|--|------------|------|------|---------------|--------------|-----|-----|---------|------|------|-------|
| COLLEGE                    | SHRIDEVI INSTITUTE OF ENGINEERING & TECHNOLOGY |            |      |      |               |              |     |     |         |      |      |       |
| FACULTY NAME               |  | SOWMYA T C |      |      |               |              |     |     |         |      |      |       |
| BRANCH                     |  | EEE        |      |      | ACADEMIC YEAR |              |     |     | 2018-19 |      |      |       |
| COURSE                     | B.E  | SEMESTER   |      |      | VII           | SECTION      |     |     | EEE     |      |      |       |
| SUBJECT                    | UTILIZATION OF ELECTRICAL POWER                |            |      |      |               | SUBJECT CODE |     |     | 15EE724 |      |      |       |
| CO & PO MAPPING            |  |            |      |      |               |              |     |     |         |      |      |       |
|                            | PO1  | PO2        | PO3  | PO4  | PO5           | PO6          | PO7 | PO8 | PO9     | PO10 | PO11 | PO12  |
|                            | 1  | 2          | 3    | 4    | 5             | 6            | 7   | 8   | 9       | 10   | 11   | 12    |
| CO1                        | 2  | 3          | 2    | 2    | 2             | 1            | 1   |     | 1       |      |      | 1     |
| CO2                        | 2  | 3          | 3    | 3    | 2             | 1            | 1   |     | 1       |      |      | 3     |
| CO3                        | 2  | 3          | 2    | 1    | 2             | 1            | 1   |     | 1       |      |      | 1     |
| CO4                        | 2  | 3          |      | 1    | 2             | 1            | 1   |     | 1       |      |      | 1     |
| CO5                        | 2  | 3          | 2    | 1    | 2             | 1            | 2   |     | 1       |      |      | 3     |
| AVERAGE                    | 2  | 3          | 2.25 | 1.62 | 2             | 1            | 1.2 |     | 1       |      |      | 1.8   |
| OVERALL MAPPING OF SUBJECT |  |            |      |      |               |              |     |     |         |      |      | 1.763 |

#### CO AND PO ATTAINMENT

|                        | CO%   | PO1  | PO2  | PO3  | PO4  | PO5  | PO6  | PO7  | PO8 | PO9  | PO10 | PO11 | PO12 |
|------------------------|-------|------|------|------|------|------|------|------|-----|------|------|------|------|
| CO1                    | 39.96 | 0.79 | 1.19 | 0.89 | 0.64 | 0.79 | 0.39 | 0.47 |     | 0.39 |      |      | 0.71 |
| CO2                    | 36.32 | 0.72 | 1.08 | 0.81 | 0.58 | 0.72 | 0.36 | 0.43 |     | 0.36 |      |      | 0.65 |
| CO3                    | 39.96 | 0.79 | 1.19 | 0.89 | 0.64 | 0.79 | 0.39 | 0.47 |     | 0.39 |      |      | 0.71 |
| CO4                    | 39.96 | 0.79 | 1.19 |      | 0.64 | 0.79 | 0.39 | 0.47 |     | 0.39 |      |      | 0.71 |
| CO5                    | 37.91 | 0.75 | 1.13 | 0.85 | 0.61 | 0.75 | 0.37 | 0.45 |     | 0.37 |      |      | 0.68 |
| AVERAGE                | 38.82 | 0.8  | 1.15 | 0.86 | 0.62 | 0.76 | 0.38 | 0.45 |     | 0.38 |      |      | 0.69 |
| FINAL ATTAINMENT LEVEL |       |      |      |      |      |      |      |      |     |      |      |      | 0.67 |

G. H. Ramesh  
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*(Signature)*  
 PRINCIPAL  
 Shri. Tumkur

STATE NAME - KARNATAKA  
UTILIZATION OF ELECTRICAL POWER  
SEE MARKSHEET

| Academic year | BHK-19         |     |       |     | SEM |     |       |     | 7)            |     |       |     | 20  |     |       |     | Subject Code            |     |              |     | I-BET-14            |     |                    |     |
|---------------|----------------|-----|-------|-----|-----|-----|-------|-----|---------------|-----|-------|-----|-----|-----|-------|-----|-------------------------|-----|--------------|-----|---------------------|-----|--------------------|-----|
|               | IA TEST (105M) |     | TOTAL |     | SEM |     | TOTAL |     | IA TEST (105) |     | TOTAL |     | SEM |     | TOTAL |     | ASSIGNMENT / QUIZ (5 M) |     | Subject Code |     | Total Co-ATTAINMENT |     | % of individual CD |     |
|               | COI            | CPI | COI   | CPI | COI | CPI | COI   | CPI | COI           | CPI | COI   | CPI | COI | CPI | COI   | CPI | COI                     | CPI | COI          | CPI | COI                 | CPI | COI                | CPI |
| 19V14E006     | 1.8            | 3.8 | 3.8   | 4   | 2   | 4   | 3.8   | 3.8 | 4             | 1   | 1     | 1   | 1   | 1   | 1     | 1   | 1                       | 1   | 1            | 1   | 1                   | 1   | 1                  | 1   |
| 19V15E003     | 2              | 2   | 4     | 4   | 2   | 2   | 4     | 4   | 4             | 1   | 1     | 1   | 1   | 1   | 1     | 1   | 1                       | 1   | 1            | 1   | 1                   | 1   | 1                  | 1   |
| 19V15E007     | 2.9            | 3.8 | 4.8   | 4.8 | 2.9 | 3.8 | 4.8   | 4.8 | 4.8           | 1   | 1     | 1   | 1   | 1   | 1     | 1   | 1                       | 1   | 1            | 1   | 1                   | 1   | 1                  | 1   |
| 19V15E008     | 2.1            | 2.1 | 4.2   | 4.2 | 2.1 | 2.1 | 4.2   | 4.2 | 4.2           | 1   | 1     | 1   | 1   | 1   | 1     | 1   | 1                       | 1   | 1            | 1   | 1                   | 1   | 1                  | 1   |
| 19V15E012     | 1.5            | 1.5 | 3     | 3   | 1.5 | 1.5 | 3     | 3   | 3             | 1   | 1     | 1   | 1   | 1   | 1     | 1   | 1                       | 1   | 1            | 1   | 1                   | 1   | 1                  | 1   |
| 19V15E013     | 1.8            | 1.8 | 3.6   | 3.6 | 1.8 | 1.8 | 3.6   | 3.6 | 3.6           | 1   | 1     | 1   | 1   | 1   | 1     | 1   | 1                       | 1   | 1            | 1   | 1                   | 1   | 1                  | 1   |
| 19V15E015     | 1.8            | 1.8 | 3.6   | 3.6 | 1.8 | 1.8 | 3.6   | 3.6 | 3.6           | 1   | 1     | 1   | 1   | 1   | 1     | 1   | 1                       | 1   | 1            | 1   | 1                   | 1   | 1                  | 1   |
| 19V15E011     | 2.3            | 2.3 | 4.6   | 4.6 | 2.3 | 2.3 | 4.6   | 4.6 | 4.6           | 1   | 1     | 1   | 1   | 1   | 1     | 1   | 1                       | 1   | 1            | 1   | 1                   | 1   | 1                  | 1   |
| 19V15E018     | 2              | 2   | 4     | 4   | 2   | 2   | 4     | 4   | 4             | 1   | 1     | 1   | 1   | 1   | 1     | 1   | 1                       | 1   | 1            | 1   | 1                   | 1   | 1                  | 1   |
| 19V15E026     | 1.1            | 1.1 | 2.2   | 2.2 | 1.1 | 1.1 | 2.2   | 2.2 | 2.2           | 1   | 1     | 1   | 1   | 1   | 1     | 1   | 1                       | 1   | 1            | 1   | 1                   | 1   | 1                  | 1   |
| 19V15E024     | 1.1            | 1.1 | 2.2   | 2.2 | 1.1 | 1.1 | 2.2   | 2.2 | 2.2           | 1   | 1     | 1   | 1   | 1   | 1     | 1   | 1                       | 1   | 1            | 1   | 1                   | 1   | 1                  | 1   |
| 19V15E025     | 1.8            | 1.8 | 3.6   | 3.6 | 1.8 | 1.8 | 3.6   | 3.6 | 3.6           | 1   | 1     | 1   | 1   | 1   | 1     | 1   | 1                       | 1   | 1            | 1   | 1                   | 1   | 1                  | 1   |
| 19V15E021     | 2              | 2   | 4     | 4   | 2   | 2   | 4     | 4   | 4             | 1   | 1     | 1   | 1   | 1   | 1     | 1   | 1                       | 1   | 1            | 1   | 1                   | 1   | 1                  | 1   |
| 19V15E011     | 2.3            | 2.3 | 4.6   | 4.6 | 2.3 | 2.3 | 4.6   | 4.6 | 4.6           | 1   | 1     | 1   | 1   | 1   | 1     | 1   | 1                       | 1   | 1            | 1   | 1                   | 1   | 1                  | 1   |
| 19V15E005     | 2              | 2   | 4     | 4   | 2   | 2   | 4     | 4   | 4             | 1   | 1     | 1   | 1   | 1   | 1     | 1   | 1                       | 1   | 1            | 1   | 1                   | 1   | 1                  | 1   |
| 19V15E006     | 1.5            | 1.5 | 3     | 3   | 1.5 | 1.5 | 3     | 3   | 3             | 1   | 1     | 1   | 1   | 1   | 1     | 1   | 1                       | 1   | 1            | 1   | 1                   | 1   | 1                  | 1   |
| 19V15E001     | 2              | 2   | 4     | 4   | 2   | 2   | 4     | 4   | 4             | 1   | 1     | 1   | 1   | 1   | 1     | 1   | 1                       | 1   | 1            | 1   | 1                   | 1   | 1                  | 1   |
| 19V15E004     | 2              | 2   | 4     | 4   | 2   | 2   | 4     | 4   | 4             | 1   | 1     | 1   | 1   | 1   | 1     | 1   | 1                       | 1   | 1            | 1   | 1                   | 1   | 1                  | 1   |
| 19V15E005     | 2.1            | 2.1 | 4.2   | 4.2 | 2.1 | 2.1 | 4.2   | 4.2 | 4.2           | 1   | 1     | 1   | 1   | 1   | 1     | 1   | 1                       | 1   | 1            | 1   | 1                   | 1   | 1                  | 1   |
| 19V15E009     | 2              | 2   | 4     | 4   | 2   | 2   | 4     | 4   | 4             | 1   | 1     | 1   | 1   | 1   | 1     | 1   | 1                       | 1   | 1            | 1   | 1                   | 1   | 1                  | 1   |

*Ramesh Kumar*

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*G. V. Ramesh*  
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**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGG**

|                |                               |                     |                |
|----------------|-------------------------------|---------------------|----------------|
| <b>SUBJECT</b> | <b>TESTING AND COMMISSION</b> | <b>SUBJECT CODE</b> | <b>15EE725</b> |
|----------------|-------------------------------|---------------------|----------------|

**COURSE OUTCOME**

|            |  |
|------------|--|
| <b>CO1</b> | Understand the process of commissioning.   |
| <b>CO2</b> | Prepare the steps of various maintenance methods/techniques.                               |
| <b>CO3</b> | Suggest the trouble shooting methods to improve life of electrical equipment.              |
| <b>CO4</b> | Perform required testing procedure for different equipment using proper tools and methods. |
| <b>CO5</b> | Perform required testing procedure for different equipment using proper tools and methods. |

**PROGRAM OUTCOMES**

- PO1** Engineering knowledge: An ability to apply knowledge of mathematics (including probability, statistics and discrete mathematics), science, and engineering for solving Engineering problems and Knowledge.
- PO2** Problem analysis: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- PO3** Design / development of solutions: An ability to design solution for engineering problems and design system components or process to meet desired specifications and needs.
- PO4** Conduct investigations of complex Problem: An ability to identify, formulate, comprehend, analyze, design synthesis of the information to solve complex engineering problems and provide valid conclusions.
- PO5** Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modeling to complex engineering activities.
- PO6** The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal, and cultural issues.
- PO7** Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- PO8** Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- PO9** Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- PO10** Communication: Communicate effectively on complex engineering activities with the engineering community and with the society.
- PO11** Project management and finance: An ability to use the modern engineering tools, techniques, skills and management principles to do work as a member and leader in a team, to manage projects in multidisciplinary environments.
- PO12** Life-long learning: A recognition of the need for, and an ability to engage in, to resolve contemporary issues and acquire lifelong learning.

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*Principals Signature*  
PRINCIPAL  
SIET, TUMAKURU

|                            |  |          |     |               |     |         |              |         |     |         |      |      |
|----------------------------|--|----------|-----|---------------|-----|---------|--------------|---------|-----|---------|------|------|
| COLLEGE                    | SHRIDEVI INSTITUTE OF ENGINEERING & TECHNOLOGY |          |     |               |     |         |              |         |     |         |      |      |
| FACULTY NAME               | UMA BAI  |          |     |               |     |         |              |         |     |         |      |      |
| BRANCH                     | EEE  |          |     | ACADEMIC YEAR |     |         |              | 2018-19 |     |         |      |      |
| COURSE                     | B.E  | SEMESTER |     |               | IV  | SECTION |              |         | EEE |         |      |      |
| SUBJECT                    | TESTING AND COMMISSION                         |          |     |               |     |         | SUBJECT CODE |         |     | 15EE725 |      |      |
| CO & PO MAPPING            |  |          |     |               |     |         |              |         |     |         |      |      |
|                            | PO1  | PO2      | PO3 | PO4           | PO5 | PO6     | PO7          | PO8     | PO9 | PO10    | PO11 | PO12 |
|                            | 1  | 2        | 3   | 4             | 5   | 6       | 7            | 8       | 9   | 10      | 11   | 12   |
| CO1                        | 3  | 3        | 3   | 2             | 3   | 1       | 1            | 0       | 3   | 1       | 3    | 1    |
| CO2                        | 3  | 3        | 3   | 3             | 1   | 2       | 1            | 0       | 2   | 1       | 2    | 1    |
| CO3                        | 3  | 3        | 3   | 2             | 2   | 2       | 1            | 0       | 2   | 1       | 2    | 1    |
| CO4                        | 3  | 3        | 3   | 3             | 2   | 2       | 1            | 0       | 1   | 1       | 2    | 1    |
| CO5                        | 3  | 3        | 3   | 3             | 2   | 2       | 1            | 0       | 1   | 1       | 2    | 1    |
| AVERAGE                    | 3  | 3        | 3   | 2.6           | 2   | 1.8     | 1            | 0       | 1.8 | 1       | 2.2  | 1    |
| OVERALL MAPPING OF SUBJECT |  |          |     |               |     |         |              |         |     |         |      | 1.86 |

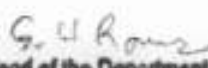
#### CO AND PO ATTAINMENT

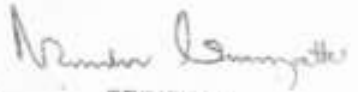
|                        | CO%   | PO1  | PO2  | PO3  | PO4  | PO5  | PO6  | PO7  | PO8 | PO9  | PO10 | PO11 | PO12 |
|------------------------|-------|------|------|------|------|------|------|------|-----|------|------|------|------|
| CO1                    | 40.57 | 1.21 | 1.21 | 1.21 | 1.05 | 0.81 | 0.73 | 0.40 | 0   | 0.73 | 0.40 | 0.89 | 0.40 |
| CO2                    | 39.14 | 1.17 | 1.17 | 1.17 | 1.01 | 0.78 | 0.70 | 0.39 | 0   | 0.70 | 0.39 | 0.86 | 0.39 |
| CO3                    | 40.73 | 1.22 | 1.22 | 1.22 | 1.06 | 0.81 | 0.73 | 0.40 | 0   | 0.73 | 0.40 | 0.90 | 0.40 |
| CO4                    | 40.73 | 1.22 | 1.22 | 1.22 | 1.06 | 0.81 | 0.73 | 0.40 | 0   | 0.73 | 0.40 | 0.90 | 0.40 |
| CO5                    | 40.73 | 1.22 | 1.22 | 1.22 | 1.06 | 0.81 | 0.73 | 0.40 | 0   | 0.73 | 0.40 | 0.90 | 0.40 |
| AVERAGE                | 40.38 | 1.21 | 1.21 | 1.21 | 1.04 | 0.80 | 0.72 | 0.39 | 0   | 0.72 | 0.39 | 0.89 | 0.39 |
| FINAL ATTAINMENT LEVEL |       |      |      |      |      |      |      |      |     |      |      |      | 0.74 |

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| Academic year | 2018-19 |     |       | SEM |     |       | 20  |     |       | Subject |        |        | TESTING AND COMMISSIONS |        |        | Subject Code |        |        | 15EE725 |        |        | Total Course ATAINMENT |        |        | No. of students |        |        |        |        |        |        |      |
|---------------|---------|-----|-------|-----|-----|-------|-----|-----|-------|---------|--------|--------|-------------------------|--------|--------|--------------|--------|--------|---------|--------|--------|------------------------|--------|--------|-----------------|--------|--------|--------|--------|--------|--------|------|
|               | CO1     | CO2 | TOTAL | CO1 | CO2 | TOTAL | CO1 | CO2 | TOTAL | CO1     | CO2    | CO3    | CO1                     | CO2    | CO3    | CO1          | CO2    | CO3    | CO1     | CO2    | CO3    | CO1                    | CO2    | CO3    | CO1             | CO2    | CO3    | CO1    | CO2    | CO3    |        |      |
| 15W18E008     | 2.1     | 2.1 | 4.2   | 2.1 | 2.1 | 4.2   | 1   | 1   | 2     | 10.4    | 10.4   | 10.4   | 10.4                    | 10.4   | 10.4   | 10.4         | 10.4   | 10.4   | 10.4    | 10.4   | 10.4   | 10.4                   | 10.4   | 10.4   | 10.4            | 10.4   | 10.4   | 10.4   | 10.4   | 10.4   | 10.4   |      |
| 15W18E009     | 2.1     | 2.1 | 4.2   | 2.1 | 2.1 | 4.2   | 1   | 1   | 2     | 10.4    | 10.4   | 10.4   | 10.4                    | 10.4   | 10.4   | 10.4         | 10.4   | 10.4   | 10.4    | 10.4   | 10.4   | 10.4                   | 10.4   | 10.4   | 10.4            | 10.4   | 10.4   | 10.4   | 10.4   | 10.4   | 10.4   |      |
| 15W18E010     | 2.5     | 2.5 | 5     | 2.5 | 2.5 | 5     | 1   | 1   | 2     | 12.2    | 12.2   | 12.2   | 12.2                    | 12.2   | 12.2   | 12.2         | 12.2   | 12.2   | 12.2    | 12.2   | 12.2   | 12.2                   | 12.2   | 12.2   | 12.2            | 12.2   | 12.2   | 12.2   | 12.2   | 12.2   | 12.2   |      |
| 15W18E011     | 2.3     | 2.3 | 4.6   | 2.3 | 2.3 | 4.6   | 1   | 1   | 2     | 9.8     | 9.8    | 9.8    | 9.8                     | 9.8    | 9.8    | 9.8          | 9.8    | 9.8    | 9.8     | 9.8    | 9.8    | 9.8                    | 9.8    | 9.8    | 9.8             | 9.8    | 9.8    | 9.8    | 9.8    | 9.8    | 9.8    |      |
| 15W18E012     | 2       | 2   | 4     | 2   | 2   | 4     | 1   | 1   | 2     | 12.2    | 12.2   | 12.2   | 12.2                    | 12.2   | 12.2   | 12.2         | 12.2   | 12.2   | 12.2    | 12.2   | 12.2   | 12.2                   | 12.2   | 12.2   | 12.2            | 12.2   | 12.2   | 12.2   | 12.2   | 12.2   | 12.2   |      |
| 15W18E013     | 1.8     | 1.8 | 3.6   | 1.8 | 1.8 | 3.6   | 1   | 1   | 2     | 7.4     | 7.4    | 7.4    | 7.4                     | 7.4    | 7.4    | 7.4          | 7.4    | 7.4    | 7.4     | 7.4    | 7.4    | 7.4                    | 7.4    | 7.4    | 7.4             | 7.4    | 7.4    | 7.4    | 7.4    | 7.4    | 7.4    |      |
| 15W18E014     | 2.1     | 2.1 | 4.2   | 2.1 | 2.1 | 4.2   | 1   | 1   | 2     | 5.8     | 5.8    | 5.8    | 5.8                     | 5.8    | 5.8    | 5.8          | 5.8    | 5.8    | 5.8     | 5.8    | 5.8    | 5.8                    | 5.8    | 5.8    | 5.8             | 5.8    | 5.8    | 5.8    | 5.8    | 5.8    | 5.8    |      |
| 15W18E015     | 2.5     | 2.5 | 5     | 2.5 | 2.5 | 5     | 1   | 1   | 2     | 11.4    | 11.4   | 11.4   | 11.4                    | 11.4   | 11.4   | 11.4         | 11.4   | 11.4   | 11.4    | 11.4   | 11.4   | 11.4                   | 11.4   | 11.4   | 11.4            | 11.4   | 11.4   | 11.4   | 11.4   | 11.4   | 11.4   |      |
| 15W18E016     | 2.3     | 2.3 | 4.6   | 2.3 | 2.3 | 4.6   | 1   | 1   | 2     | 8.2     | 8.2    | 8.2    | 8.2                     | 8.2    | 8.2    | 8.2          | 8.2    | 8.2    | 8.2     | 8.2    | 8.2    | 8.2                    | 8.2    | 8.2    | 8.2             | 8.2    | 8.2    | 8.2    | 8.2    | 8.2    | 8.2    |      |
| 15W18E017     | 2.5     | 2.5 | 5     | 2.5 | 2.5 | 5     | 1   | 1   | 2     | 11.4    | 11.4   | 11.4   | 11.4                    | 11.4   | 11.4   | 11.4         | 11.4   | 11.4   | 11.4    | 11.4   | 11.4   | 11.4                   | 11.4   | 11.4   | 11.4            | 11.4   | 11.4   | 11.4   | 11.4   | 11.4   | 11.4   |      |
| 15W18E018     | 2.3     | 2.3 | 4.6   | 2.3 | 2.3 | 4.6   | 1   | 1   | 2     | 8.2     | 8.2    | 8.2    | 8.2                     | 8.2    | 8.2    | 8.2          | 8.2    | 8.2    | 8.2     | 8.2    | 8.2    | 8.2                    | 8.2    | 8.2    | 8.2             | 8.2    | 8.2    | 8.2    | 8.2    | 8.2    | 8.2    | 8.2  |
| 15W18E019     | 2.5     | 2.5 | 5     | 2.5 | 2.5 | 5     | 1   | 1   | 2     | 11.4    | 11.4   | 11.4   | 11.4                    | 11.4   | 11.4   | 11.4         | 11.4   | 11.4   | 11.4    | 11.4   | 11.4   | 11.4                   | 11.4   | 11.4   | 11.4            | 11.4   | 11.4   | 11.4   | 11.4   | 11.4   | 11.4   | 11.4 |
| 15W18E020     | 1.8     | 1.8 | 3.6   | 1.8 | 1.8 | 3.6   | 1   | 1   | 2     | 7.4     | 7.4    | 7.4    | 7.4                     | 7.4    | 7.4    | 7.4          | 7.4    | 7.4    | 7.4     | 7.4    | 7.4    | 7.4                    | 7.4    | 7.4    | 7.4             | 7.4    | 7.4    | 7.4    | 7.4    | 7.4    | 7.4    |      |
| 15W18E021     | 1.8     | 1.8 | 3.6   | 1.8 | 1.8 | 3.6   | 1   | 1   | 2     | 11.4    | 11.4   | 11.4   | 11.4                    | 11.4   | 11.4   | 11.4         | 11.4   | 11.4   | 11.4    | 11.4   | 11.4   | 11.4                   | 11.4   | 11.4   | 11.4            | 11.4   | 11.4   | 11.4   | 11.4   | 11.4   | 11.4   |      |
| 15W18E022     | 1.8     | 1.8 | 3.6   | 1.8 | 1.8 | 3.6   | 1   | 1   | 2     | 10.6    | 10.6   | 10.6   | 10.6                    | 10.6   | 10.6   | 10.6         | 10.6   | 10.6   | 10.6    | 10.6   | 10.6   | 10.6                   | 10.6   | 10.6   | 10.6            | 10.6   | 10.6   | 10.6   | 10.6   | 10.6   | 10.6   |      |
| 15W18E023     | 2.1     | 2.1 | 4.2   | 2.1 | 2.1 | 4.2   | 1   | 1   | 2     | 11      | 11     | 11     | 11                      | 11     | 11     | 11           | 11     | 11     | 11      | 11     | 11     | 11                     | 11     | 11     | 11              | 11     | 11     | 11     | 11     | 11     | 11     |      |
| 15W18E024     | 2.3     | 2.3 | 4.6   | 2.3 | 2.3 | 4.6   | 1   | 1   | 2     | 8.4     | 8.4    | 8.4    | 8.4                     | 8.4    | 8.4    | 8.4          | 8.4    | 8.4    | 8.4     | 8.4    | 8.4    | 8.4                    | 8.4    | 8.4    | 8.4             | 8.4    | 8.4    | 8.4    | 8.4    | 8.4    | 8.4    | 8.4  |
| 15W18E025     | 2.3     | 2.3 | 4.6   | 2.3 | 2.3 | 4.6   | 1   | 1   | 2     | 8.6     | 8.6    | 8.6    | 8.6                     | 8.6    | 8.6    | 8.6          | 8.6    | 8.6    | 8.6     | 8.6    | 8.6    | 8.6                    | 8.6    | 8.6    | 8.6             | 8.6    | 8.6    | 8.6    | 8.6    | 8.6    | 8.6    | 8.6  |
| 15W18E026     | 2.1     | 2.1 | 4.2   | 2.1 | 2.1 | 4.2   | 1   | 1   | 2     | 8.2     | 8.2    | 8.2    | 8.2                     | 8.2    | 8.2    | 8.2          | 8.2    | 8.2    | 8.2     | 8.2    | 8.2    | 8.2                    | 8.2    | 8.2    | 8.2             | 8.2    | 8.2    | 8.2    | 8.2    | 8.2    | 8.2    | 8.2  |
| 15W18E027     | 2.1     | 2.1 | 4.2   | 2.1 | 2.1 | 4.2   | 1   | 1   | 2     | 10.6    | 10.6   | 10.6   | 10.6                    | 10.6   | 10.6   | 10.6         | 10.6   | 10.6   | 10.6    | 10.6   | 10.6   | 10.6                   | 10.6   | 10.6   | 10.6            | 10.6   | 10.6   | 10.6   | 10.6   | 10.6   | 10.6   | 10.6 |
| 15W18E028     | 2.3     | 2.3 | 4.6   | 2.3 | 2.3 | 4.6   | 1   | 1   | 2     | 12      | 12     | 12     | 12                      | 12     | 12     | 12           | 12     | 12     | 12      | 12     | 12     | 12                     | 12     | 12     | 12              | 12     | 12     | 12     | 12     | 12     | 12     |      |
| 15W18E029     | 2.5     | 2.5 | 5     | 2.5 | 2.5 | 5     | 1   | 1   | 2     | 12.6    | 12.6   | 12.6   | 12.6                    | 12.6   | 12.6   | 12.6         | 12.6   | 12.6   | 12.6    | 12.6   | 12.6   | 12.6                   | 12.6   | 12.6   | 12.6            | 12.6   | 12.6   | 12.6   | 12.6   | 12.6   | 12.6   | 12.6 |
|               |         |     |       |     |     |       |     |     |       | 11.475  | 11.475 | 11.475 | 11.475                  | 11.475 | 11.475 | 11.475       | 11.475 | 11.475 | 11.475  | 11.475 | 11.475 | 11.475                 | 11.475 | 11.475 | 11.475          | 11.475 | 11.475 | 11.475 | 11.475 | 11.475 | 11.475 |      |

  
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 Shridevi Institute of Engineering & Technology  
 TUMKUR-572106.

  
 PRINCIPAL  
 SIET, TUMAKURU

**COs & POs**

**2018-19**

**EVEN SEMESTER**



45

**DEPARTMENT OF EEE**

2018-19

|                |                                   |                     |               |
|----------------|-----------------------------------|---------------------|---------------|
| <b>SUBJECT</b> | <b>POWER GENERATION ECONOMICS</b> | <b>SUBJECT CODE</b> | <b>17EE42</b> |
|----------------|-----------------------------------|---------------------|---------------|

**COURSE OUTCOME**

- CO1.** Describe the working of hydroelectric, steam, nuclear power plants and state functions of major equipment of the power plants.
- CO2.** Classify various substations and explain the functions of major equipments in substations.
- CO3.** Explain the types of grounding and its importance
- CO4.** Infer the economic aspects of power system operation and its effects
- CO5.** Explain the importance of power factor improvement,

**PROGRAM OUTCOMES**

- PO1** Engineering knowledge: An ability to apply knowledge of mathematics (including probability, statistics and discrete mathematics), science, and engineering for solving Engineering problems and Knowledge.
- PO2** Problem analysis: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- PO3** Design / development of solutions: An ability to design solution for engineering problems and design system components or process to meet desired specifications and needs.
- PO4** Conduct investigations of complex Problem: An ability to identify, formulate, comprehend, analyze, design synthesis of the information to solve complex engineering problems and provide valid conclusions.
- PO5** Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modeling to complex engineering activities.
- PO6** The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal, and cultural issues.
- PO7** Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- PO8** Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- PO9** Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- PO10** Communication: Communicate effectively on complex engineering activities with the engineering community and with the society.
- PO11** Project management and finance: An ability to use the modern engineering tools, techniques, skills and management principles to do work as a member and leader in a team, to manage projects in multidisciplinary environments.
- PO12** Life-long learning: A recognition of the need for, and an ability to engage in, to resolve contemporary issues and acquire lifelong learning.

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*Principals*  
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|                            |  |          |     |               |         |     |              |           |        |      |      |      |
|----------------------------|--|----------|-----|---------------|---------|-----|--------------|-----------|--------|------|------|------|
| COLLEGE                    | SHRIDEVI INSTITUTE OF ENGINEERING & TECHNOLOGY |          |     |               |         |     |              |           |        |      |      |      |
| FACULTY NAME               | MRS. SHWETHA T M                               |          |     |               |         |     |              |           |        |      |      |      |
| BRANCH                     | EEE  |          |     | ACADEMIC YEAR |         |     |              | 2018-2019 |        |      |      |      |
| COURSE                     | B.E  | SEMESTER |     | IV            | SECTION |     |              |           |        |      |      |      |
| SUBJECT                    | POWER GENERATION ECONOMICS                     |          |     |               |         |     | SUBJECT CODE |           | 17EE42 |      |      |      |
| CO & PO MAPPING            |  |          |     |               |         |     |              |           |        |      |      |      |
|                            | PO1  | PO2      | PO3 | PO4           | PO5     | PO6 | PO7          | PO8       | PO9    | PO10 | PO11 | PO12 |
| CO1                        | 3  | 3        | 2   |               |         | 2   | 2            | 1         | 1      | 1    |      | 1    |
| CO2                        | 2  | 2        | 2   |               |         | 2   | 1            | 1         | 1      | 1    |      | 1    |
| CO3                        | 3  | 2        | 2   |               |         | 2   | 2            | 1         | 1      | 1    |      | 1    |
| CO4                        | 2  | 2        | 2   |               |         | 2   | 2            | 1         | 1      | 1    |      | 1    |
| CO5                        | 3  | 2        | 2   |               |         | 2   | 1            | 1         | 1      | 1    |      | 1    |
| AVERAGE                    | 2.6  | 2.2      | 2   |               |         | 2   | 1.6          | 1         | 1      | 1    |      | 1    |
| OVERALL MAPPING OF SUBJECT |  |          |     |               |         |     |              |           |        |      |      | 1.6  |

#### CO AND PO ATTAINMENT

|                        | CO%    | PO1   | PO2   | PO3   | PO4 | PO5 | PO6   | PO7   | PO8   | PO9   | PO10  | PO11 | PO12   |
|------------------------|--------|-------|-------|-------|-----|-----|-------|-------|-------|-------|-------|------|--------|
| CO1                    | 48.49  | 1.45  | 1.45  | 0.97  |     |     | 0.97  | 0.97  | 0.48  | 0.48  | 0.48  |      | 0.48   |
| CO2                    | 47.02  | 0.94  | 0.94  | 0.94  |     |     | 0.94  | 0.47  | 0.47  | 0.47  | 0.47  |      | 0.47   |
| CO3                    | 51.25  | 1.54  | 1.03  | 1.03  |     |     | 1.03  | 1.03  | 0.51  | 0.51  | 0.51  |      | 0.51   |
| CO4                    | 47.78  | 0.96  | 0.96  | 0.96  |     |     | 0.96  | 0.96  | 0.48  | 0.48  | 0.48  |      | 0.48   |
| CO5                    | 48.68  | 1.46  | 0.97  | 0.97  |     |     | 0.97  | 0.49  | 0.49  | 0.49  | 0.49  |      | 0.49   |
| AVERAGE                | 48.644 | 1.270 | 1.070 | 0.973 |     |     | 0.973 | 0.781 | 0.486 | 0.486 | 0.486 |      | 0.486  |
| FINAL ATTAINMENT LEVEL |        |       |       |       |     |     |       |       |       |       |       |      | 0.7792 |

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| Academic year | 2018-19       |     |       | SEM           | 4th | STUDENTS-14 |               |     |       |                       | Subject | Power Generation & Economics | Subject Code | 17EE42 |              |     |     |     |     |                      |       |       |       |       |                    |      |      |      |      |         |  |
|---------------|---------------|-----|-------|---------------|-----|-------------|---------------|-----|-------|-----------------------|---------|------------------------------|--------------|--------|--------------|-----|-----|-----|-----|----------------------|-------|-------|-------|-------|--------------------|------|------|------|------|---------|--|
| SEM-IV        | IA TEST 1(MM) |     |       | IA TEST 2(MM) |     |             | IA TEST 3(MM) |     |       | ASSIGNMENT / QUIZ(MM) |         |                              |              |        | SEE MARKS(M) |     |     |     |     | Total Cos ATTAINMENT |       |       |       |       | % of individual CO |      |      |      |      | SEE Tot |  |
| ESN           | CO1           | CO2 | TOTAL | CO2           | CO3 | TOTAL       | CO4           | CO5 | TOTAL | CO1                   | CO2     | CO3                          | CO4          | CO5    | CO1          | CO2 | CO3 | CO4 | CO5 | CO1-1                | CO1-2 | CO1-3 | CO1-4 | CO1-5 | CO1                | CO2  | CO3  | CO4  | CO5  | GM      |  |
| 15V15EE029    | 7             | 6   | 13    | 6             | 6   | 12          | 7             | 7   | 14    | 2                     | 2       | 2                            | 2            | 2      | 3.6          | 3.6 | 3.6 | 3.6 | 3.6 | 13                   | 18    | 6     | 12    | 19    | 43.4               | 40.0 | 19.3 | 40.0 | 64.1 | 18      |  |
| 15V15EE031    | 8             | 7   | 15    | 8             | 7   | 15          | 10            | 5   | 15    | 2                     | 2       | 2                            | 2            | 2      | 6            | 6   | 6   | 6   | 6   | 16                   | 15    | 8     | 15    | 21    | 59.3               | 55.6 | 66.7 | 55.6 | 24.1 | 30      |  |
| 15V17EE001    | 5             | 10  | 15    | 7             | 8   | 15          | 8             | 7   | 15    | 2                     | 2       | 2                            | 2            | 2      | 4.8          | 4.8 | 4.8 | 4.8 | 4.8 | 12                   | 15    | 7     | 17    | 21    | 43.7               | 54.8 | 56.7 | 62.2 | 23.9 | 24      |  |
| 15V17EE002    | 10            | 6   | 16    | 10            | 6   | 16          | 9             | 7   | 16    | 2                     | 2       | 2                            | 2            | 2      | 4.4          | 4.4 | 4.4 | 4.4 | 4.4 | 16                   | 12    | 6     | 12    | 23    | 60.7               | 45.9 | 53.3 | 45.9 | 26.9 | 22      |  |
| 15V17EE003    | 11            | 6   | 17    | 9             | 8   | 17          | 10            | 7   | 17    | 2                     | 2       | 2                            | 2            | 2      | 5.4          | 5.4 | 5.4 | 5.4 | 5.4 | 18                   | 15    | 7     | 13    | 23    | 68.1               | 57.0 | 61.7 | 49.6 | 26.9 | 27      |  |
| 15V17EE004    | 15            | 10  | 25    | 16            | 9   | 25          | 13            | 12  | 25    | 2                     | 2       | 2                            | 2            | 2      | 8.8          | 8.8 | 8.8 | 8.8 | 8.8 | 26                   | 20    | 11    | 21    | 39    | 95.6               | 73.3 | 90.0 | 77.0 | 44.6 | 44      |  |
| 15V17EE005    | 15            | 13  | 28    | 14            | 14  | 28          | 13            | 15  | 28    | 2                     | 2       | 2                            | 2            | 2      | 7.8          | 7.8 | 7.8 | 7.8 | 7.8 | 25                   | 24    | 10    | 23    | 39    | 91.9               | 88.1 | 81.7 | 84.4 | 44.6 | 39      |  |
| 15V17EE007    | 8             | 4   | 12    | 7             | 5   | 12          | 8             | 4   | 12    | 2                     | 2       | 2                            | 2            | 2      | 4.2          | 4.2 | 4.2 | 4.2 | 4.2 | 14                   | 11    | 6     | 10    | 17    | 52.6               | 41.5 | 51.7 | 37.8 | 19.8 | 21      |  |
| 15V17EE008    | 10            | 10  | 20    | 9             | 11  | 20          | 10            | 10  | 20    | 2                     | 2       | 2                            | 2            | 2      | 5.4          | 5.4 | 5.4 | 5.4 | 5.4 | 17                   | 18    | 7     | 17    | 26    | 64.4               | 68.1 | 61.7 | 64.4 | 30.3 | 27      |  |
| 15V17EE009    | 11            | 10  | 21    | 12            | 9   | 21          | 9             | 12  | 21    | 2                     | 2       | 2                            | 2            | 2      | 6.4          | 6.4 | 6.4 | 6.4 | 6.4 | 19                   | 17    | 8     | 18    | 32    | 71.9               | 64.4 | 70.0 | 68.1 | 37.2 | 32      |  |
| 15V17EE010    | 10            | 9   | 19    | 12            | 7   | 19          | 10            | 9   | 19    | 2                     | 2       | 2                            | 2            | 2      | 7.4          | 7.4 | 7.4 | 7.4 | 7.4 | 19                   | 16    | 9     | 18    | 30    | 71.9               | 60.7 | 78.3 | 68.1 | 34.9 | 37      |  |
| 15V17EE011    | 6             | 5   | 11    | 5             | 6   | 11          | 4             | 7   | 11    | 2                     | 2       | 2                            | 2            | 2      | 4.2          | 4.2 | 4.2 | 4.2 | 4.2 | 12                   | 12    | 6     | 11    | 18    | 45.2               | 45.2 | 51.7 | 41.5 | 20.9 | 21      |  |
| 15V18EE400    | 11            | 12  | 23    | 10            | 13  | 23          | 9             | 14  | 23    | 2                     | 2       | 2                            | 2            | 2      | 6.4          | 6.4 | 6.4 | 6.4 | 6.4 | 19                   | 21    | 8     | 20    | 32    | 71.9               | 79.3 | 70.0 | 75.6 | 37.2 | 32      |  |
| 15V18EE401    | 8             | 7   | 15    | 10            | 5   | 15          | 7             | 8   | 15    | 2                     | 2       | 2                            | 2            | 2      | 6            | 6   | 6   | 6   | 6   | 16                   | 13    | 8     | 15    | 26    | 59.3               | 48.1 | 66.7 | 55.6 | 29.9 | 30      |  |
| 15V18EE402    | 10            | 8   | 18    | 11            | 7   | 18          | 10            | 8   | 18    | 2                     | 2       | 2                            | 2            | 2      | 5.8          | 5.8 | 5.8 | 5.8 | 5.8 | 18                   | 15    | 8     | 16    | 27    | 65.9               | 54.8 | 65.0 | 58.5 | 30.8 | 29      |  |
| 15V18EE403    | 11            | 10  | 21    | 10            | 11  | 21          | 9             | 12  | 21    | 2                     | 2       | 2                            | 2            | 2      | 4.8          | 4.8 | 4.8 | 4.8 | 4.8 | 18                   | 18    | 7     | 17    | 29    | 65.9               | 65.9 | 56.7 | 62.2 | 33.1 | 24      |  |
| AVERAGE       |               |     |       |               |     |             |               |     |       |                       |         |                              |              |        |              |     |     |     |     |                      |       |       |       |       |                    | 64.5 | 58.9 | 62.6 | 59.2 | 33.1    |  |

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**DEPARTMENT OF EEE**

2018-17

|                |                                      |                     |               |
|----------------|--------------------------------------|---------------------|---------------|
| <b>SUBJECT</b> | <b>TRANSMISSION&amp;DISTRIBUTION</b> | <b>SUBJECT CODE</b> | <b>17EE43</b> |
|----------------|--------------------------------------|---------------------|---------------|

**COURSE OUTCOME**

- CO1. Explain the concepts of various methods of generation of power.
- CO2. Explain the importance of HVAC, EHVAC, UHVAC and HVDC transmission.
- CO3. Design and analyze overhead transmission system for a given voltage level.
- CO4. Calculate the parameters of the transmission line for different configurations and assess the performance offline.
- CO5. Explain the use of underground cables and evaluate different types of distribution systems.

**PROGRAM OUTCOMES**

- PO1 Engineering knowledge: An ability to apply knowledge of mathematics (including probability, statistics and discrete mathematics), science, and engineering for solving Engineering problems and Knowledge.
- PO2 Problem analysis: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- PO3 Design / development of solutions: An ability to design solution for engineering problems and design system components or process to meet desired specifications and needs.
- PO4 Conduct investigations of complex Problem: An ability to identify, formulate, comprehend, analyze, design synthesis of the information to solve complex engineering problems and provide valid conclusions.
- PO5 Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modeling to complex engineering activities.
- PO6 The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal, and cultural issues.
- PO7 Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- PO8 Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- PO9 Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- PO10 Communication: Communicate effectively on complex engineering activities with the engineering community and with the society.
- PO11 Project management and finance: An ability to use the modern engineering tools, techniques, skills and management principles to do work as a member and leader in a team, to manage projects in multidisciplinary environments.
- PO12 Life-long learning: A recognition of the need for, and an ability to engage in, to resolve contemporary issues and acquire lifelong learning.

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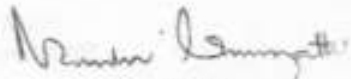
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|----------------|---|
| <b>COLLEGE</b> | <b>SHRIDEVI INSTITUTE OF ENGINEERING &amp; TECHNOLOGY</b> |
|----------------|---|

|                            |  |          |     |               |              |     |     |         |     |      |      |       |
|----------------------------|--|----------|-----|---------------|--------------|-----|-----|---------|-----|------|------|-------|
| COLLEGE                    | SHRIDEVI INSTITUTE OF ENGINEERING & TECHNOLOGY |          |     |               |              |     |     |         |     |      |      |       |
| FACULTY NAME               | MRS. SHWETHA T M                               |          |     |               |              |     |     |         |     |      |      |       |
| BRANCH                     | EEE  |          |     | ACADEMIC YEAR |              |     |     | 2018-19 |     |      |      |       |
| COURSE                     | B.E  | SEMESTER |     | IV            | SECTION      |     |     |         |     |      |      |       |
| SUBJECT                    | TRANSMISSION&DISTRIBUTION                      |          |     |               | SUBJECT CODE |     |     | 17EE43  |     |      |      |       |
| CO & PO MAPPING            |  |          |     |               |              |     |     |         |     |      |      |       |
|                            | PO1  | PO2      | PO3 | PO4           | PO5          | PO6 | PO7 | PO8     | PO9 | PO10 | PO11 | PO12  |
| CO1                        | 2  | 3        |     | 2             | 1            | 2   | 1   | 1       |     |      |      | 1     |
| CO2                        | 2  | 3        |     | 2             | 1            | 2   | 1   | 1       |     |      |      | 1     |
| CO3                        | 2  | 3        |     | 2             | 2            | 2   | 1   | 1       |     |      |      | 1     |
| CO4                        | 2  | 3        |     | 2             | 2            | 2   | 1   | 1       |     |      |      | 1     |
| CO5                        | 2  | 3        |     | 2             | 1            | 2   | 1   | 1       |     |      |      | 1     |
| AVERAGE                    | 2  | 3        |     | 2             | 1.4          | 2   | 1   | 1       |     |      |      | 1     |
| OVERALL MAPPING OF SUBJECT |  |          |     |               |              |     |     |         |     |      |      | 1.675 |

#### CO AND PO ATTAINMENT

|                        | CO%   | PO1    | PO2    | PO3 | PO4    | PO5    | PO6    | PO7    | PO8    | PO9 | PO10 | PO11 | PO12   |
|------------------------|-------|--------|--------|-----|--------|--------|--------|--------|--------|-----|------|------|--------|
| CO1                    | 51.1  | 1.022  | 1.533  |     | 1.022  | 0.511  | 1.022  | 0.511  | 0.511  |     |      |      | 0.511  |
| CO2                    | 46.7  | 0.934  | 1.401  |     | 0.934  | 0.467  | 0.934  | 0.467  | 0.467  |     |      |      | 0.467  |
| CO3                    | 49.4  | 0.988  | 1.482  |     | 0.988  | 0.988  | 0.988  | 0.494  | 0.494  |     |      |      | 0.494  |
| CO4                    | 47.5  | 0.95   | 1.425  |     | 0.95   | 0.95   | 0.95   | 0.475  | 0.475  |     |      |      | 0.475  |
| CO5                    | 47.1  | 0.942  | 1.413  |     | 0.942  | 0.471  | 0.942  | 0.471  | 0.471  |     |      |      | 0.471  |
| AVERAGE                | 48.36 | 0.9672 | 1.4508 |     | 0.9672 | 0.6774 | 0.9672 | 0.4836 | 0.4836 |     |      |      | 0.4836 |
| FINAL ATTAINMENT LEVEL |       |        |        |     |        |        |        |        |        |     |      |      | 0.810  |

  
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MARKS SUMMARY

| NAME | IA TEST 1 |     |     | IA TEST 2 |     |     | IA TEST 3 |     |     | Assignments |      |      | SEM 1&2 2018-2019 |      |      | SEM 1&2 2019-2020 |      |      | TOTAL |      |      | Average |      |      |      |   |
|------|-----------|-----|-----|-----------|-----|-----|-----------|-----|-----|-------------|------|------|-------------------|------|------|-------------------|------|------|-------|------|------|---------|------|------|------|---|
|      | CO1       | CO2 | CO3 | CO4       | CO5 | CO6 | CO7       | CO8 | CO9 | CO10        | CO11 | CO12 | CO13              | CO14 | CO15 | CO16              | CO17 | CO18 | CO19  | CO20 | CO21 | CO22    | CO23 | CO24 | CO25 |   |
| Amal | 8         | 6   | 11  | 7         | 5   | 12  | 8         | 8   | 8   | 2           | 2    | 2    | 2                 | 2    | 2    | 2                 | 2    | 2    | 2     | 2    | 2    | 2       | 2    | 2    | 2    | 2 |
| Amal | 8         | 7   | 15  | 8         | 7   | 18  | 8         | 8   | 8   | 2           | 2    | 2    | 2                 | 2    | 2    | 2                 | 2    | 2    | 2     | 2    | 2    | 2       | 2    | 2    | 2    | 2 |
| Amal | 8         | 8   | 16  | 8         | 8   | 18  | 8         | 8   | 8   | 2           | 2    | 2    | 2                 | 2    | 2    | 2                 | 2    | 2    | 2     | 2    | 2    | 2       | 2    | 2    | 2    | 2 |
| Amal | 8         | 9   | 16  | 8         | 8   | 18  | 8         | 8   | 8   | 2           | 2    | 2    | 2                 | 2    | 2    | 2                 | 2    | 2    | 2     | 2    | 2    | 2       | 2    | 2    | 2    | 2 |
| Amal | 8         | 10  | 22  | 13        | 10  | 21  | 8         | 8   | 8   | 2           | 2    | 2    | 2                 | 2    | 2    | 2                 | 2    | 2    | 2     | 2    | 2    | 2       | 2    | 2    | 2    | 2 |
| Amal | 8         | 10  | 23  | 12        | 10  | 21  | 8         | 8   | 8   | 2           | 2    | 2    | 2                 | 2    | 2    | 2                 | 2    | 2    | 2     | 2    | 2    | 2       | 2    | 2    | 2    | 2 |
| Amal | 8         | 10  | 23  | 12        | 10  | 21  | 8         | 8   | 8   | 2           | 2    | 2    | 2                 | 2    | 2    | 2                 | 2    | 2    | 2     | 2    | 2    | 2       | 2    | 2    | 2    | 2 |
| Amal | 8         | 10  | 23  | 12        | 10  | 21  | 8         | 8   | 8   | 2           | 2    | 2    | 2                 | 2    | 2    | 2                 | 2    | 2    | 2     | 2    | 2    | 2       | 2    | 2    | 2    | 2 |
| Amal | 8         | 10  | 23  | 12        | 10  | 21  | 8         | 8   | 8   | 2           | 2    | 2    | 2                 | 2    | 2    | 2                 | 2    | 2    | 2     | 2    | 2    | 2       | 2    | 2    | 2    | 2 |
| Amal | 8         | 10  | 23  | 12        | 10  | 21  | 8         | 8   | 8   | 2           | 2    | 2    | 2                 | 2    | 2    | 2                 | 2    | 2    | 2     | 2    | 2    | 2       | 2    | 2    | 2    | 2 |
| Amal | 8         | 10  | 23  | 12        | 10  | 21  | 8         | 8   | 8   | 2           | 2    | 2    | 2                 | 2    | 2    | 2                 | 2    | 2    | 2     | 2    | 2    | 2       | 2    | 2    | 2    | 2 |
| Amal | 8         | 10  | 23  | 12        | 10  | 21  | 8         | 8   | 8   | 2           | 2    | 2    | 2                 | 2    | 2    | 2                 | 2    | 2    | 2     | 2    | 2    | 2       | 2    | 2    | 2    | 2 |
| Amal | 8         | 10  | 23  | 12        | 10  | 21  | 8         | 8   | 8   | 2           | 2    | 2    | 2                 | 2    | 2    | 2                 | 2    | 2    | 2     | 2    | 2    | 2       | 2    | 2    | 2    | 2 |
| Amal | 8         | 10  | 23  | 12        | 10  | 21  | 8         | 8   | 8   | 2           | 2    | 2    | 2                 | 2    | 2    | 2                 | 2    | 2    | 2     | 2    | 2    | 2       | 2    | 2    | 2    | 2 |
| Amal | 8         | 10  | 23  | 12        | 10  | 21  | 8         | 8   | 8   | 2           | 2    | 2    | 2                 | 2    | 2    | 2                 | 2    | 2    | 2     | 2    | 2    | 2       | 2    | 2    | 2    | 2 |
| Amal | 8         | 10  | 23  | 12        | 10  | 21  | 8         | 8   | 8   | 2           | 2    | 2    | 2                 | 2    | 2    | 2                 | 2    | 2    | 2     | 2    | 2    | 2       | 2    | 2    | 2    | 2 |
| Amal | 8         | 10  | 23  | 12        | 10  | 21  | 8         | 8   | 8   | 2           | 2    | 2    | 2                 | 2    | 2    | 2                 | 2    | 2    | 2     | 2    | 2    | 2       | 2    | 2    | 2    | 2 |
| Amal | 8         | 10  | 23  | 12        | 10  | 21  | 8         | 8   | 8   | 2           | 2    | 2    | 2                 | 2    | 2    | 2                 | 2    | 2    | 2     | 2    | 2    | 2       | 2    | 2    | 2    | 2 |
| Amal | 8         | 10  | 23  | 12        | 10  | 21  | 8         | 8   | 8   | 2           | 2    | 2    | 2                 | 2    | 2    | 2                 | 2    | 2    | 2     | 2    | 2    | 2       | 2    | 2    | 2    | 2 |
| Amal | 8         | 10  | 23  | 12        | 10  | 21  | 8         | 8   | 8   | 2           | 2    | 2    | 2                 | 2    | 2    | 2                 | 2    | 2    | 2     | 2    | 2    | 2       | 2    | 2    | 2    | 2 |
| Amal | 8         | 10  | 23  | 12        | 10  | 21  | 8         | 8   | 8   | 2           | 2    | 2    | 2                 | 2    | 2    | 2                 | 2    | 2    | 2     | 2    | 2    | 2       | 2    | 2    | 2    | 2 |
| Amal | 8         | 10  | 23  | 12        | 10  | 21  | 8         | 8   | 8   | 2           | 2    | 2    | 2                 | 2    | 2    | 2                 | 2    | 2    | 2     | 2    | 2    | 2       | 2    | 2    | 2    | 2 |
| Amal | 8         | 10  | 23  | 12        | 10  | 21  | 8         | 8   | 8   | 2           | 2    | 2    | 2                 | 2    | 2    | 2                 | 2    | 2    | 2     | 2    | 2    | 2       | 2    | 2    | 2    | 2 |
| Amal | 8         | 10  | 23  | 12        | 10  | 21  | 8         | 8   | 8   | 2           | 2    | 2    | 2                 | 2    | 2    | 2                 | 2    | 2    | 2     | 2    | 2    | 2       | 2    | 2    | 2    | 2 |
| Amal | 8         | 10  | 23  | 12        | 10  | 21  | 8         | 8   | 8   | 2           | 2    | 2    | 2                 | 2    | 2    | 2                 | 2    | 2    | 2     | 2    | 2    | 2       | 2    | 2    | 2    | 2 |
| Amal | 8         | 10  | 23  | 12        | 10  | 21  | 8         | 8   | 8   | 2           | 2    | 2    | 2                 | 2    | 2    | 2                 | 2    | 2    | 2     | 2    | 2    | 2       | 2    | 2    | 2    | 2 |
| Amal | 8         | 10  | 23  | 12        | 10  | 21  | 8         | 8   | 8   | 2           | 2    | 2    | 2                 | 2    | 2    | 2                 | 2    | 2    | 2     | 2    | 2    | 2       | 2    | 2    | 2    | 2 |
| Amal | 8         | 10  | 23  | 12        | 10  | 21  | 8         | 8   | 8   | 2           | 2    | 2    | 2                 | 2    | 2    | 2                 | 2    | 2    | 2     | 2    | 2    | 2       | 2    | 2    | 2    | 2 |
| Amal | 8         | 10  | 23  | 12        | 10  | 21  | 8         | 8   | 8   | 2           | 2    | 2    | 2                 | 2    | 2    | 2                 | 2    | 2    | 2     | 2    | 2    | 2       | 2    | 2    | 2    | 2 |
| Amal | 8         | 10  | 23  | 12        | 10  | 21  | 8         | 8   | 8   | 2           | 2    | 2    | 2                 | 2    | 2    | 2                 | 2    | 2    | 2     | 2    | 2    | 2       | 2    | 2    | 2    | 2 |
| Amal | 8         | 10  | 23  | 12        | 10  | 21  | 8         | 8   | 8   | 2           | 2    | 2    | 2                 | 2    | 2    | 2                 | 2    | 2    | 2     | 2    | 2    | 2       | 2    | 2    | 2    | 2 |
| Amal | 8         | 10  | 23  | 12        | 10  | 21  | 8         | 8   | 8   | 2           | 2    | 2    | 2                 | 2    | 2    | 2                 | 2    | 2    | 2     | 2    | 2    | 2       | 2    | 2    | 2    | 2 |
| Amal | 8         | 10  | 23  | 12        | 10  | 21  | 8         | 8   | 8   | 2           | 2    | 2    | 2                 | 2    | 2    | 2                 | 2    | 2    | 2     | 2    | 2    | 2       | 2    | 2    | 2    | 2 |
| Amal | 8         | 10  | 23  | 12        | 10  | 21  | 8         | 8   | 8   | 2           | 2    | 2    | 2                 | 2    | 2    | 2                 | 2    | 2    | 2     | 2    | 2    | 2       | 2    | 2    | 2    | 2 |
| Amal | 8         | 10  | 23  | 12        | 10  | 21  | 8         | 8   | 8   | 2           | 2    | 2    | 2                 | 2    | 2    | 2                 | 2    | 2    | 2     | 2    | 2    | 2       | 2    | 2    | 2    | 2 |
| Amal | 8         | 10  | 23  | 12        | 10  | 21  | 8         | 8   | 8   | 2           | 2    | 2    | 2                 | 2    | 2    | 2                 | 2    | 2    | 2     | 2    | 2    | 2       | 2    | 2    | 2    | 2 |
| Amal | 8         | 10  | 23  | 12        | 10  | 21  | 8         | 8   | 8   | 2           | 2    | 2    | 2                 | 2    | 2    | 2                 | 2    | 2    | 2     | 2    | 2    | 2       | 2    | 2    | 2    | 2 |
| Amal | 8         | 10  | 23  | 12        | 10  | 21  | 8         | 8   | 8   | 2           | 2    | 2    | 2                 | 2    | 2    | 2                 | 2    | 2    | 2     | 2    | 2    | 2       | 2    | 2    | 2    | 2 |
| Amal | 8         | 10  | 23  | 12        | 10  | 21  | 8         | 8   | 8   | 2           | 2    | 2    | 2                 | 2    | 2    | 2                 | 2    | 2    | 2     | 2    | 2    | 2       | 2    | 2    | 2    | 2 |
| Amal | 8         | 10  | 23  | 12        | 10  | 21  | 8         | 8   | 8   | 2           | 2    | 2    | 2                 | 2    | 2    | 2                 | 2    | 2    | 2     | 2    | 2    | 2       | 2    | 2    | 2    | 2 |
| Amal | 8         | 10  | 23  | 12        | 10  | 21  | 8         | 8   | 8   | 2           | 2    | 2    | 2                 | 2    | 2    | 2                 | 2    | 2    | 2     | 2    | 2    | 2       | 2    | 2    | 2    | 2 |
| Amal | 8         | 10  | 23  | 12        | 10  | 21  | 8         | 8   | 8   | 2           | 2    | 2    | 2                 | 2    | 2    | 2                 | 2    | 2    | 2     | 2    | 2    | 2       | 2    | 2    | 2    | 2 |
| Amal | 8         | 10  | 23  | 12        | 10  | 21  | 8         | 8   | 8   | 2           | 2    | 2    | 2                 | 2    | 2    | 2                 | 2    | 2    | 2     | 2    | 2    | 2       | 2    | 2    | 2    | 2 |
| Amal | 8         | 10  | 23  | 12        | 10  | 21  | 8         | 8   | 8   | 2           | 2    | 2    | 2                 | 2    | 2    | 2                 | 2    | 2    | 2     | 2    | 2    | 2       | 2    | 2    | 2    | 2 |
| Amal | 8         | 10  | 23  | 12        | 10  | 21  | 8         | 8   | 8   | 2           | 2    | 2    | 2                 | 2    | 2    | 2                 | 2    | 2    | 2     | 2    | 2    | 2       | 2    | 2    | 2    | 2 |
| Amal | 8         | 10  | 23  | 12        | 10  | 21  | 8         | 8   | 8   | 2           | 2    | 2    | 2                 | 2    | 2    | 2                 | 2    | 2    | 2     | 2    | 2    | 2       | 2    | 2    | 2    | 2 |
| Amal | 8         | 10  | 23  | 12        | 10  | 21  | 8         | 8   | 8   | 2           | 2    | 2    | 2                 | 2    | 2    | 2                 | 2    | 2    | 2     | 2    | 2    | 2       | 2    | 2    | 2    | 2 |
| Amal | 8         | 10  | 23  | 12        | 10  | 21  | 8         | 8   | 8   | 2           | 2    | 2    | 2                 | 2    | 2    | 2                 | 2    | 2    | 2     | 2    | 2    | 2       | 2    | 2    | 2    | 2 |
| Amal | 8         | 10  | 23  | 12        | 10  | 21  | 8         | 8   | 8   | 2           | 2    | 2    | 2                 | 2    | 2    | 2                 | 2    | 2    | 2     | 2    | 2    | 2       | 2    | 2    | 2    | 2 |
| Amal | 8         | 10  | 23  | 12        | 10  | 21  | 8         | 8   | 8   | 2           | 2    | 2    | 2                 | 2    | 2    | 2                 | 2    | 2    | 2     | 2    | 2    | 2       | 2    | 2    | 2    | 2 |
| Amal | 8         | 10  | 23  | 12        | 10  | 21  | 8         | 8   | 8   | 2           | 2    | 2    | 2                 | 2    | 2    | 2                 | 2    | 2    | 2     | 2    | 2    | 2       | 2    | 2    | 2    | 2 |
| Amal | 8         | 10  | 23  | 12        | 10  | 21  | 8         | 8   | 8   | 2           | 2    | 2    | 2                 | 2    | 2    | 2                 | 2    | 2    | 2     | 2    | 2    | 2       | 2    | 2    | 2    | 2 |
| Amal | 8         | 10  | 23  | 12        | 10  | 21  | 8         | 8   | 8   | 2           | 2    | 2    | 2                 | 2    | 2    | 2                 | 2    | 2    | 2     | 2    | 2    | 2       | 2    | 2    | 2    | 2 |
| Amal | 8         | 10  | 23  | 12        | 10  | 21  | 8         | 8   | 8   | 2           | 2    | 2    | 2                 | 2    | 2    | 2                 | 2    | 2    | 2     | 2    | 2    | 2       | 2    | 2    | 2    | 2 |
| Amal | 8         | 10  | 23  | 12        | 10  | 21  | 8         | 8   | 8   | 2           | 2    | 2    | 2                 | 2    | 2    | 2                 | 2    | 2    | 2     | 2    | 2    | 2       | 2    | 2    | 2    | 2 |
| Amal | 8         | 10  | 23  | 12        | 10  | 21  | 8         | 8   | 8   | 2           | 2    | 2    | 2                 | 2    | 2    | 2                 | 2    | 2    | 2     | 2    | 2    | 2       | 2    | 2    | 2    | 2 |
| Amal | 8         | 10  | 23  | 12        | 10  | 21  | 8         | 8   | 8   | 2           | 2    | 2    | 2                 | 2    | 2    | 2                 | 2    | 2    | 2     | 2    | 2    | 2       | 2    | 2    | 2    | 2 |
| Amal | 8         | 10  | 23  | 12        | 10  | 21  | 8         | 8   | 8   | 2           | 2    | 2    | 2                 | 2    | 2    | 2                 | 2    | 2    | 2     | 2    | 2    | 2       | 2    | 2    | 2    | 2 |
| Amal | 8         | 10  | 23  | 12        | 10  | 21  | 8         | 8   | 8   |             |      |      |                   |      |      |                   |      |      |       |      |      |         |      |      |      |   |

## DEPARTMENT OF EEE

|                |                        |                     |               |
|----------------|------------------------|---------------------|---------------|
| <b>SUBJECT</b> | <b>ELECTRIC MOTORS</b> | <b>SUBJECT CODE</b> | <b>17EE44</b> |
|----------------|------------------------|---------------------|---------------|

### COURSE OUTCOME

2018-19

|            |  |
|------------|--|
| <b>CO1</b> | Explain the construction, operation and classification of DC Motor, AC motor and Special purpose motors  |
| <b>CO2</b> | Describe the performance characteristics & applications of Electric motors.  |
| <b>CO3</b> | Demonstrate and explain the methods of testing of DC machines and determine losses and Efficiency  |
| <b>CO4</b> | Control the speed of DC motor and induction motor.   |
| <b>CO5</b> | Explain the starting methods, equivalent circuit and phasor diagrams, torque angle, effect of change in excitation and change in load, hunting and damping of synchronous motors |

### PROGRAM OUTCOME

- P01** Engineering knowledge: An ability to apply knowledge of mathematics (including probability, statistics and discrete mathematics), science, and engineering for solving Engineering problems and Knowledge.
- P02** Problem analysis: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- P03** Design / development of solutions: An ability to design solution for engineering problems and design system components or process to meet desired specifications and needs.
- P04** Conduct investigations of complex Problem: An ability to identify, formulate, comprehend, analyze, design synthesis of the information to solve complex engineering problems and provide valid conclusions.
- P05** Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modeling to complex engineering activities.
- P06** The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal, and cultural issues.
- P07** Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- P08** Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- P09** Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- P010** Communication: Communicate effectively on complex engineering activities with the engineering community and with the society.
- P011** Project management and finance: An ability to use the modern engineering tools, techniques, skills and management principles to do work as a member and leader in a team, to manage projects in multidisciplinary environments.
- P012** Life-long learning: A recognition of the need for, and an ability to engage in, to resolve contemporary issues and acquire lifelong learning.

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*Pravin Kumar*  
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S.E.T. TUMKURU.

|                            |  |          |     |               |         |     |              |           |        |      |      |      |
|----------------------------|--|----------|-----|---------------|---------|-----|--------------|-----------|--------|------|------|------|
| COLLEGE                    | SHRIDEVI INSTITUTE OF ENGINEERING & TECHNOLOGY |          |     |               |         |     |              |           |        |      |      |      |
| FACULTY NAME               | UMABAI   |          |     |               |         |     |              |           |        |      |      |      |
| BRANCH                     | EEE  |          |     | ACADEMIC YEAR |         |     |              | 2018-2019 |        |      |      |      |
| COURSE                     | B.E  | SEMESTER |     | IV            | SECTION |     |              |           |        |      |      |      |
| SUBJECT                    | ELECTRIC MOTORS                                |          |     |               |         |     | SUBJECT CODE |           | 17EE44 |      |      |      |
| CO & PO MAPPING            |  |          |     |               |         |     |              |           |        |      |      |      |
|                            | PO1  | PO2      | PO3 | PO4           | PO5     | PO6 | PO7          | PO8       | PO9    | PO10 | PO11 | PO12 |
| CO1                        | 3  | 2        | 2   | 2             | 2       | 2   |              |           |        |      |      | 1    |
| CO2                        | 3  | 2        | 2   | 2             | 2       | 2   |              |           |        |      |      | 1    |
| CO3                        | 3  | 2        | 3   | 2             | 2       | 2   |              |           |        |      |      | 1    |
| CO4                        | 3  | 2        | 2   | 2             | 2       | 2   |              |           |        |      |      | 1    |
| CO5                        | 3  | 2        | 2   | 2             | 2       | 2   |              |           |        |      |      | 2    |
| AVERAGE                    | 3  | 2        | 2.2 | 2             | 2       | 2   |              |           |        |      |      | 1.2  |
| OVERALL MAPPING OF SUBJECT |  |          |     |               |         |     |              |           |        |      |      | 2.05 |

#### CO AND PO ATTAINMENT

|                        | CO%   | PO1  | PO2  | PO3  | PO4  | PO5  | PO6  | PO7 | PO8 | PO9 | PO10 | PO11 | PO12  |
|------------------------|-------|------|------|------|------|------|------|-----|-----|-----|------|------|-------|
| CO1                    | 47.4  | 1.42 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |     |     |     |      |      | 0.47  |
| CO2                    | 45.9  | 1.37 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 |     |     |     |      |      | 0.45  |
| CO3                    | 50.1  | 1.5  | 1.00 | 1.5  | 1.00 | 1.00 | 1.00 |     |     |     |      |      | 0.50  |
| CO4                    | 47.1  | 1.41 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |     |     |     |      |      | 0.47  |
| CO5                    | 47.6  | 1.42 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |     |     |     |      |      | 0.47  |
| AVERAGE                | 47.62 | 1.42 | 0.93 | 0.95 | 0.93 | 0.93 | 0.93 |     |     |     |      |      | 0.47  |
| FINAL ATTAINMENT LEVEL |       |      |      |      |      |      |      |     |     |     |      |      | 0.937 |

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*Mandira Srinivasan*  
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 SIET, TUMAKURU.





SHRIDEVI INSTITUTE OF ENGINEERING & TECHNOLOGY  
SIRA ROAD, TUMKUR- 572 106.

**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGG**

|         |                              |              |        |
|---------|------------------------------|--------------|--------|
| SUBJECT | ELECTROMAGNETIC FIELD THEORY | SUBJECT CODE | 17EE45 |
|---------|------------------------------|--------------|--------|

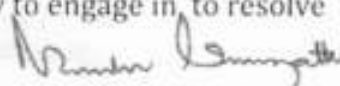
**COURSE OUTCOME**

|     |   |
|-----|---|
| CO1 | Use different coordinate systems , Coulomb's Law and Gauss Law for the evaluation of electric fields produced by different charge configurations. |
| CO2 | Calculate the energy and potential due to a system of charges & Explain the behavior of electric field across a boundary conditions               |
| CO3 | Explain the Poisson's, Laplace equations and behavior of steady magnetic fields.  |
| CO4 | Explain the behavior of magnetic fields and magnetic materials.   |
| CO5 | Asses time varying fields and propagation of waves in different media.  |

**PROGRAM OUTCOMES**

- PO1 Engineering knowledge: An ability to apply knowledge of mathematics (including probability, statistics and discrete mathematics), science, and engineering for solving Engineering problems and Knowledge.
- PO2 Problem analysis: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- PO3 Design / development of solutions: An ability to design solution for engineering problems and design system components or process to meet desired specifications and needs.
- PO4 Conduct investigations of complex Problem: An ability to identify, formulate, comprehend, analyze, design synthesis of the information to solve complex engineering problems and provide valid conclusions.
- PO5 Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modeling to complex engineering activities.
- PO6 The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal, and cultural issues.
- PO7 Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- PO8 Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- PO9 Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- PO10 Communication: Communicate effectively on complex engineering activities with the engineering community and with the society.
- PO11 Project management and finance: An ability to use the modern engineering tools, techniques, skills and management principles to do work as a member and leader in a team, to manage projects in multidisciplinary environments.
- PO12 Life-long learning: A recognition of the need for, and an ability to engage in, to resolve contemporary issues and acquire lifelong learning.


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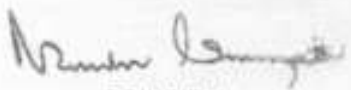
  
PRINCIPAL  
SIET, TUMAKURU.

|                            |  |          |     |               |     |         |              |         |     |        |      |      |
|----------------------------|--|----------|-----|---------------|-----|---------|--------------|---------|-----|--------|------|------|
| COLLEGE                    | SHRIDEVI INSTITUTE OF ENGINEERING & TECHNOLOGY |          |     |               |     |         |              |         |     |        |      |      |
| FACULTY NAME               | R TEJASWINI                                    |          |     |               |     |         |              |         |     |        |      |      |
| BRANCH                     | EEE  |          |     | ACADEMIC YEAR |     |         |              | 2018-19 |     |        |      |      |
| COURSE                     | B.E  | SEMESTER |     |               | IV  | SECTION |              |         | EEE |        |      |      |
| SUBJECT                    | ELECTROMAGNETIC FIELD THEORY                   |          |     |               |     |         | SUBJECT CODE |         |     | 17EE45 |      |      |
| CO & PO MAPPING            |  |          |     |               |     |         |              |         |     |        |      |      |
|                            | PO1  | PO2      | PO3 | PO4           | PO5 | PO6     | PO7          | PO8     | PO9 | PO10   | PO11 | PO12 |
|                            | 1  | 2        | 3   | 4             | 5   | 6       | 7            | 8       | 9   | 10     | 11   | 12   |
| CO1                        | 2  | 3        | 1   | 1             |     |         |              |         |     |        |      | 2    |
| CO2                        | 2  | 3        | 1   | 1             |     |         |              |         |     |        |      | 2    |
| CO3                        | 1  | 2        | 1   | 1             |     |         |              |         |     |        |      | 1    |
| CO4                        | 3  | 3        | 1   | 1             |     |         |              |         |     |        |      | 3    |
| CO5                        | 2  | 3        | 1   | 1             |     |         |              |         |     |        |      | 2    |
| AVERAGE                    | 2  | 2.8      | 1   | 1             |     |         |              |         |     |        |      | 2    |
| OVERALL MAPPING OF SUBJECT |  |          |     |               |     |         |              |         |     |        |      | 1.63 |

#### CO AND PO ATTAINMENT

|                        | CO%   | PO1  | PO2  | PO3  | PO4  | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
|------------------------|-------|------|------|------|------|-----|-----|-----|-----|-----|------|------|------|
| CO1                    | 60.2  | 1.20 | 1.68 | 0.60 | 0.60 |     |     |     |     |     |      |      | 1.20 |
| CO2                    | 58.7  | 1.17 | 1.64 | 0.58 | 0.58 |     |     |     |     |     |      |      | 1.17 |
| CO3                    | 47.7  | 0.95 | 1.33 | 0.47 | 0.47 |     |     |     |     |     |      |      | 0.95 |
| CO4                    | 59.3  | 1.18 | 1.66 | 0.59 | 0.59 |     |     |     |     |     |      |      | 1.18 |
| CO5                    | 32.4  | 0.64 | 0.90 | 0.32 | 0.32 |     |     |     |     |     |      |      | 0.64 |
| AVERAGE                | 51.66 | 1.02 | 1.44 | 0.51 | 0.51 |     |     |     |     |     |      |      | 1.02 |
| FINAL ATTAINMENT LEVEL |       |      |      |      |      |     |     |     |     |     |      |      | 0.9  |

  
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 SIET, TUMAKURU



| Academic year | 2018-19        |     |       | SEM            |     |       | IIS            |     |       | STUDENTS=10             |     |     | Subject |     |               |     |     | ENFT |     |                      |       |       | Subject Code |       |                     |      |      | COURSE |      |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|---------------|----------------|-----|-------|----------------|-----|-------|----------------|-----|-------|-------------------------|-----|-----|---------|-----|---------------|-----|-----|------|-----|----------------------|-------|-------|--------------|-------|---------------------|------|------|--------|------|---------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| SEM-IV        | IA TEST (100M) |     |       | IA TEST (100M) |     |       | IA TEST (100M) |     |       | ASSIGNMENT / QUIZ(10 M) |     |     |         |     | SEE MARKS(50) |     |     |      |     | Total COs ATTAINMENT |       |       |              |       | No of individual CO |      |      |        |      | SEE Tot |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ENR           | CO1            | CO2 | TOTAL | CO1            | CO2 | TOTAL | CO1            | CO2 | TOTAL | CO1                     | CO2 | CO3 | CO4     | CO5 | CO1           | CO2 | CO3 | CO4  | CO5 | CO1-1                | CO1-2 | CO1-3 | CO1-4        | CO1-5 | CO1                 | CO2  | CO3  | CO4    | CO5  | 60M     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 15V15EE029    | 7              | 5   | 13    | 10             | 3   | 13    | 8              | 5   | 13    | 2                       | 2   | 2   | 2       | 2   | 1.8           | 1.8 | 1.8 | 1.8  | 1.8 | 11                   | 19    | 4     | 9            | 19    | 37.2                | 42.7 | 13.1 | 30.3   | 64.8 | 9       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 15V15EE031    | 10             | 10  | 20    | 9              | 11  | 20    | 12             | 8   | 20    | 2                       | 2   | 2   | 2       | 2   | 2.8           | 2.8 | 2.8 | 2.8  | 2.8 | 15                   | 16    | 5     | 15           | 22    | 54.8                | 58.5 | 40.0 | 54.8   | 25.1 | 14      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 15V17EE001    | 10             | 8   | 18    | 9              | 9   | 18    | 12             | 6   | 18    | 2                       | 2   | 2   | 2       | 2   | 0.6           | 0.6 | 0.6 | 0.6  | 0.6 | 13                   | 12    | 3     | 11           | 18    | 46.7                | 43.0 | 21.7 | 39.3   | 20.2 | 3       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 15V17EE002    | 10             | 13  | 23    | 12             | 11  | 23    | 14             | 9   | 23    | 2                       | 2   | 2   | 2       | 2   | 4.4           | 4.4 | 4.4 | 4.4  | 4.4 | 16                   | 17    | 6     | 19           | 27    | 60.7                | 64.4 | 53.3 | 71.9   | 31.5 | 22      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 15V17EE003    | 11             | 11  | 22    | 10             | 12  | 22    | 12             | 10  | 22    | 2                       | 2   | 2   | 2       | 2   | 5.6           | 5.6 | 5.6 | 5.6  | 5.6 | 19                   | 20    | 8     | 19           | 28    | 68.9                | 72.6 | 63.3 | 68.9   | 31.7 | 28      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 15V17EE004    | 15             | 15  | 30    | 15             | 15  | 30    | 15             | 15  | 30    | 2                       | 2   | 2   | 2       | 2   | 6.6           | 6.6 | 6.6 | 6.6  | 6.6 | 24                   | 24    | 9     | 24           | 39    | 87.4                | 87.4 | 71.7 | 87.4   | 44.4 | 33      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 15V17EE005    | 15             | 15  | 30    | 15             | 15  | 30    | 15             | 15  | 30    | 2                       | 2   | 2   | 2       | 2   | 8.2           | 8.2 | 8.2 | 8.2  | 8.2 | 25                   | 25    | 10    | 25           | 40    | 93.3                | 93.3 | 85.0 | 93.3   | 46.2 | 41      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 15V17EE007    | 10             | 7   | 17    | 12             | 5   | 17    | 9              | 8   | 17    | 2                       | 2   | 2   | 2       | 2   | 3.4           | 3.4 | 3.4 | 3.4  | 3.4 | 15                   | 10    | 5     | 12           | 25    | 57.0                | 56.5 | 45.0 | 45.9   | 29.2 | 17      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 15V17EE008    | 9              | 10  | 19    | 10             | 9   | 19    | 12             | 7   | 19    | 2                       | 2   | 2   | 2       | 2   | 3.6           | 3.6 | 3.6 | 3.6  | 3.6 | 15                   | 15    | 6     | 18           | 23    | 54.1                | 54.1 | 46.7 | 57.8   | 26.0 | 18      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 15V17EE009    | 10             | 15  | 25    | 15             | 10  | 25    | 14             | 11  | 25    | 2                       | 2   | 2   | 2       | 2   | 3.4           | 3.4 | 3.4 | 3.4  | 3.4 | 15                   | 15    | 5     | 20           | 31    | 57.0                | 57.0 | 45.0 | 75.6   | 36.1 | 17      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 15V17EE010    | 12             | 13  | 25    | 14             | 11  | 25    | 13             | 12  | 25    | 2                       | 2   | 2   | 2       | 2   | 7.4           | 7.4 | 7.4 | 7.4  | 7.4 | 21                   | 20    | 9     | 22           | 35    | 79.3                | 75.6 | 78.3 | 83.0   | 40.7 | 37      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 15V17EE011    | 8              | 5   | 13    | 7              | 6   | 13    | 9              | 4   | 13    | 2                       | 2   | 2   | 2       | 2   | 3.4           | 3.4 | 3.4 | 3.4  | 3.4 | 13                   | 11    | 5     | 10           | 16    | 49.6                | 42.2 | 45.0 | 38.5   | 18.9 | 17      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 15V18EE400    | 10             | 7   | 17    | 9              | 8   | 17    | 10             | 7   | 17    | 2                       | 2   | 2   | 2       | 2   | 1             | 1   | 1   | 1    | 1   | 13                   | 11    | 3     | 10           | 19    | 48.1                | 40.7 | 25.0 | 37.0   | 21.8 | 5       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 15V18EE401    | 8              | 8   | 16    | 10             | 6   | 16    | 9              | 7   | 16    | 2                       | 2   | 2   | 2       | 2   | 3.6           | 3.6 | 3.6 | 3.6  | 3.6 | 14                   | 12    | 6     | 14           | 23    | 50.4                | 43.0 | 46.7 | 50.4   | 26.0 | 18      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 15V18EE402    | 10             | 9   | 19    | 9              | 10  | 19    | 11             | 8   | 19    | 2                       | 2   | 2   | 2       | 2   | 1             | 1   | 1   | 1    | 1   | 13                   | 13    | 3     | 12           | 20    | 48.1                | 48.1 | 25.0 | 44.4   | 23.0 | 5       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 15V18EE403    | 12             | 12  | 24    | 10             | 14  | 24    | 13             | 11  | 24    | 2                       | 2   | 2   | 2       | 2   | 5             | 5   | 5   | 5    | 5   | 19                   | 21    | 7     | 19           | 28    | 70.4                | 77.8 | 58.3 | 70.4   | 32.2 | 25      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| AVERAGE       |                |     |       |                |     |       |                |     |       |                         |     |     |         |     |               |     |     |      |     |                      |       |       |              |       | 60.2                | 58.7 | 47.7 | 59.3   | 32.4 |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

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**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGG**

|         |  |              |        |
|---------|--|--------------|--------|
| SUBJECT | OPERATIONAL AMPLIFIERS AND LINEAR IC'S | SUBJECT CODE | 17EE46 |
|---------|--|--------------|--------|

**COURSE OUTCOME**

|     |  |
|-----|--|
| CO1 | Describe the characteristics of ideal and practical operational amplifier.                 |
| CO2 | Design filters and signal generators using linear ICs.                                     |
| CO3 | Demonstrate the application of Linear ICs as comparators and rectifiers.                   |
| CO4 | Analyze voltage regulators for given specification using op-amp and IC voltage regulators. |
| CO5 | Summarize the basics of PLL and Timer.   |

**PROGRAM OUTCOMES**

- PO1 Engineering knowledge: An ability to apply knowledge of mathematics (including probability, statistics and discrete mathematics), science, and engineering for solving Engineering problems and Knowledge.
- PO2 Problem analysis: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- PO3 Design / development of solutions: An ability to design solution for engineering problems and design system components or process to meet desired specifications and needs.
- PO4 Conduct investigations of complex Problem: An ability to identify, formulate, comprehend, analyze, design synthesis of the information to solve complex engineering problems and provide valid conclusions.
- PO5 Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modeling to complex engineering activities.
- PO6 The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal, and cultural issues.
- PO7 Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- PO8 Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- PO9 Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- PO10 Communication: Communicate effectively on complex engineering activities with the engineering community and with the society.
- PO11 Project management and finance: An ability to use the modern engineering tools, techniques, skills and management principles to do work as a member and leader in a team, to manage projects in multidisciplinary environments.
- PO12 Life-long learning: A recognition of the need for, and an ability to engage in, to resolve contemporary issues and acquire lifelong learning.

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|                            |  |          |     |     |               |         |              |     |         |        |      |      |
|----------------------------|--|----------|-----|-----|---------------|---------|--------------|-----|---------|--------|------|------|
| COLLEGE                    | SHRIDEVI INSTITUTE OF ENGINEERING & TECHNOLOGY |          |     |     |               |         |              |     |         |        |      |      |
| FACULTY NAME               |  | NAYANA   |     |     |               |         |              |     |         |        |      |      |
| BRANCH                     |  | EEE      |     |     | ACADEMIC YEAR |         |              |     | 2018-19 |        |      |      |
| COURSE                     | B.E  | SEMESTER |     |     | IV            | SECTION |              |     | EEE     |        |      |      |
| SUBJECT                    | OPERATIONAL AMPLIFIERS AND LINEAR IC'S         |          |     |     |               |         | SUBJECT CODE |     |         | 17EE46 |      |      |
| CO & PO MAPPING            |  |          |     |     |               |         |              |     |         |        |      |      |
|                            | PO1  | PO2      | PO3 | PO4 | PO5           | PO6     | PO7          | PO8 | PO9     | PO10   | PO11 | PO12 |
|                            | 1  | 2        | 3   | 4   | 5             | 6       | 7            | 8   | 9       | 10     | 11   | 12   |
| CO1                        | 3  |          |     |     | 2             | 2       |              |     |         |        |      | 2    |
| CO2                        | 3  |          |     |     | 2             | 2       |              |     |         |        |      | 2    |
| CO3                        | 3  |          |     |     | 2             | 2       |              |     |         |        |      | 2    |
| CO4                        | 3  |          |     |     | 2             | 2       |              |     |         |        |      | 2    |
| CO5                        | 3  |          |     |     | 2             | 2       |              |     |         |        |      | 2    |
| AVERAGE                    | 3  |          |     |     | 2             | 2       |              |     |         |        |      | 2    |
| OVERALL MAPPING OF SUBJECT |  |          |     |     |               |         |              |     |         |        |      | 2.02 |

#### CO AND PO ATTAINMENT

|                        | CO%   | PO1  | PO2 | PO3 | PO4 | PO5  | PO6  | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
|------------------------|-------|------|-----|-----|-----|------|------|-----|-----|-----|------|------|------|
| CO1                    | 52.4  | 1.57 |     |     |     | 1.04 | 1.04 |     |     |     |      |      | 1.04 |
| CO2                    | 50.8  | 1.52 |     |     |     | 1.01 | 1.01 |     |     |     |      |      | 1.01 |
| CO3                    | 50.8  | 1.52 |     |     |     | 1.01 | 1.01 |     |     |     |      |      | 1.01 |
| CO4                    | 51.5  | 1.54 |     |     |     | 1.03 | 1.03 |     |     |     |      |      | 1.03 |
| CO5                    | 27.3  | 0.81 |     |     |     | 0.54 | 0.54 |     |     |     |      |      | 0.54 |
| AVERAGE                | 46.56 | 1.39 |     |     |     | 0.92 | 0.92 |     |     |     |      |      | 0.92 |
| FINAL ATTAINMENT LEVEL |       |      |     |     |     |      |      |     |     |     |      |      | 1.03 |

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57

**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGG**

|         |                |              |        |
|---------|----------------|--------------|--------|
| SUBJECT | CONTROL SYSTEM | SUBJECT CODE | 15EE61 |
|---------|----------------|--------------|--------|

**COURSE OUTCOME**

|     |   |
|-----|---|
| CO1 | Use gauges and transducers to measure pressure, direction and distance.   |
| CO2 | Discuss the use of light transducers and other devices used for the measurement of electromagnetic Radiations         |
| CO3 | Explain the working of different temperature sensing devices.   |
| CO4 | Discuss the principles and applications of audio electrical sensors and transducers used for the measurement of sound |
| CO5 | Discuss the use of sensors for the measurement of mass, volume and environmental quantities                           |

**PROGRAM OUTCOMES**

- PO1 Engineering knowledge: An ability to apply knowledge of mathematics (including probability, statistics and discrete mathematics), science, and engineering for solving Engineering problems and Knowledge.
- PO2 Problem analysis: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- PO3 Design / development of solutions: An ability to design solution for engineering problems and design system components or process to meet desired specifications and needs.
- PO4 Conduct investigations of complex Problem: An ability to identify, formulate, comprehend, analyze, design synthesis of the information to solve complex engineering problems and provide valid conclusions.
- PO5 Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modeling to complex engineering activities.
- PO6 The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal, and cultural issues.
- PO7 Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- PO8 Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- PO9 Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- PO10 Communication: Communicate effectively on complex engineering activities with the engineering community and with the society.
- PO11 Project management and finance: An ability to use the modern engineering tools, techniques, skills and management principles to do work as a member and leader in a team, to manage projects in multidisciplinary environments.
- PO12 Life-long learning: A recognition of the need for, and an ability to engage in, to resolve contemporary issues and acquire lifelong learning.

|                            |  |          |     |               |              |     |     |         |     |      |      |      |
|----------------------------|--|----------|-----|---------------|--------------|-----|-----|---------|-----|------|------|------|
| COLLEGE                    | SHRIDEVI INSTITUTE OF ENGINEERING & TECHNOLOGY |          |     |               |              |     |     |         |     |      |      |      |
| FACULTY NAME               |  | SOWMYA   |     |               |              |     |     |         |     |      |      |      |
| BRANCH                     |  | EEE      |     | ACADEMIC YEAR |              |     |     | 2018-19 |     |      |      |      |
| COURSE                     | B.E.   | SEMESTER |     | VI            | SECTION      |     |     | EEE     |     |      |      |      |
| SUBJECT                    | CONTROL SYSTEM                                 |          |     |               | SUBJECT CODE |     |     | 15EE61  |     |      |      |      |
| CO & PO MAPPING            |  |          |     |               |              |     |     |         |     |      |      |      |
|                            | PO1  | PO2      | PO3 | PO4           | PO5          | PO6 | PO7 | PO8     | PO9 | PO10 | PO11 | PO12 |
|                            | 1  | 2        | 3   | 4             | 5            | 6   | 7   | 8       | 9   | 10   | 11   | 12   |
| CO1                        | 2  | 3        | 2   | 2             |              |     | 1   | 1       |     |      | 1    | 1    |
| CO2                        | 2  | 3        | 2   | 2             | 1            |     | 1   | 1       |     |      | 1    | 1    |
| CO3                        | 3  | 3        | 2   | 2             |              | 1   |     | 1       |     |      |      | 1    |
| CO4                        | 2  | 3        | 2   | 2             |              |     | 1   | 1       |     |      | 1    | 1    |
| CO5                        | 3  | 2        | 3   | 3             |              | 1   |     | 1       |     |      | 1    | 1    |
| AVERAGE                    | 2.4  | 2.8      | 2.2 | 2.2           | 1            | 1   | 1   | 1       |     |      | 1    | 1    |
| OVERALL MAPPING OF SUBJECT |  |          |     |               |              |     |     |         |     |      |      | 1.56 |

#### CO AND PO ATTAINMENT

|                        | CO%   | PO1  | PO2  | PO3  | PO4  | PO5  | PO6  | PO7  | PO8  | PO9 | PO10 | PO11 | PO12 |
|------------------------|-------|------|------|------|------|------|------|------|------|-----|------|------|------|
| CO1                    | 38.66 | 0.93 | 1.08 | 0.85 | 0.85 |      |      | 0.38 | 0.38 |     |      | 0.38 | 0.38 |
| CO2                    | 34.17 | 0.82 | 0.95 | 0.75 | 0.75 | 0.34 |      | 0.34 | 0.34 |     |      | 0.34 | 0.34 |
| CO3                    | 38.66 | 0.93 | 1.08 | 0.85 | 0.85 |      | 0.38 |      | 0.38 |     |      |      | 0.38 |
| CO4                    | 38.66 | 0.93 | 1.08 | 0.85 | 0.85 |      |      | 0.38 | 0.38 |     |      | 0.38 | 0.38 |
| CO5                    | 38.66 | 0.93 | 1.08 | 0.85 | 0.85 |      | 0.38 |      | 0.38 |     |      | 0.38 | 0.38 |
| AVERAGE                | 37.76 | 0.91 | 1.05 | 0.83 | 0.83 | 0.34 | 0.38 | 0.36 | 0.37 |     |      | 0.37 | 0.37 |
| FINAL ATTAINMENT LEVEL |       |      |      |      |      |      |      |      |      |     |      |      | 0.58 |

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**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGG**

|         |                         |              |        |
|---------|-------------------------|--------------|--------|
| SUBJECT | POWER SYSTEM ANALYSIS I | SUBJECT CODE | 15EE62 |
|---------|-------------------------|--------------|--------|

**COURSE OUTCOME**

|     |   |
|-----|---|
| CO1 | Model the power system components & construct per unit impedance diagram of power system.                 |
| CO2 | Analyze three phase symmetrical faults on power system.   |
| CO3 | Compute unbalanced phasor in terms of sequence components and vice versa, also develop sequence networks. |
| CO4 | Analyze various unsymmetrical faults on power system.   |
| CO5 | Examine dynamics of synchronous machine and determine the power system stability                          |

**PROGRAM OUTCOMES**

- PO1 Engineering knowledge: An ability to apply knowledge of mathematics (including probability, statistics and discrete mathematics), science, and engineering for solving Engineering problems and Knowledge.
- PO2 Problem analysis: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- PO3 Design / development of solutions: An ability to design solution for engineering problems and design system components or process to meet desired specifications and needs.
- PO4 Conduct investigations of complex Problem: An ability to identify, formulate, comprehend, analyze, design synthesis of the information to solve complex engineering problems and provide valid conclusions.
- PO5 Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modeling to complex engineering activities.
- PO6 The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal, and cultural issues.
- PO7 Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- PO8 Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- PO9 Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- PO10 Communication: Communicate effectively on complex engineering activities with the engineering community and with the society.
- PO11 Project management and finance: An ability to use the modern engineering tools, techniques, skills and management principles to do work as a member and leader in a team, to manage projects in multidisciplinary environments.
- PO12 Life-long learning: A recognition of the need for, and an ability to engage in, to resolve contemporary issues and acquire lifelong learning.

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|                            |  |          |     |               |     |         |              |         |     |        |      |      |
|----------------------------|--|----------|-----|---------------|-----|---------|--------------|---------|-----|--------|------|------|
| COLLEGE                    | SHRIDEVI INSTITUTE OF ENGINEERING & TECHNOLOGY |          |     |               |     |         |              |         |     |        |      |      |
| FACULTY NAME               | UMA BAI  |          |     |               |     |         |              |         |     |        |      |      |
| BRANCH                     | EEE  |          |     | ACADEMIC YEAR |     |         |              | 2018-19 |     |        |      |      |
| COURSE                     | B.E  | SEMESTER |     |               | VI  | SECTION |              |         | EEE |        |      |      |
| SUBJECT                    | POWER SYSTEM ANALYSIS 1                        |          |     |               |     |         | SUBJECT CODE |         |     | 15EE62 |      |      |
| CO & PO MAPPING            |  |          |     |               |     |         |              |         |     |        |      |      |
|                            | PO1  | PO2      | PO3 | PO4           | PO5 | PO6     | PO7          | PO8     | PO9 | PO10   | PO11 | PO12 |
|                            | 1  | 2        | 3   | 4             | 5   | 6       | 7            | 8       | 9   | 10     | 11   | 12   |
| CO1                        | 3  | 3        |     |               |     |         |              |         |     |        |      |      |
| CO2                        | 3  | 3        |     |               |     |         |              |         |     |        |      |      |
| CO3                        | 2  | 3        |     |               |     |         |              |         |     |        |      |      |
| CO4                        | 2  | 3        |     |               |     |         |              |         |     |        |      |      |
| CO5                        | 2.5  | 3        |     | 3             |     |         |              |         |     |        |      | 2    |
| AVERAGE                    | 2.5  | 3        |     | 3             |     |         |              |         |     |        |      | 2    |
| OVERALL MAPPING OF SUBJECT |  |          |     |               |     |         |              |         |     |        |      | 2.62 |

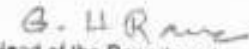
#### CO AND PO ATTAINMENT

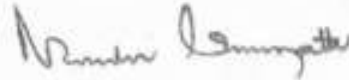
|                        | CO%   | PO1  | PO2  | PO3 | PO4  | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
|------------------------|-------|------|------|-----|------|-----|-----|-----|-----|-----|------|------|------|
| CO1                    | 36.17 | 0.90 | 1.08 |     |      |     |     |     |     |     |      |      |      |
| CO2                    | 31.27 | 0.78 | 0.93 |     |      |     |     |     |     |     |      |      |      |
| CO3                    | 36.40 | 0.91 | 1.09 |     |      |     |     |     |     |     |      |      |      |
| CO4                    | 36.40 | 0.91 | 1.09 |     |      |     |     |     |     |     |      |      |      |
| CO5                    | 36.40 | 0.91 | 1.09 |     | 1.09 |     |     |     |     |     |      |      | 0.72 |
| AVERAGE                | 35.32 | 0.88 | 1.05 |     | 1.09 |     |     |     |     |     |      |      | 0.72 |
| FINAL ATTAINMENT LEVEL |       |      |      |     |      |     |     |     |     |     |      |      | 0.93 |

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| STAFF NAME (HARBA) |                 |     |       |                 |     |                |                   |     |       |                         |                           |     |     |     |                |              |        |     |     |                      |          |                    |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
|--------------------|-----------------|-----|-------|-----------------|-----|----------------|-------------------|-----|-------|-------------------------|---------------------------|-----|-----|-----|----------------|--------------|--------|-----|-----|----------------------|----------|--------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Academic year      | 2015-19         |     |       | SEM             | 6   | Total strength |                   |     | 13    | Subject                 | POWER SYSTEM ANALYSIS - I |     |     |     |                | Subject Code | ISEES2 |     |     |                      |          | % of individual CO |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| USN                | IA TEST I (15M) |     |       | IA TEST II (15) |     |                | IA TEST III (15M) |     |       | ASSIGNMENT / QUIZ (5 M) |                           |     |     |     | SEE MARKS (80) |              |        |     |     | Total COs ATTAINMENT |          |                    |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
|                    | CO1             | CO2 | TOTAL | CO1             | CO2 | TOTAL          | CO1               | CO2 | TOTAL | CO1                     | CO2                       | CO3 | CO4 | CO5 | CO1-12         | CO1          | CO2    | CO3 | CO4 | CO5                  | CO1-26.6 | CO1-31.7           | CO1-36.6 | CO1-26.6 | CO1-26.6 | CO1      | CO2      | CO3      | CO4      | CO5      |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| DV14EE001          | 1.1             | 1.1 | 2.6   | 1.1             | 1.1 | 2.6            | 1.1               | 1.1 | 2.6   | 1                       | 1                         | 1   | 1   | 1   | 9.2            | 9.2          | 9.2    | 9.2 | 9.2 | 9.2                  | 11.3     | 10.2               | 11.5     | 11.5     | 11.5     | 43.23308 | 10.26706 | 41.23308 | 43.23308 | 43.23308 |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| DV14EE004          | 1.6             | 1.6 | 3.2   | 1.6             | 1.6 | 3.2            | 1.6               | 1.6 | 3.2   | 1                       | 1                         | 1   | 1   | 1   | 6.6            | 6.6          | 6.6    | 6.6 | 6.6 | 6.6                  | 9.2      | 10.2               | 9.2      | 9.2      | 9.2      | 34.58647 | 10.26706 | 34.58647 | 34.58647 | 34.58647 |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| DV14EE010          | 1.1             | 1.1 | 2.2   | 1.1             | 1.1 | 2.2            | 1.1               | 1.1 | 2.2   | 1                       | 1                         | 1   | 1   | 1   | 6              | 6            | 6      | 6   | 6   | 6                    | 8.1      | 11.8               | 8.1      | 8.1      | 8.1      | 30.45113 | 15.01484 | 30.45113 | 30.45113 | 30.45113 |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| DV15EE001          | 1.8             | 1.8 | 3.6   | 1.8             | 1.8 | 3.6            | 1.8               | 1.8 | 3.6   | 1                       | 1                         | 1   | 1   | 1   | 8.6            | 8.6          | 8.6    | 8.6 | 8.6 | 8.6                  | 11.4     | 11.4               | 11.4     | 11.4     | 11.4     | 42.85714 | 10.76261 | 42.85714 | 42.85714 | 42.85714 |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| DV15EE004          | 1.7             | 1.7 | 3.4   | 1.7             | 1.7 | 3.4            | 1.7               | 1.7 | 3.4   | 1                       | 1                         | 1   | 1   | 1   | 8.8            | 8.8          | 8.8    | 8.8 | 8.8 | 8.8                  | 11.1     | 12.6               | 11.9     | 11.9     | 11.9     | 41.72917 | 17.18672 | 44.73684 | 44.73684 | 44.73684 |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| DV15EE010          | 1.6             | 1.6 | 3.2   | 1.6             | 1.6 | 3.2            | 1.6               | 1.6 | 3.2   | 1                       | 1                         | 1   | 1   | 1   | 7.4            | 7.4          | 7.4    | 7.4 | 7.4 | 7.4                  | 10       | 10                 | 10       | 10       | 10       | 37.59398 | 29.08212 | 37.59398 | 37.59398 | 37.59398 |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| DV15EE011          | 1.3             | 1.3 | 2.6   | 1.3             | 1.3 | 2.6            | 1.3               | 1.3 | 2.6   | 1                       | 1                         | 1   | 1   | 1   | 5.6            | 5.6          | 5.6    | 5.6 | 5.6 | 5.6                  | 7.9      | 10.4               | 7.9      | 7.9      | 7.9      | 29.69925 | 10.86951 | 29.69925 | 29.69925 | 29.69925 |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| DV15EE014          | 1.6             | 1.6 | 3.2   | 1.6             | 1.6 | 3.2            | 1.6               | 1.6 | 3.2   | 1                       | 1                         | 1   | 1   | 1   | 6.8            | 6.8          | 6.8    | 6.8 | 6.8 | 6.8                  | 9.4      | 10.2               | 9.4      | 9.4      | 9.4      | 35.13835 | 10.26706 | 35.13835 | 35.13835 | 35.13835 |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| DV15EE016          | 1.5             | 1.5 | 3     | 1.5             | 1.5 | 3              | 1.5               | 1.5 | 3     | 1                       | 1                         | 1   | 1   | 1   | 6              | 6            | 6      | 6   | 6   | 6                    | 8.5      | 12.6               | 8.5      | 8.5      | 8.5      | 31.95489 | 17.18672 | 31.95489 | 31.95489 | 31.95489 |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| DV15EE022          | 2               | 2   | 4     | 2               | 2   | 4              | 2                 | 2   | 4     | 1                       | 1                         | 1   | 1   | 1   | 8.6            | 8.6          | 8.6    | 8.6 | 8.6 | 8.6                  | 11.6     | 10.6               | 11.6     | 11.6     | 11.6     | 43.60902 | 11.45403 | 43.60902 | 43.60902 | 43.60902 |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| DV15EE025          | 1.3             | 1.3 | 2.6   | 1.3             | 1.3 | 2.6            | 1.3               | 1.3 | 2.6   | 1                       | 1                         | 1   | 1   | 1   | 5.6            | 5.6          | 5.6    | 5.6 | 5.6 | 5.6                  | 7.9      | 9.4                | 7.9      | 7.9      | 7.9      | 29.69925 | 17.89118 | 29.69925 | 29.69925 | 29.69925 |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| DV15EE030          | 1.1             | 1.1 | 2.2   | 1.1             | 1.1 | 2.2            | 1.1               | 1.1 | 2.2   | 1                       | 1                         | 1   | 1   | 1   | 5.8            | 5.8          | 5.8    | 5.8 | 5.8 | 5.8                  | 7.9      | 10.8               | 7.9      | 7.9      | 7.9      | 29.69925 | 12.04748 | 29.69925 | 29.69925 | 29.69925 |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| DV15EE039          | 2               | 2   | 4     | 2               | 2   | 4              | 2                 | 2   | 4     | 1                       | 1                         | 1   | 1   | 1   | 7.6            | 7.6          | 7.6    | 7.6 | 7.6 | 7.6                  | 10.6     | 5                  | 10.6     | 10.6     | 10.6     | 39.84962 | 14.8168  | 39.84962 | 39.84962 | 39.84962 |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
|                    |                 |     |       |                 |     |                |                   |     |       |                         |                           |     |     |     |                |              |        |     |     |                      | 9.623077 | 10.53886           | 9.689615 | 9.689615 | 9.689615 | 9.689615 | 10.17098 | 11.2718  | 10.40811 | 10.40811 | 10.40811 | 10.40811 | 10.40811 | 10.40811 | 10.40811 | 10.40811 | 10.40811 | 10.40811 | 10.40811 | 10.40811 | 10.40811 | 10.40811 | 10.40811 | 10.40811 | 10.40811 | 10.40811 | 10.40811 | 10.40811 | 10.40811 | 10.40811 | 10.40811 | 10.40811 |

  
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**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGG**

|         |                           |              |        |
|---------|---------------------------|--------------|--------|
| SUBJECT | DIGITAL SIGNAL PROCESSING | SUBJECT CODE | 15EE63 |
|---------|---------------------------|--------------|--------|

**COURSE OUTCOME**

|     |   |
|-----|---|
| CO1 | Apply DFT and IDFT to perform linear filtering techniques on given sequences to determine the output  |
| CO2 | Apply fast and efficient algorithms for computing DFT and inverse DFT of a given sequence   |
| CO3 | Design and realize infinite impulse response Butterworth and Chebyshev digital filters using impulse invariant and bilinear transformation techniques |
| CO4 | Develop a digital IIR filter by direct, cascade, parallel, ladder and FIR filter by direct, cascade and linear phase methods of realization.          |
| CO5 | Design and realize FIR filters by use of window function and frequency sampling method  |

**PROGRAM OUTCOMES**

- P01** Engineering knowledge: An ability to apply knowledge of mathematics (including probability, statistics and discrete mathematics), science, and engineering for solving Engineering problems and Knowledge.
- P02** Problem analysis: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- P03** Design / development of solutions: An ability to design solution for engineering problems and design system components or process to meet desired specifications and needs.
- P04** Conduct investigations of complex Problem: An ability to identify, formulate, comprehend, analyze, design synthesis of the information to solve complex engineering problems and provide valid conclusions.
- P05** Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modeling to complex engineering activities.
- P06** The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal, and cultural issues.
- P07** Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- P08** Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- P09** Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- P010** Communication: Communicate effectively on complex engineering activities with the engineering community and with the society.
- P011** Project management and finance: An ability to use the modern engineering tools, techniques, skills and management principles to do work as a member and leader in a team, to manage projects in multidisciplinary environments.
- P012** Life-long learning: A recognition of the need for, and an ability to engage in, to resolve contemporary issues and acquire lifelong learning.

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|                            |  |          |     |               |     |              |         |     |        |      |      |      |
|----------------------------|--|----------|-----|---------------|-----|--------------|---------|-----|--------|------|------|------|
| COLLEGE                    | SHRIDEVI INSTITUTE OF ENGINEERING & TECHNOLOGY |          |     |               |     |              |         |     |        |      |      |      |
| FACULTY NAME               | G H RAVIKUMAR                                  |          |     |               |     |              |         |     |        |      |      |      |
| BRANCH                     | EEE  |          |     | ACADEMIC YEAR |     |              | 2018-19 |     |        |      |      |      |
| COURSE                     | B.E  | SEMESTER |     |               | VI  | SECTION      |         |     | EEE    |      |      |      |
| SUBJECT                    | DIGITAL SIGNAL PROCESSING                      |          |     |               |     | SUBJECT CODE |         |     | 15EE63 |      |      |      |
| CO & PO MAPPING            |  |          |     |               |     |              |         |     |        |      |      |      |
|                            | PO1  | PO2      | PO3 | PO4           | PO5 | PO6          | PO7     | PO8 | PO9    | PO10 | PO11 | PO12 |
|                            | 1  | 2        | 3   | 4             | 5   | 6            | 7       | 8   | 9      | 10   | 11   | 12   |
| CO1                        | 2  | 3        |     |               |     |              |         |     |        |      |      |      |
| CO2                        | 3  | 2        | 2   |               |     |              |         |     |        |      |      |      |
| CO3                        | 3  | 2        | 2   |               |     |              |         |     |        |      |      |      |
| CO4                        | 3  | 2        | 2   |               |     |              |         |     |        |      |      |      |
| CO5                        | 2  | 3        |     |               |     |              |         |     |        |      |      |      |
| AVERAGE                    | 2.6  | 2.4      | 2   |               |     |              |         |     |        |      |      |      |
| OVERALL MAPPING OF SUBJECT |  |          |     |               |     |              |         |     |        |      |      | 2.33 |

#### CO AND PO ATTAINMENT

|                        | CO%   | PO1  | PO2  | PO3  | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
|------------------------|-------|------|------|------|-----|-----|-----|-----|-----|-----|------|------|------|
| CO1                    | 36.98 | 0.96 | 0.88 |      |     |     |     |     |     |     |      |      |      |
| CO2                    | 34.28 | 0.89 | 0.82 | 0.68 |     |     |     |     |     |     |      |      |      |
| CO3                    | 36.98 | 0.96 | 0.88 | 0.73 |     |     |     |     |     |     |      |      |      |
| CO4                    | 36.98 | 0.96 | 0.88 | 0.73 |     |     |     |     |     |     |      |      |      |
| CO5                    | 36.98 | 0.96 | 0.88 |      |     |     |     |     |     |     |      |      |      |
| AVERAGE                | 36.44 | 0.95 | 0.86 | 0.71 |     |     |     |     |     |     |      |      |      |
| FINAL ATTAINMENT LEVEL |       |      |      |      |     |     |     |     |     |     |      |      | 0.84 |

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**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGG**

|                |                                  |                     |               |
|----------------|----------------------------------|---------------------|---------------|
| <b>SUBJECT</b> | <b>ELECTRICAL MACHINE DESIGN</b> | <b>SUBJECT CODE</b> | <b>15EE64</b> |
|----------------|----------------------------------|---------------------|---------------|

**COURSE OUTCOME**

|            |  |
|------------|--|
| <b>CO1</b> | Identify and list, limitations, modern trends in design, manufacturing of electrical machines and properties of materials used in the electrical machines.   |
| <b>CO2</b> | Derive the output equation of DC machine, discuss selection of specific loadings and magnetic circuits of DC machines, design the field windings of DC machine, and design stator and rotor circuits of a DC machine   |
| <b>CO3</b> | Derive the output equations of transformer, discuss selection of specific loadings, estimate the number of cooling tubes, no load current and leakage reactance of core type transformer   |
| <b>CO4</b> | Develop the output equation of induction motor, discuss selection of specific loadings and magnetic circuits of induction motor, design stator and rotor circuits of a induction motor.  |
| <b>CO5</b> | Formulate the output equation of alternator, design the field windings of Synchronous machine, discuss short circuit ratio and its effects on performance of synchronous machines, design salient pole and non-salient pole alternators for given specifications |

**PROGRAM OUTCOMES**

- PO1** Engineering knowledge: An ability to apply knowledge of mathematics (including probability, statistics and discrete mathematics), science, and engineering for solving Engineering problems and Knowledge.
- PO2** Problem analysis: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- PO3** Design / development of solutions: An ability to design solution for engineering problems and design system components or process to meet desired specifications and needs.
- PO4** Conduct investigations of complex Problem: An ability to identify, formulate, comprehend, analyze, design synthesis of the information to solve complex engineering problems and provide valid conclusions.
- PO5** Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modeling to complex engineering activities.
- PO6** The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal, and cultural issues.
- PO7** Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- PO8** Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- PO9** Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- PO10** Communication: Communicate effectively on complex engineering activities with the engineering community and with the society.
- PO11** Project management and finance: An ability to use the modern engineering tools, techniques, skills and management principles to do work as a member and leader in a team, to manage projects in multidisciplinary environments.
- PO12** Life-long learning: A recognition of the need for, and an ability to engage in, to resolve contemporary issues and acquire lifelong learning.

|                            |  |          |     |               |     |              |     |         |        |      |      |      |
|----------------------------|--|----------|-----|---------------|-----|--------------|-----|---------|--------|------|------|------|
| COLLEGE                    | SHRIDEVI INSTITUTE OF ENGINEERING & TECHNOLOGY |          |     |               |     |              |     |         |        |      |      |      |
| FACULTY NAME               | G H RAVIKUMAR                                  |          |     |               |     |              |     |         |        |      |      |      |
| BRANCH                     | EEE  |          |     | ACADEMIC YEAR |     |              |     | 2018-19 |        |      |      |      |
| COURSE                     | B.E  | SEMESTER |     |               | VI  | SECTION      |     |         | EEE    |      |      |      |
| SUBJECT                    | ELECTRICAL MACHINE DESIGN                      |          |     |               |     | SUBJECT CODE |     |         | 15EE64 |      |      |      |
| CO & PO MAPPING            |  |          |     |               |     |              |     |         |        |      |      |      |
|                            | PO1  | PO2      | PO3 | PO4           | PO5 | PO6          | PO7 | PO8     | PO9    | PO10 | PO11 | PO12 |
|                            | 1  | 2        | 3   | 4             | 5   | 6            | 7   | 8       | 9      | 10   | 11   | 12   |
| CO1                        | 2  |          | 2   |               |     | 2            | 2   |         |        |      |      |      |
| CO2                        | 1  |          | 2   |               |     |              | 2   |         |        |      |      |      |
| CO3                        | 1  | 3        | 3   | 3             |     |              |     |         |        |      | 2    |      |
| CO4                        | 1  | 3        | 3   |               |     |              |     |         |        |      |      |      |
| CO5                        | 2  | 3        | 3   | 3             |     |              |     |         |        |      |      |      |
| AVERAGE                    | 1.4  | 3        | 2.6 | 3             |     | 2            | 2   |         |        |      | 2    |      |
| OVERALL MAPPING OF SUBJECT |  |          |     |               |     |              |     |         |        |      |      | 2.21 |

#### CO AND PO ATTAINMENT

|                        | CO%   | PO1  | PO2  | PO3  | PO4  | PO5 | PO6  | PO7  | PO8 | PO9 | PO10 | PO11 | PO12 |
|------------------------|-------|------|------|------|------|-----|------|------|-----|-----|------|------|------|
| CO1                    | 45.28 | 0.63 |      | 1.17 |      |     | 0.91 | 0.91 |     |     |      |      |      |
| CO2                    | 40.53 | 0.56 | 1.22 | 1.05 |      |     |      | 0.81 |     |     |      |      |      |
| CO3                    | 45.28 | 0.63 | 1.36 | 1.17 | 1.35 |     |      |      |     |     |      | 0.91 |      |
| CO4                    | 45.28 | 0.63 | 1.36 | 1.17 |      |     |      |      |     |     |      |      |      |
| CO5                    | 45.28 | 0.63 | 1.36 | 1.17 | 1.35 |     |      |      |     |     |      |      |      |
| AVERAGE                | 44.33 | 0.62 | 1.33 | 1.14 | 1.35 |     | 0.91 | 0.86 |     |     |      | 0.91 |      |
| FINAL ATTAINMENT LEVEL |       |      |      |      |      |     |      |      |     |     |      |      | 1.01 |

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STAFF NAME: G.H RAVI KUMAR

| Academic year | 2015-19       |     |       | SEM           |     |       | 4              |     |       | Total strength         |     |     | U3 | Subject       |      |        | ELECTRICAL MACHINE DESIGN |      |      | Subject Code |          |          | ISEE24             |          |          |          |          |          |          |     |  |
|---------------|---------------|-----|-------|---------------|-----|-------|----------------|-----|-------|------------------------|-----|-----|----|---------------|------|--------|---------------------------|------|------|--------------|----------|----------|--------------------|----------|----------|----------|----------|----------|----------|-----|--|
|               | IA TEST (15M) |     |       | IA TEST 2(15) |     |       | IA TEST 3(15M) |     |       | ASSIGNMENT / QUIZ(15M) |     |     |    | SEE MARKS(50) |      |        | Total Cae ATTAINMENT      |      |      |              |          |          | % of individual CO |          |          |          |          |          |          |     |  |
|               | CO1           | CO2 | TOTAL | CO1           | CO2 | TOTAL | CO1            | CO2 | TOTAL | CO1                    | CO2 | CO3 |    | CO4           | CO5  | CO1-11 | CO2                       | CO3  | CO4  | CO5          | CO1-26.6 | CO2-31.7 | CO3-26.6           | CO4-26.6 | CO5-26.6 | CO1      | CO2      | CO3      | CO4      | CO5 |  |
|               | CO1           | CO2 | TOTAL | CO1           | CO2 | TOTAL | CO1            | CO2 | TOTAL | CO1                    | CO2 | CO3 |    | CO4           | CO5  | CO1-11 | CO2                       | CO3  | CO4  | CO5          | CO1-26.6 | CO2-31.7 | CO3-26.6           | CO4-26.6 | CO5-26.6 | CO1      | CO2      | CO3      | CO4      | CO5 |  |
| 15V14E001     | 1.1           | 1.1 | 2.2   | 1.1           | 1.1 | 2.2   | 1.1            | 1.1 | 2.2   | 1                      | 1   | 1   | 1  | 1             | 8    | 8      | 8                         | 8    | 8    | 20.3         | 21.2     | 10.1     | 10.1               | 10.1     | 17.9092  | 33.23442 | 17.9092  | 17.9092  | 17.9092  |     |  |
| 15V14E004     | 2.1           | 2.1 | 4.2   | 2.1           | 2.1 | 4.2   | 2.1            | 2.1 | 4.2   | 1                      | 1   | 1   | 1  | 1             | 12   | 12     | 12                        | 12   | 12   | 25.3         | 17.2     | 15.1     | 15.1               | 15.1     | 56.76692 | 51.03858 | 56.76692 | 56.76692 | 56.76692 |     |  |
| 15V14E010     | 1.1           | 1.1 | 2.2   | 1.1           | 1.1 | 2.2   | 1.1            | 1.1 | 2.2   | 1                      | 1   | 1   | 1  | 1             | 0    | 0      | 0                         | 0    | 0    | 2.1          | 1.6      | 2.1      | 2.1                | 2.1      | 8.646617 | 10.68290 | 8.646617 | 8.646617 | 8.646617 |     |  |
| 15V15E001     | 1.5           | 1.5 | 3     | 1.5           | 1.5 | 3     | 1.5            | 1.5 | 3     | 1                      | 1   | 1   | 1  | 1             | 8.4  | 8.4    | 8.4                       | 8.4  | 8.4  | 20.9         | 12.4     | 10.9     | 10.9               | 10.9     | 40.97744 | 36.79525 | 40.97744 | 40.97744 | 40.97744 |     |  |
| 15V15E004     | 1.6           | 1.6 | 3.2   | 1.6           | 1.6 | 3.2   | 1.6            | 1.6 | 3.2   | 1                      | 1   | 1   | 1  | 1             | 10.8 | 10.8   | 10.8                      | 10.8 | 10.8 | 23.4         | 25       | 13.4     | 13.4               | 13.4     | 50.37594 | 44.51019 | 50.37594 | 50.37594 | 50.37594 |     |  |
| 15V15E010     | 1.8           | 1.8 | 3.6   | 1.8           | 1.8 | 3.6   | 1.8            | 1.8 | 3.6   | 1                      | 1   | 1   | 1  | 1             | 11.6 | 11.6   | 11.6                      | 11.6 | 11.6 | 14.4         | 16.2     | 14.4     | 14.4               | 14.4     | 54.13534 | 48.07122 | 54.13534 | 54.13534 | 54.13534 |     |  |
| 15V15E011     | 1.5           | 1.5 | 3     | 1.5           | 1.5 | 3     | 1.5            | 1.5 | 3     | 1                      | 1   | 1   | 1  | 1             | 6.8  | 6.8    | 6.8                       | 6.8  | 6.8  | 9.3          | 10.8     | 9.3      | 9.3                | 9.3      | 34.96241 | 32.04748 | 34.96241 | 34.96241 | 34.96241 |     |  |
| 15V15E014     | 1.6           | 1.6 | 3.2   | 1.6           | 1.6 | 3.2   | 1.6            | 1.6 | 3.2   | 1                      | 1   | 1   | 1  | 1             | 10.8 | 10.8   | 10.8                      | 10.8 | 10.8 | 23.4         | 25       | 13.4     | 13.4               | 13.4     | 50.37594 | 44.51019 | 50.37594 | 50.37594 | 50.37594 |     |  |
| 15V15E016     | 1.8           | 1.8 | 3.6   | 1.8           | 1.8 | 3.6   | 1.8            | 1.8 | 3.6   | 1                      | 1   | 1   | 1  | 1             | 9.8  | 9.8    | 9.8                       | 9.8  | 9.8  | 12.6         | 14.4     | 12.6     | 12.6               | 12.6     | 47.36842 | 42.72997 | 47.36842 | 47.36842 | 47.36842 |     |  |
| 15V15E022     | 2             | 2   | 4     | 2             | 2   | 4     | 2              | 2   | 4     | 1                      | 1   | 1   | 1  | 1             | 12.6 | 12.6   | 12.6                      | 12.6 | 12.6 | 15.6         | 17.6     | 15.6     | 15.6               | 15.6     | 58.64662 | 52.22512 | 58.64662 | 58.64662 | 58.64662 |     |  |
| 15V15E023     | 1.8           | 1.8 | 3.6   | 1.8           | 1.8 | 3.6   | 1.8            | 1.8 | 3.6   | 1                      | 1   | 1   | 1  | 1             | 8.2  | 8.2    | 8.2                       | 8.2  | 8.2  | 11           | 12.8     | 11       | 11                 | 11       | 41.35138 | 37.9822  | 41.35138 | 41.35138 | 41.35138 |     |  |
| 15V15E030     | 1.8           | 1.8 | 3.6   | 1.8           | 1.8 | 3.6   | 1.8            | 1.8 | 3.6   | 1                      | 1   | 1   | 1  | 1             | 12.2 | 12.2   | 12.2                      | 12.2 | 12.2 | 15           | 16.8     | 15       | 15                 | 15       | 54.39098 | 49.85161 | 54.39098 | 54.39098 | 54.39098 |     |  |
| 15V15E039     | 1.1           | 1.1 | 2.2   | 1.1           | 1.1 | 2.2   | 1.1            | 1.1 | 2.2   | 1                      | 1   | 1   | 1  | 1             | 11.4 | 11.4   | 11.4                      | 11.4 | 11.4 | 13.5         | 14.6     | 13.5     | 13.5               | 13.5     | 50.75188 | 43.12144 | 50.75188 | 50.75188 | 50.75188 |     |  |
|               |               |     |       |               |     |       |                |     |       |                        |     |     |    |               |      |        |                           |      |      | 12.04615     | 13.60154 | 12.04615 | 12.04615           | 12.04615 | 45.28629 | 40.51869 | 45.28629 | 45.28629 | 45.28629 |     |  |

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SHRIDEVI INSTITUTE OF ENGINEERING & TECHNOLOGY

SIRA ROAD, TUMKUR- 572 106.

**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGG**

|                |                                |                     |                |
|----------------|--------------------------------|---------------------|----------------|
| <b>SUBJECT</b> | <b>SENSORS AND TRANSDUCERS</b> | <b>SUBJECT CODE</b> | <b>15EE662</b> |
|----------------|--------------------------------|---------------------|----------------|

**COURSE OUTCOME**

|            |   |
|------------|---|
| <b>CO1</b> | Use gauges and transducers to measure pressure, direction and distance.   |
| <b>CO2</b> | Discuss the use of light transducers and other devices used for the measurement of electromagnetic Radiations         |
| <b>CO3</b> | Explain the working of different temperature sensing devices.   |
| <b>CO4</b> | Discuss the principles and applications of audio electrical sensors and transducers used for the measurement of sound |
| <b>CO5</b> | Discuss the use of sensors for the measurement of mass, volume and environmental quantities                           |

**PROGRAM OUTCOMES**

- PO1** Engineering knowledge: An ability to apply knowledge of mathematics (including probability, statistics and discrete mathematics), science, and engineering for solving Engineering problems and Knowledge.
- PO2** Problem analysis: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- PO3** Design / development of solutions: An ability to design solution for engineering problems and design system components or process to meet desired specifications and needs.
- PO4** Conduct investigations of complex Problem: An ability to identify, formulate, comprehend, analyze, design synthesis of the information to solve complex engineering problems and provide valid conclusions.
- PO5** Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modeling to complex engineering activities.
- PO6** The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal, and cultural issues.
- PO7** Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- PO8** Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- PO9** Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- PO10** Communication: Communicate effectively on complex engineering activities with the engineering community and with the society.
- PO11** Project management and finance: An ability to use the modern engineering tools, techniques, skills and management principles to do work as a member and leader in a team, to manage projects in multidisciplinary environments.
- PO12** Life-long learning: A recognition of the need for, and an ability to engage in, to resolve contemporary issues and acquire lifelong learning.

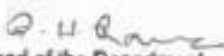
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*Principals*  
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|                            |  |          |     |               |     |         |              |         |     |         |      |      |  |
|----------------------------|--|----------|-----|---------------|-----|---------|--------------|---------|-----|---------|------|------|--|
| COLLEGE                    | SHRIDEVI INSTITUTE OF ENGINEERING & TECHNOLOGY |          |     |               |     |         |              |         |     |         |      |      |  |
| FACULTY NAME               | SHWETHA T M                                    |          |     |               |     |         |              |         |     |         |      |      |  |
| BRANCH                     | EEE  |          |     | ACADEMIC YEAR |     |         |              | 2018-19 |     |         |      |      |  |
| COURSE                     | B.E  | SEMESTER |     |               | VI  | SECTION |              |         | EEE |         |      |      |  |
| SUBJECT                    | SENSORS AND TRANSDUCERS                        |          |     |               |     |         | SUBJECT CODE |         |     | 15EE662 |      |      |  |
| CO & PO MAPPING            |  |          |     |               |     |         |              |         |     |         |      |      |  |
|                            | PO1  | PO2      | PO3 | PO4           | PO5 | PO6     | PO7          | PO8     | PO9 | PO10    | PO11 | PO12 |  |
|                            | 1  | 2        | 3   | 4             | 5   | 6       | 7            | 8       | 9   | 10      | 11   | 12   |  |
| CO1                        | 3  | 3        | 2   | 1             | 2   | 2       | 2            | 1       | 3   | 2       | 2    | 1    |  |
| CO2                        | 2  | 1        | 3   | 3             | 2   | 1       | 2            | 2       | 1   | 2       | 2    | 1    |  |
| CO3                        | 2  | 1        | 2   | 2             | 3   | 2       | 2            | 1       | 2   | 2       | 2    | 1    |  |
| CO4                        | 2  | 2        | 3   | 2             | 1   | 1       | 2            | 2       | 3   | 2       | 1    | 2    |  |
| CO5                        | 2  | 3        | 2   | 1             | 2   | 2       | 3            | 2       | 2   | 3       | 2    | 2    |  |
| AVERAGE                    | 2.2  | 2        | 2.4 | 1.8           | 2   | 1.6     | 2.2          | 1.6     | 2.2 | 2.2     | 1.8  | 1.8  |  |
| OVERALL MAPPING OF SUBJECT |  |          |     |               |     |         |              |         |     |         |      | 1.98 |  |

#### CO AND PO ATTAINMENT

|                        | CO%   | PO1  | PO2  | PO3  | PO4  | PO5  | PO6  | PO7  | PO8  | PO9  | PO10 | PO11 | PO12 |
|------------------------|-------|------|------|------|------|------|------|------|------|------|------|------|------|
| CO1                    | 43.26 | 0.95 | 0.86 | 1.03 | 0.77 | 0.86 | 0.69 | 0.95 | 0.69 | 0.95 | 0.95 | 0.77 | 0.77 |
| CO2                    | 38.98 | 0.85 | 0.77 | 0.93 | 0.70 | 0.77 | 0.62 | 0.85 | 0.62 | 0.85 | 0.85 | 0.70 | 0.70 |
| CO3                    | 43.26 | 0.95 | 0.86 | 1.03 | 0.77 | 0.86 | 0.69 | 0.95 | 0.69 | 0.95 | 0.95 | 0.77 | 0.77 |
| CO4                    | 43.26 | 0.95 | 0.86 | 1.03 | 0.77 | 0.86 | 0.69 | 0.95 | 0.69 | 0.95 | 0.95 | 0.77 | 0.77 |
| CO5                    | 43.26 | 0.95 | 0.86 | 1.03 | 0.77 | 0.86 | 0.69 | 0.95 | 0.69 | 0.95 | 0.95 | 0.77 | 0.77 |
| AVERAGE                | 42.40 | 0.93 | 0.84 | 1.01 | 0.75 | 0.84 | 0.67 | 0.93 | 0.67 | 0.93 | 0.93 | 0.75 | 0.75 |
| FINAL ATTAINMENT LEVEL |       |      |      |      |      |      |      |      |      |      |      |      | 0.83 |

  
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6 Sem 2018-19

**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGG**

|                |                              |                     |                |
|----------------|------------------------------|---------------------|----------------|
| <b>SUBJECT</b> | <b>SOLAR AND WIND ENERGY</b> | <b>SUBJECT CODE</b> | <b>15EE664</b> |
|----------------|------------------------------|---------------------|----------------|

**COURSE OUTCOME**

|            |   |
|------------|---|
| <b>CO1</b> | Discuss the importance of the role of renewable energy, the concept of energy storage and the principles of energy storage devices.   |
| <b>CO2</b> | Discuss the concept of solar radiation data and solar PV system fabrication, operation of solar cell, sizing and design of PV system. |
| <b>CO3</b> | Describe the process of harnessing solar energy and its applications in heating and cooling.  |
| <b>CO4</b> | Explain basic Principles of Wind Energy Conversion, collection of wind data, energy estimation and site selection.                    |
| <b>CO5</b> | Discuss the performance of Wind-machines, energy storage, applications of Wind Energy and environmental aspects.                      |

**PROGRAM OUTCOMES**

- PO1** Engineering knowledge: An ability to apply knowledge of mathematics (including probability, statistics and discrete mathematics), science, and engineering for solving Engineering problems and Knowledge.
- PO2** Problem analysis: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- PO3** Design / development of solutions: An ability to design solution for engineering problems and design system components or process to meet desired specifications and needs.
- PO4** Conduct investigations of complex Problem: An ability to identify, formulate, comprehend, analyze, design synthesis of the information to solve complex engineering problems and provide valid conclusions.
- PO5** Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modeling to complex engineering activities.
- PO6** The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal, and cultural issues.
- PO7** Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- PO8** Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- PO9** Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- PO10** Communication: Communicate effectively on complex engineering activities with the engineering community and with the society.
- PO11** Project management and finance: An ability to use the modern engineering tools, techniques, skills and management principles to do work as a member and leader in a team, to manage projects in multidisciplinary environments.
- PO12** Life-long learning: A recognition of the need for, and an ability to engage in, to resolve contemporary issues and acquire lifelong learning.

|                            |  |          |     |               |     |              |     |         |         |      |      |      |
|----------------------------|--|----------|-----|---------------|-----|--------------|-----|---------|---------|------|------|------|
| COLLEGE                    | SHRIDEVI INSTITUTE OF ENGINEERING & TECHNOLOGY |          |     |               |     |              |     |         |         |      |      |      |
| FACULTY NAME               | R TEJASHWINI                                   |          |     |               |     |              |     |         |         |      |      |      |
| BRANCH                     | EEE  |          |     | ACADEMIC YEAR |     |              |     | 2018-19 |         |      |      |      |
| COURSE                     | B.E  | SEMESTER |     |               | VI  | SECTION      |     |         | EEE     |      |      |      |
| SUBJECT                    | SOLAR AND WIND ENERGY                          |          |     |               |     | SUBJECT CODE |     |         | 15EE664 |      |      |      |
| CO & PO MAPPING            |  |          |     |               |     |              |     |         |         |      |      |      |
|                            | PO1  | PO2      | PO3 | PO4           | PO5 | PO6          | PO7 | PO8     | PO9     | PO10 | PO11 | PO12 |
|                            | 1  | 2        | 3   | 4             | 5   | 6            | 7   | 8       | 9       | 10   | 11   | 12   |
| CO1                        | 2  | 3        | 3   |               |     | 1            | 1   |         |         |      |      | 1    |
| CO2                        | 2  | 3        | 3   |               |     | 1            | 1   |         |         |      |      | 1    |
| CO3                        | 2  | 3        | 3   |               |     | 1            | 1   |         |         |      |      | 1    |
| CO4                        | 2  | 3        | 3   |               |     | 1            | 1   |         |         |      |      | 1    |
| CO5                        | 2  | 3        | 3   |               |     | 1            | 1   |         |         |      |      | 1    |
| AVERAGE                    | 2  | 3        | 3   |               |     | 1            | 1   |         |         |      |      | 1    |
| OVERALL MAPPING OF SUBJECT |  |          |     |               |     |              |     |         |         |      |      | 1.83 |

#### CO AND PO ATTAINMENT

|                        | CO%   | PO1  | PO2  | PO3  | PO4 | PO5 | PO6  | PO7  | PO8 | PO9 | PO10 | PO11 | PO12 |
|------------------------|-------|------|------|------|-----|-----|------|------|-----|-----|------|------|------|
| CO1                    | 46.90 | 0.91 | 1.40 | 1.40 |     |     | 0.46 | 0.46 |     |     |      |      | 0.46 |
| CO2                    | 42.22 | 0.84 | 1.27 | 1.27 |     |     | 0.42 | 0.42 |     |     |      |      | 0.42 |
| CO3                    | 46.90 | 0.91 | 1.40 | 1.40 |     |     | 0.46 | 0.46 |     |     |      |      | 0.46 |
| CO4                    | 46.90 | 0.91 | 1.40 | 1.40 |     |     | 0.46 | 0.46 |     |     |      |      | 0.46 |
| CO5                    | 46.90 | 0.91 | 1.40 | 1.40 |     |     | 0.46 | 0.46 |     |     |      |      | 0.46 |
| AVERAGE                | 45.96 | 0.90 | 1.37 | 1.37 |     |     | 0.45 | 0.45 |     |     |      |      | 0.45 |
| FINAL ATTAINMENT LEVEL |       |      |      |      |     |     |      |      |     |     |      |      | 0.83 |

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 SIET, TUMAKURU.

| Academic year | 20K-19         |     |       |     | SEM |     |                |     | 6     |      |                |      | 7     |      |                |      | 8     |      |                |      | 9     |      |                |      | 10    |      |                |      | 11    |      |                |      | 12    |  |  |  |
|---------------|----------------|-----|-------|-----|-----|-----|----------------|-----|-------|------|----------------|------|-------|------|----------------|------|-------|------|----------------|------|-------|------|----------------|------|-------|------|----------------|------|-------|------|----------------|------|-------|--|--|--|
|               | IA TEST (105M) |     | TOTAL |     | SEM |     | IA TEST (105M) |     | TOTAL |      | IA TEST (105M) |      | TOTAL |      | IA TEST (105M) |      | TOTAL |      | IA TEST (105M) |      | TOTAL |      | IA TEST (105M) |      | TOTAL |      | IA TEST (105M) |      | TOTAL |      | IA TEST (105M) |      | TOTAL |  |  |  |
|               | CO1            | CO2 | CO3   | CO4 | CO5 | CO6 | CO7            | CO8 | CO9   | CO10 | CO11           | CO12 | CO13  | CO14 | CO15           | CO16 | CO17  | CO18 | CO19           | CO20 | CO21  | CO22 | CO23           | CO24 | CO25  | CO26 | CO27           | CO28 | CO29  | CO30 | CO31           | CO32 |       |  |  |  |
| 19W14E001     | 1.3            | 1.3 | 1.3   | 1.3 | 2.8 | 1.3 | 1.3            | 2.8 | 1.3   | 1.3  | 1.3            | 1.3  | 2.8   | 1.3  | 1.3            | 1.3  | 1.3   | 2.8  | 1.3            | 1.3  | 1.3   | 1.3  | 2.8            | 1.3  | 1.3   | 1.3  | 1.3            | 2.8  | 1.3   | 1.3  | 1.3            | 1.3  | 2.8   |  |  |  |
| 19W14E004     | 2.1            | 2.1 | 2.1   | 2.1 | 4.2 | 2.1 | 2.1            | 4.2 | 2.1   | 2.1  | 2.1            | 2.1  | 4.2   | 2.1  | 2.1            | 2.1  | 2.1   | 4.2  | 2.1            | 2.1  | 2.1   | 2.1  | 4.2            | 2.1  | 2.1   | 2.1  | 2.1            | 4.2  | 2.1   | 2.1  | 2.1            | 2.1  | 4.2   |  |  |  |
| 19W14E010     | 1.5            | 1.5 | 1.5   | 1.5 | 3   | 1.5 | 1.5            | 3   | 1.5   | 1.5  | 1.5            | 1.5  | 3     | 1.5  | 1.5            | 1.5  | 1.5   | 3    | 1.5            | 1.5  | 1.5   | 1.5  | 3              | 1.5  | 1.5   | 1.5  | 1.5            | 3    | 1.5   | 1.5  | 1.5            | 1.5  | 3     |  |  |  |
| 19W14E001     | 1.1            | 1.1 | 1.1   | 1.1 | 2.2 | 1.1 | 1.1            | 2.2 | 1.1   | 1.1  | 1.1            | 1.1  | 2.2   | 1.1  | 1.1            | 1.1  | 1.1   | 2.2  | 1.1            | 1.1  | 1.1   | 1.1  | 2.2            | 1.1  | 1.1   | 1.1  | 1.1            | 2.2  | 1.1   | 1.1  | 1.1            | 1.1  | 2.2   |  |  |  |
| 19W14E004     | 1.8            | 1.8 | 1.8   | 1.8 | 3.6 | 1.8 | 1.8            | 3.6 | 1.8   | 1.8  | 1.8            | 1.8  | 3.6   | 1.8  | 1.8            | 1.8  | 1.8   | 3.6  | 1.8            | 1.8  | 1.8   | 1.8  | 3.6            | 1.8  | 1.8   | 1.8  | 1.8            | 3.6  | 1.8   | 1.8  | 1.8            | 1.8  | 3.6   |  |  |  |
| 19W14E010     | 1.8            | 1.8 | 1.8   | 1.8 | 3.6 | 1.8 | 1.8            | 3.6 | 1.8   | 1.8  | 1.8            | 1.8  | 3.6   | 1.8  | 1.8            | 1.8  | 1.8   | 3.6  | 1.8            | 1.8  | 1.8   | 1.8  | 3.6            | 1.8  | 1.8   | 1.8  | 1.8            | 3.6  | 1.8   | 1.8  | 1.8            | 1.8  | 3.6   |  |  |  |
| 19W14E011     | 1.3            | 1.3 | 1.3   | 1.3 | 2.6 | 1.3 | 1.3            | 2.6 | 1.3   | 1.3  | 1.3            | 1.3  | 2.6   | 1.3  | 1.3            | 1.3  | 1.3   | 2.6  | 1.3            | 1.3  | 1.3   | 1.3  | 2.6            | 1.3  | 1.3   | 1.3  | 1.3            | 2.6  | 1.3   | 1.3  | 1.3            | 1.3  | 2.6   |  |  |  |
| 19W14E014     | 2              | 2   | 2     | 2   | 4   | 2   | 2              | 4   | 2     | 2    | 2              | 2    | 4     | 2    | 2              | 2    | 2     | 4    | 2              | 2    | 2     | 2    | 4              | 2    | 2     | 2    | 2              | 4    | 2     | 2    | 2              | 2    | 4     |  |  |  |
| 19W14E016     | 2              | 2   | 2     | 2   | 4   | 2   | 2              | 4   | 2     | 2    | 2              | 2    | 4     | 2    | 2              | 2    | 2     | 4    | 2              | 2    | 2     | 2    | 4              | 2    | 2     | 2    | 2              | 4    | 2     | 2    | 2              | 2    | 4     |  |  |  |
| 19W14E022     | 2.5            | 2.5 | 2.5   | 2.5 | 5   | 2.5 | 2.5            | 5   | 2.5   | 2.5  | 2.5            | 2.5  | 5     | 2.5  | 2.5            | 2.5  | 2.5   | 5    | 2.5            | 2.5  | 2.5   | 2.5  | 5              | 2.5  | 2.5   | 2.5  | 2.5            | 5    | 2.5   | 2.5  | 2.5            | 2.5  | 5     |  |  |  |
| 19W14E023     | 1.8            | 1.8 | 1.8   | 1.8 | 3.6 | 1.8 | 1.8            | 3.6 | 1.8   | 1.8  | 1.8            | 1.8  | 3.6   | 1.8  | 1.8            | 1.8  | 1.8   | 3.6  | 1.8            | 1.8  | 1.8   | 1.8  | 3.6            | 1.8  | 1.8   | 1.8  | 1.8            | 3.6  | 1.8   | 1.8  | 1.8            | 1.8  | 3.6   |  |  |  |
| 19W14E030     | 2              | 2   | 2     | 2   | 4   | 2   | 2              | 4   | 2     | 2    | 2              | 2    | 4     | 2    | 2              | 2    | 2     | 4    | 2              | 2    | 2     | 2    | 4              | 2    | 2     | 2    | 2              | 4    | 2     | 2    | 2              | 2    | 4     |  |  |  |
| 19W14E039     | 1.6            | 1.6 | 1.6   | 1.6 | 3.2 | 1.6 | 1.6            | 3.2 | 1.6   | 1.6  | 1.6            | 1.6  | 3.2   | 1.6  | 1.6            | 1.6  | 1.6   | 3.2  | 1.6            | 1.6  | 1.6   | 1.6  | 3.2            | 1.6  | 1.6   | 1.6  | 1.6            | 3.2  | 1.6   | 1.6  | 1.6            | 1.6  | 3.2   |  |  |  |

  
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SHRIDEVI INSTITUTE OF ENGINEERING & TECHNOLOGY

SIRA ROAD, TUMKUR- 572 106.

85  
2018-19

**DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING**

|         |                                |              |        |
|---------|--------------------------------|--------------|--------|
| SUBJECT | POWER SYSTEM OPERATION CONTROL | SUBJECT CODE | 15EE81 |
|---------|--------------------------------|--------------|--------|

**COURSE OUTCOME**

- CO1. Describe various levels of controls in power systems, architecture and configuration of SCADA
- CO2. Develop and analyze mathematical models of Automatic Load Frequency Control.
- CO3. Develop mathematical model of Automatic Generation Control in Interconnected Power system
- CO4. Discuss the Control of Voltage, Reactive Power and Voltage collapse
- CO5. Explain security, contingency analysis, and state estimation of power systems

**PROGRAM OUTCOMES**

- PO1 Engineering knowledge: An ability to apply knowledge of mathematics (including probability, statistics and discrete mathematics), science, and engineering for solving Engineering problems and Knowledge.
- PO2 Problem analysis: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- PO3 Design / development of solutions: An ability to design solution for engineering problems and design system components or process to meet desired specifications and needs.
- PO4 Conduct investigations of complex Problem: An ability to identify, formulate, comprehend, analyze, design synthesis of the information to solve complex engineering problems and provide valid conclusions.
- PO5 Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modeling to complex engineering activities.
- PO6 The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal, and cultural issues.
- PO7 Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- PO8 Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- PO9 Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- PO10 Communication: Communicate effectively on complex engineering activities with the engineering community and with the society.
- PO11 Project management and finance: An ability to use the modern engineering tools, techniques, skills and management principles to do work as a member and leader in a team, to manage projects in multidisciplinary environments.
- PO12 Life-long learning: A recognition of the need for, and an ability to engage in, to resolve contemporary issues and acquire lifelong learning.


G. H. Ramesh  
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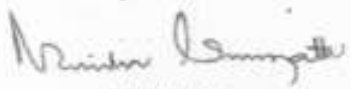
Principal  
PRINCIPAL  
SIET, TUMAKURU.

|                            |  |          |     |               |     |         |              |         |     |        |      |      |
|----------------------------|--|----------|-----|---------------|-----|---------|--------------|---------|-----|--------|------|------|
| COLLEGE                    | SHRIDEVI INSTITUTE OF ENGINEERING & TECHNOLOGY |          |     |               |     |         |              |         |     |        |      |      |
| FACULTY NAME               | Mrs. SOWMYA. T. C                              |          |     |               |     |         |              |         |     |        |      |      |
| BRANCH                     | EEE  |          |     | ACADEMIC YEAR |     |         |              | 2018-19 |     |        |      |      |
| COURSE                     | B.E  | SEMESTER |     | VIII          |     | SECTION |              |         | EEE |        |      |      |
| SUBJECT                    | POWER SYSTEM OPERATION & CONTROL               |          |     |               |     |         | SUBJECT CODE |         |     | 15EE81 |      |      |
| CO & PO MAPPING            |  |          |     |               |     |         |              |         |     |        |      |      |
|                            | PO1  | PO2      | PO3 | PO4           | PO5 | PO6     | PO7          | PO8     | PO9 | PO10   | PO11 | PO12 |
| CO1                        | 2  | 3        |     |               |     |         |              |         |     |        |      | 1    |
| CO2                        | 2  | 3        |     |               |     |         |              |         |     |        |      | 1    |
| CO3                        | 2  | 3        |     |               |     |         |              |         |     |        |      | 1    |
| CO4                        | 2  | 3        |     |               |     |         |              |         |     |        |      | 1    |
| CO5                        | 2  | 3        |     |               |     |         |              |         |     |        |      | 1    |
| AVERAGE                    | 2  | 3        |     |               |     |         |              |         |     |        |      | 1    |
| OVERALL MAPPING OF SUBJECT |  |          |     |               |     |         |              |         |     |        |      | 2    |

#### CO AND PO ATTAINMENT

|                        | CO%   | PO1   | PO2   | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12  |
|------------------------|-------|-------|-------|-----|-----|-----|-----|-----|-----|-----|------|------|-------|
| CO1                    | 66.49 | 1.329 | 1.994 |     |     |     |     |     |     |     |      |      | 0.664 |
| CO2                    | 62.61 | 1.252 | 1.878 |     |     |     |     |     |     |     |      |      | 0.626 |
| CO3                    | 62.61 | 1.252 | 1.878 |     |     |     |     |     |     |     |      |      | 0.626 |
| CO4                    | 62.61 | 1.252 | 1.878 |     |     |     |     |     |     |     |      |      | 0.626 |
| CO5                    | 45.46 | 0.909 | 1.363 |     |     |     |     |     |     |     |      |      | 0.454 |
| AVERAGE                |       | 1.198 | 1.798 |     |     |     |     |     |     |     |      |      | 0.599 |
| FINAL ATTAINMENT-LEVEL |       |       |       |     |     |     |     |     |     |     |      |      | 1.198 |

  
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SHRIDEVI INSTITUTE OF ENGINEERING & TECHNOLOGY

SIRA ROAD, TUMKUR- 572 106.

DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

|         |                                  |              |        |
|---------|----------------------------------|--------------|--------|
| SUBJECT | INDUSTRIAL DRIVES & APPLICATIONS | SUBJECT CODE | 15EE82 |
|---------|----------------------------------|--------------|--------|

COURSE OUTCOME

- CO1: Explain the advantages, choice and control of electric drive
- CO2: Explain the dynamics, generating and motoring modes of operation of electric drives
- CO3: Explain the selection of motor power rating to suit industry requirements
- CO4: Analyze the performance & control of DC motor drives using controlled rectifiers
- CO5: Analyze the performance & control of converter fed Induction motor, synchronous motor & stepper motor drives

PROGRAM OUTCOMES

- PO1 Engineering knowledge: An ability to apply knowledge of mathematics (including probability, statistics and discrete mathematics), science, and engineering for solving Engineering problems and Knowledge.
- PO2 Problem analysis: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- PO3 Design / development of solutions: An ability to design solution for engineering problems and design system components or process to meet desired specifications and needs.
- PO4 Conduct investigations of complex Problem: An ability to identify, formulate, comprehend, analyze, design synthesis of the information to solve complex engineering problems and provide valid conclusions.
- PO5 Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modeling to complex engineering activities.
- PO6 The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal, and cultural issues.
- PO7 Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- PO8 Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- PO9 Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- PO10 Communication: Communicate effectively on complex engineering activities with the engineering community and with the society.
- PO11 Project management and finance: An ability to use the modern engineering tools, techniques, skills and management principles to do work as a member and leader in a team, to manage projects in multidisciplinary environments.
- PO12 Life-long learning: A recognition of the need for, and an ability to engage in, to resolve contemporary issues and acquire lifelong learning.


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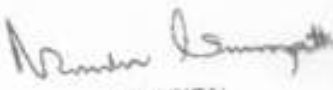
Principal  
SIRA ROAD, TUMKUR

|                            |  |          |     |               |      |         |              |         |        |      |      |      |
|----------------------------|--|----------|-----|---------------|------|---------|--------------|---------|--------|------|------|------|
| COLLEGE                    | SHRIDEVI INSTITUTE OF ENGINEERING & TECHNOLOGY |          |     |               |      |         |              |         |        |      |      |      |
| FACULTY NAME               | Mr. G. H. RAVIKUMAR                            |          |     |               |      |         |              |         |        |      |      |      |
| BRANCH                     | EEE  |          |     | ACADEMIC YEAR |      |         |              | 2018-19 |        |      |      |      |
| COURSE                     | B.E  | SEMESTER |     |               | VIII | SECTION |              |         | EEE    |      |      |      |
| SUBJECT                    | INDUSTRIAL DRIVES & APPLICATIONS               |          |     |               |      |         | SUBJECT CODE |         | 15EE82 |      |      |      |
| CO & PO MAPPING            |  |          |     |               |      |         |              |         |        |      |      |      |
|                            | PO1  | PO2      | PO3 | PO4           | PO5  | PO6     | PO7          | PO8     | PO9    | PO10 | PO11 | PO12 |
| CO1                        | 2  | -        | -   | -             | -    | -       | -            | -       | -      | -    | -    | 2    |
| CO2                        | 2  | 3        | -   | -             | -    | -       | -            | -       | -      | -    | -    | 2    |
| CO3                        | 2  | 3        | -   | -             | -    | -       | -            | -       | -      | -    | -    | 2    |
| CO4                        | 2  | 3        | -   | -             | -    | -       | -            | -       | -      | -    | -    | 2    |
| CO5                        | 2  | 2        | -   | -             | -    | -       | -            | -       | -      | -    | -    | 2    |
| AVERAGE                    | 2  | 2        | -   | -             | -    | -       | -            | -       | -      | -    | -    | 2    |
| OVERALL MAPPING OF SUBJECT |  |          |     |               |      |         |              |         |        |      |      | 2    |

#### CO AND PO ATTAINMENT

|                        | CO%   | PO1   | PO2   | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12  |
|------------------------|-------|-------|-------|-----|-----|-----|-----|-----|-----|-----|------|------|-------|
| CO1                    | 67.14 | 1.342 | -     | -   | -   | -   | -   | -   | -   | -   | -    | -    | 1.342 |
| CO2                    | 65.30 | 1.306 | 1.959 | -   | -   | -   | -   | -   | -   | -   | -    | -    | 1.306 |
| CO3                    | 65.30 | 1.306 | 1.959 | -   | -   | -   | -   | -   | -   | -   | -    | -    | 1.306 |
| CO4                    | 65.30 | 1.306 | 1.959 | -   | -   | -   | -   | -   | -   | -   | -    | -    | 1.306 |
| CO5                    | 46.71 | 0.934 | 0.934 | -   | -   | -   | -   | -   | -   | -   | -    | -    | 0.934 |
| AVERAGE                |       | 1.238 | 1.702 | -   | -   | -   | -   | -   | -   | -   | -    | -    | 1.238 |
| FINAL ATTAINMENT LEVEL |       |       |       |     |     |     |     |     |     |     |      |      | 1.392 |

  
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 Shridevi Institute of Engineering & Technology  
 - TUMKUR-572106.

  
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| Academic year | 2018-19        |     | SEM VIII       |     | Total strength |     | Subject: RIAI, DRIVES & APPLIC |     | Subject Code  |        | 15EF82 |     | Total COs Attainment |      |        |        | % of Individual CO |       |      |      | SEE Tot |      |      |      |       |
|---------------|----------------|-----|----------------|-----|----------------|-----|--------------------------------|-----|---------------|--------|--------|-----|----------------------|------|--------|--------|--------------------|-------|------|------|---------|------|------|------|-------|
|               | IA TEST 1(15M) |     | IA TEST 2(15M) |     | IA TEST 3(15M) |     | ASSIGNMENT / QUIZ(5 M)         |     | SEE MARKS(80) |        | 15EF82 |     | Total COs Attainment |      |        |        | % of Individual CO |       |      |      | SEE Tot |      |      |      |       |
|               | CO1            | CO2 | CO3            | CO4 | CO1            | CO2 | CO3                            | CO4 | CO5           | CO1-12 | CO2    | CO3 | CO4                  | CO5  | CO1+24 | CO3-24 | CO4+24             | CO5+3 | CO1  | CO2  | CO3     | CO4  | CO5  | 80M  |       |
| 15V14EE006    | 7              | 7   | 14             | 7   | 7              | 14  | 7                              | 14  | 1             | 1      | 1      | 1   | 1                    | 5.6  | 5.6    | 5.6    | 5.6                | 5.6   | 55.5 | 55.5 | 55.5    | 55.5 | 46.9 | 28.0 | 5.6   |
| 15V15EE003    | 8              | 7   | 15             | 8   | 7              | 15  | 8                              | 7   | 15            | 1      | 1      | 1   | 1                    | 6.2  | 6.2    | 6.2    | 6.2                | 6.2   | 62.0 | 58.0 | 58.0    | 58.0 | 50.0 | 31.0 | 6.2   |
| 15V15EE007    | 8              | 7   | 15             | 8   | 7              | 15  | 8                              | 7   | 15            | 1      | 1      | 1   | 1                    | 10.2 | 10.2   | 10.2   | 10.2               | 10.2  | 78.4 | 74.3 | 74.3    | 74.3 | 50.0 | 51.0 | 10.2  |
| 15V15EE008    | 8              | 7   | 15             | 8   | 7              | 15  | 8                              | 7   | 15            | 1      | 1      | 1   | 1                    | 7.6  | 7.6    | 7.6    | 7.6                | 7.6   | 67.8 | 63.7 | 63.7    | 63.7 | 50.0 | 38.0 | 7.6   |
| 15V15EE012    | 6              | 5   | 11             | 6   | 5              | 11  | 6                              | 5   | 11            | 1      | 1      | 1   | 1                    | 9.8  | 9.8    | 9.8    | 9.8                | 9.8   | 68.6 | 64.5 | 64.5    | 64.5 | 37.5 | 49.0 | 9.8   |
| 15V15EE013    | 6              | 8   | 14             | 6   | 8              | 14  | 6                              | 8   | 14            | 1      | 1      | 1   | 1                    | 1.8  | 1.8    | 1.8    | 1.8                | 1.8   | 35.9 | 44.1 | 44.1    | 44.1 | 46.9 | 9.0  | 1.8   |
| 15V15EE015    | 8              | 7   | 15             | 8   | 7              | 15  | 8                              | 7   | 15            | 1      | 1      | 1   | 1                    | 6    | 6      | 6      | 6                  | 6     | 61.2 | 57.1 | 57.1    | 57.1 | 50.0 | 30.0 | 6     |
| 15V15EE017    | 8              | 7   | 15             | 8   | 7              | 15  | 8                              | 7   | 15            | 1      | 1      | 1   | 1                    | 10   | 10     | 10     | 10                 | 10    | 77.6 | 73.5 | 73.5    | 73.5 | 50.0 | 50.0 | 10    |
| 15V15EE019    | 7              | 7   | 14             | 7   | 7              | 14  | 7                              | 7   | 14            | 1      | 1      | 1   | 1                    | 6.6  | 6.6    | 6.6    | 6.6                | 6.6   | 59.6 | 59.6 | 59.6    | 59.6 | 46.9 | 33.0 | 6.6   |
| 15V15EE020    | 8              | 7   | 15             | 8   | 7              | 15  | 8                              | 7   | 15            | 1      | 1      | 1   | 1                    | 9.8  | 9.8    | 9.8    | 9.8                | 9.8   | 76.7 | 72.7 | 72.7    | 72.7 | 50.0 | 49.0 | 9.8   |
| 15V15EE024    | 7              | 7   | 14             | 7   | 7              | 14  | 7                              | 7   | 14            | 1      | 1      | 1   | 1                    | 7.4  | 7.4    | 7.4    | 7.4                | 7.4   | 62.9 | 62.9 | 62.9    | 62.9 | 46.9 | 37.0 | 7.4   |
| 15V15EE025    | 7              | 6   | 13             | 7   | 6              | 13  | 7                              | 6   | 13            | 1      | 1      | 1   | 1                    | 7.8  | 7.8    | 7.8    | 7.8                | 7.8   | 64.5 | 60.4 | 60.4    | 60.4 | 43.8 | 39.0 | 7.8   |
| 15V15EE032    | 7              | 7   | 14             | 7   | 7              | 14  | 7                              | 7   | 14            | 1      | 1      | 1   | 1                    | 8.6  | 8.6    | 8.6    | 8.6                | 8.6   | 67.8 | 67.8 | 67.8    | 67.8 | 46.9 | 43.0 | 8.6   |
| 15V15EE033    | 7              | 7   | 14             | 7   | 7              | 14  | 7                              | 7   | 14            | 1      | 1      | 1   | 1                    | 10   | 10     | 10     | 10                 | 10    | 73.5 | 73.5 | 73.5    | 73.5 | 46.9 | 50.0 | 10    |
| 15V15EE035    | 7              | 7   | 14             | 7   | 7              | 14  | 7                              | 7   | 14            | 1      | 1      | 1   | 1                    | 11   | 11     | 11     | 11                 | 11    | 77.6 | 77.6 | 77.6    | 77.6 | 46.9 | 55.0 | 11    |
| 15V15EE036    | 7              | 7   | 14             | 7   | 7              | 14  | 7                              | 7   | 14            | 1      | 1      | 1   | 1                    | 8    | 8      | 8      | 8                  | 8     | 65.3 | 65.3 | 65.3    | 65.3 | 46.9 | 40.0 | 8     |
| 15V15EE037    | 7              | 6   | 13             | 7   | 6              | 13  | 7                              | 6   | 13            | 1      | 1      | 1   | 1                    | 10.8 | 10.8   | 10.8   | 10.8               | 10.8  | 76.7 | 72.7 | 72.7    | 72.7 | 43.8 | 54.0 | 10.8  |
| 15V16EE401    | 6              | 7   | 13             | 6   | 7              | 13  | 6                              | 7   | 13            | 1      | 1      | 1   | 1                    | 8.6  | 8.6    | 8.6    | 8.6                | 8.6   | 63.7 | 67.8 | 67.8    | 67.8 | 43.8 | 43.0 | 8.6   |
| 15V16EE405    | 7              | 6   | 13             | 7   | 6              | 13  | 7                              | 6   | 13            | 1      | 1      | 1   | 1                    | 5.6  | 5.6    | 5.6    | 5.6                | 5.6   | 55.5 | 51.4 | 51.4    | 51.4 | 43.8 | 28.0 | 5.6   |
| 15V16EE409    | 8              | 6   | 14             | 8   | 6              | 14  | 8                              | 6   | 14            | 1      | 1      | 1   | 1                    | 13.6 | 13.6   | 13.6   | 13.6               | 13.6  | 92.2 | 84.1 | 84.1    | 84.1 | 46.9 | 68.0 | 13.6  |
|               |                |     |                |     |                |     |                                |     |               |        |        |     |                      |      |        |        |                    |       | 67.1 | 65.3 | 65.3    | 65.3 | 46.7 | 41.3 | 45.0  |
|               |                |     |                |     |                |     |                                |     |               |        |        |     |                      |      |        |        |                    |       |      |      |         |      |      |      | 68.75 |

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SHRIDEVI INSTITUTE OF ENGINEERING & TECHNOLOGY

SIRA ROAD, TUMKUR- 572 106.

**DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING**

|                |   |                     |                |
|----------------|---|---------------------|----------------|
| <b>SUBJECT</b> | <b>OPERATION &amp; MAINTENANCE OF SOLAR ELECTRIC SYSTEM</b> | <b>SUBJECT CODE</b> | <b>15EE836</b> |
|----------------|---|---------------------|----------------|

**COURSE OUTCOME**

- CO1. Explain PV technology, PV modules
- CO2. Connection of PV modules to form arrays.
- CO3. Explain the use of inverters and mounting method of the PV system
- CO4. Asses the site for PV system installation
- CO5. Explain the installation, commissioning, operation & maintenance of PV systems

**PROGRAM OUTCOMES**

- PO1 Engineering knowledge: An ability to apply knowledge of mathematics (including probability, statistics and discrete mathematics), science, and engineering for solving Engineering problems and Knowledge.
- PO2 Problem analysis: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
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- PO6 The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal, and cultural issues.
- PO7 Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- PO8 Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- PO9 Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- PO10 Communication: Communicate effectively on complex engineering activities with the engineering community and with the society.
- PO11 Project management and finance: An ability to use the modern engineering tools, techniques, skills and management principles to do work as a member and leader in a team, to manage projects in multidisciplinary environments.
- PO12 Life-long learning: A recognition of the need for, and an ability to engage in, to resolve contemporary issues and acquire lifelong learning.

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|                            |  |          |     |               |         |     |              |         |         |      |      |      |
|----------------------------|--|----------|-----|---------------|---------|-----|--------------|---------|---------|------|------|------|
| COLLEGE                    | SHRIDEVI INSTITUTE OF ENGINEERING & TECHNOLOGY   |          |     |               |         |     |              |         |         |      |      |      |
| FACULTY NAME               | Dr. H. B. PHANI RAJU                             |          |     |               |         |     |              |         |         |      |      |      |
| BRANCH                     | EEE  |          |     | ACADEMIC YEAR |         |     |              | 2018-19 |         |      |      |      |
| COURSE                     | B.E  | SEMESTER |     | VIII          | SECTION |     |              | EEE     |         |      |      |      |
| SUBJECT                    | OPERATION & MAINTENANCE OF SOLAR ELECTRIC SYSTEM |          |     |               |         |     | SUBJECT CODE |         | 15EE832 |      |      |      |
| CO & PO MAPPING            |  |          |     |               |         |     |              |         |         |      |      |      |
|                            | PO1  | PO2      | PO3 | PO4           | PO5     | PO6 | PO7          | PO8     | PO9     | PO10 | PO11 | PO12 |
| CO1                        | 2  | 2        |     |               |         |     |              |         |         |      |      | 2    |
| CO2                        | 2  | 2        |     |               |         |     |              |         |         |      |      | 2    |
| CO3                        | 2  | 2        |     |               |         |     |              |         |         |      |      | 2    |
| CO4                        | 2  | 2        |     |               |         |     |              |         |         |      |      | 2    |
| CO5                        | 2  | 2        |     |               |         |     |              |         |         |      |      | 2    |
| AVERAGE                    | 2  | 2        |     |               |         |     |              |         |         |      |      | 2    |
| OVERALL MAPPING OF SUBJECT |  |          |     |               |         |     |              |         |         |      |      | 2    |

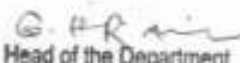
#### CO AND PO ATTAINMENT

|                        | CO%   | PO1   | PO2   | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12  |
|------------------------|-------|-------|-------|-----|-----|-----|-----|-----|-----|-----|------|------|-------|
| CO1                    | 76.08 | 1.521 | 1.521 |     |     |     |     |     |     |     |      |      | 1.521 |
| CO2                    | 75.46 | 1.509 | 1.509 |     |     |     |     |     |     |     |      |      | 1.509 |
| CO3                    | 75.46 | 1.509 | 1.509 |     |     |     |     |     |     |     |      |      | 1.509 |
| CO4                    | 75.46 | 1.509 | 1.509 |     |     |     |     |     |     |     |      |      | 1.509 |
| CO5                    | 46.40 | 0.928 | 0.928 |     |     |     |     |     |     |     |      |      | 0.928 |
| AVERAGE                |       | 1.395 | 1.395 |     |     |     |     |     |     |     |      |      | 1.395 |
| FINAL ATTAINMENT LEVEL |       |       |       |     |     |     |     |     |     |     |      |      | 1.395 |

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| Academic year | 2018-19  |                 | SEM VIII        |                 | Total strength |     | 20  |     | Subject |     | MARKSES |      | Subject Code |      | 15EE836 |      | % of individual CO |      | SEE Tot |         |         |      |         |
|---------------|----------|-----------------|-----------------|-----------------|----------------|-----|-----|-----|---------|-----|---------|------|--------------|------|---------|------|--------------------|------|---------|---------|---------|------|---------|
|               | SEM VIII | IA TEST I (15M) | IA TEST 2 (15M) | IA TEST 3 (15M) | CO5 TOTAL      | CO5 | CO5 | CO5 | CO5     | CO5 | CO5     | CO5  | CO5          | CO5  | CO5     | CO5  | CO5                | CO5  |         | CO5     | SEE Tot |      |         |
| SEM VIII      | CO1      | CO2             | CO3             | CO4             | CO5            | CO5 | CO5 | CO5 | CO5     | CO5 | CO5     | CO5  | CO5          | CO5  | CO5     | CO5  | CO5                | CO5  | CO5     | SEE Tot |         |      |         |
| USN           | 6        | 7               | 13              | 6               | 7              | 13  | 7   | 13  | 1       | 1   | 1       | 13.2 | 13.2         | 13.2 | 13.2    | 20.2 | 21.2               | 21.2 | 14      | 82.4    | 86.5    | 86.5 | 43.8    |
| 15V14EE006    | 7        | 7               | 14              | 7               | 7              | 14  | 7   | 14  | 1       | 1   | 1       | 10.6 | 10.6         | 10.6 | 10.6    | 18.6 | 18.6               | 18.6 | 15      | 75.9    | 75.9    | 75.9 | 46.9    |
| 15V15EE003    | 8        | 7               | 15              | 8               | 7              | 15  | 8   | 15  | 1       | 1   | 1       | 13.6 | 13.6         | 13.6 | 22.6    | 21.6 | 21.6               | 16   | 92.2    | 88.2    | 88.2    | 50.0 |         |
| 15V15EE007    | 8        | 7               | 15              | 8               | 7              | 15  | 8   | 15  | 1       | 1   | 1       | 10.8 | 10.8         | 10.8 | 18.8    | 18.8 | 18.8               | 16   | 80.8    | 76.7    | 76.7    | 50.0 |         |
| 15V15EE008    | 7        | 6               | 13              | 7               | 6              | 13  | 7   | 13  | 1       | 1   | 1       | 8    | 8            | 8    | 8       | 15   | 15                 | 15   | 14      | 65.3    | 61.2    | 61.2 | 43.8    |
| 15V15EE012    | 6        | 7               | 13              | 6               | 7              | 13  | 6   | 13  | 1       | 1   | 1       | 8.4  | 8.4          | 8.4  | 15.4    | 16.4 | 16.4               | 14   | 62.9    | 66.9    | 66.9    | 43.8 |         |
| 15V15EE013    | 7        | 7               | 14              | 7               | 7              | 14  | 7   | 14  | 1       | 1   | 1       | 8    | 8            | 8    | 8       | 16   | 16                 | 16   | 15      | 85.3    | 85.3    | 85.3 | 46.9    |
| 15V15EE015    | 8        | 7               | 15              | 8               | 7              | 15  | 8   | 15  | 1       | 1   | 1       | 12   | 12           | 12   | 20      | 20   | 20                 | 16   | 85.7    | 81.6    | 81.6    | 50.0 |         |
| 15V15EE017    | 7        | 7               | 14              | 7               | 7              | 14  | 7   | 14  | 1       | 1   | 1       | 9    | 9            | 9    | 17      | 18   | 18                 | 16   | 69.4    | 73.5    | 73.5    | 50.0 |         |
| 15V15EE019    | 7        | 7               | 14              | 7               | 7              | 14  | 7   | 14  | 1       | 1   | 1       | 11   | 11           | 11   | 19      | 19   | 19                 | 15   | 77.6    | 77.6    | 77.6    | 46.9 |         |
| 15V15EE020    | 7        | 7               | 14              | 7               | 7              | 14  | 7   | 14  | 1       | 1   | 1       | 10   | 10           | 10   | 18      | 18   | 18                 | 15   | 73.5    | 73.5    | 73.5    | 46.9 |         |
| 15V15EE024    | 7        | 7               | 14              | 7               | 7              | 14  | 7   | 14  | 1       | 1   | 1       | 10.4 | 10.4         | 10.4 | 18.4    | 17.4 | 17.4               | 14   | 75.1    | 71.0    | 71.0    | 43.8 |         |
| 15V15EE025    | 7        | 6               | 13              | 7               | 6              | 13  | 7   | 13  | 1       | 1   | 1       | 8.4  | 8.4          | 8.4  | 16.4    | 16.4 | 16.4               | 15   | 66.9    | 66.9    | 66.9    | 46.9 |         |
| 15V15EE032    | 7        | 7               | 14              | 7               | 7              | 14  | 7   | 14  | 1       | 1   | 1       | 11.4 | 11.4         | 11.4 | 17.4    | 18.4 | 18.4               | 12   | 71.0    | 75.1    | 75.1    | 37.5 |         |
| 15V15EE033    | 5        | 6               | 11              | 5               | 6              | 11  | 5   | 11  | 1       | 1   | 1       | 10.6 | 10.6         | 10.6 | 18.6    | 18.6 | 18.6               | 15   | 75.9    | 75.9    | 75.9    | 46.9 |         |
| 15V15EE035    | 7        | 7               | 14              | 7               | 7              | 14  | 7   | 14  | 1       | 1   | 1       | 11.2 | 11.2         | 11.2 | 19.2    | 19.2 | 19.2               | 15   | 78.4    | 78.4    | 78.4    | 46.9 |         |
| 15V15EE036    | 7        | 7               | 14              | 7               | 7              | 14  | 7   | 14  | 1       | 1   | 1       | 12.6 | 12.6         | 12.6 | 20.6    | 20.6 | 20.6               | 15   | 84.1    | 84.1    | 84.1    | 46.9 |         |
| 15V15EE037    | 7        | 7               | 14              | 7               | 7              | 14  | 7   | 14  | 1       | 1   | 1       | 10   | 10           | 10   | 18      | 18   | 18                 | 15   | 73.5    | 73.5    | 73.5    | 46.9 |         |
| 15V16EE401    | 7        | 7               | 14              | 7               | 7              | 14  | 7   | 14  | 1       | 1   | 1       | 11.4 | 11.4         | 11.4 | 19.4    | 19.4 | 19.4               | 15   | 79.2    | 79.2    | 79.2    | 46.9 |         |
| 15V16EE405    | 7        | 7               | 14              | 7               | 7              | 14  | 7   | 14  | 1       | 1   | 1       | 12.2 | 12.2         | 12.2 | 21.2    | 19.2 | 19.2               | 15   | 86.5    | 78.4    | 78.4    | 46.9 |         |
| 15V16EE409    | 8        | 6               | 14              | 8               | 6              | 14  | 8   | 14  | 1       | 1   | 1       | 12.2 | 12.2         | 12.2 | 21.2    | 19.2 | 19.2               | 15   | 86.5    | 78.4    | 78.4    | 46.9 |         |
|               |          |                 |                 |                 |                |     |     |     |         |     |         |      |              |      |         |      |                    |      |         | 76.1    | 75.5    | 75.5 | 46.4    |
|               |          |                 |                 |                 |                |     |     |     |         |     |         |      |              |      |         |      |                    |      |         |         |         |      | 88.6667 |

  
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## DEPARTMENT OF EEE

|                |                              |                     |            |
|----------------|------------------------------|---------------------|------------|
| <b>SUBJECT</b> | Basic Electrical Engineering | <b>SUBJECT CODE</b> | 18ELE13/23 |
|----------------|------------------------------|---------------------|------------|

### COURSE OUTCOME

|            |  |
|------------|--|
| <b>CO1</b> | Understand the dc circuits and electrical laws.  |
| <b>CO2</b> | Apply the basic electrical laws to solve ac and dc circuits  |
| <b>CO3</b> | Discuss the construction and operation of various electrical machines  |
| <b>CO4</b> | Identify suitable electrical machines for practical implementations  |
| <b>CO5</b> | Explain the concept of electrical transmission and distribution ,electricity billing, circuit protective devices and personal safety measures. |

### PROGRAM OUTCOME

- PO1** Engineering knowledge: An ability to apply knowledge of mathematics (including probability, statistics and discrete mathematics), science, and engineering for solving Engineering problems and Knowledge.
- PO2** Problem analysis: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- PO3** Design / development of solutions: An ability to design solution for engineering problems and design system components or process to meet desired specifications and needs.
- PO4** Conduct investigations of complex Problem: An ability to identify, formulate, comprehend, analyze, design synthesis of the information to solve complex engineering problems and provide valid conclusions.
- PO5** Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modeling to complex engineering activities.
- PO6** The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal, and cultural issues.
- PO7** Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- PO8** Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- PO9** Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- PO10** Communication: Communicate effectively on complex engineering activities with the engineering community and with the society.
- PO11** Project management and finance: An ability to use the modern engineering tools, techniques, skills and management principles to do work as a member and leader in a team, to manage projects in multidisciplinary environments.
- PO12** Life-long learning: A recognition of the need for, and an ability to engage in, to resolve contemporary issues and acquire lifelong learning.

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|                            |  |          |     |               |         |     |              |         |            |      |      |      |
|----------------------------|--|----------|-----|---------------|---------|-----|--------------|---------|------------|------|------|------|
| COLLEGE                    | SHRIDEVI INSTITUTE OF ENGINEERING & TECHNOLOGY |          |     |               |         |     |              |         |            |      |      |      |
| FACULTY NAME               | UMABAI   |          |     |               |         |     |              |         |            |      |      |      |
| BRANCH                     | EEE  |          |     | ACADEMIC YEAR |         |     |              | 2018-19 |            |      |      |      |
| COURSE                     | B.E  | SEMESTER |     |               | SECTION |     | A& B         |         |            |      |      |      |
| SUBJECT                    | Basic Electrical Engineering                   |          |     |               |         |     | SUBJECT CODE |         | 18ELE13/23 |      |      |      |
| <b>CO &amp; PO MAPPING</b> |  |          |     |               |         |     |              |         |            |      |      |      |
|                            | PO1  | PO2      | PO3 | PO4           | PO5     | PO6 | PO7          | PO8     | PO9        | PO10 | PO11 | PO12 |
| CO1                        | 3  | 2        | 1   | -             | -       | 1   | 1            | 1       | -          | -    | -    | 1    |
| CO2                        | 3  | 3        | 2   | 1             | -       | 1   | 0            | 0       | -          | -    | -    | 1    |
| CO3                        | 3  | 2        | 1   | 1             | -       | 1   | 1            | 1       | -          | -    | -    | 1    |
| CO4                        | 3  | 2        | 2   | 1             | -       | 1   | 1            | 1       | -          | -    | -    | 1    |
| CO5                        | 3  | 1        | 2   | -             | -       | 2   | 1            | 1       | -          | -    | 1    | 1    |
| AVERAGE                    | 3  | 2        | 1.6 | 1             | -       | 1.2 | 0.8          | 0.8     | -          | -    | 1    | 1    |
| OVERALL MAPPING OF SUBJECT |  |          |     |               |         |     |              |         |            |      |      | 1.37 |

#### CO AND PO ATTAINMENT

|                        | CO%   | PO1   | PO2  | PO3  | PO4  | PO5 | PO6  | PO7   | PO8   | PO9 | PO10 | PO11 | PO12  |
|------------------------|-------|-------|------|------|------|-----|------|-------|-------|-----|------|------|-------|
| CO1                    | 61.86 | 2.00  | 1.33 | 0.66 |      |     | 0.66 | 0.66  | 0.66  |     |      |      | 0.66  |
| CO2                    | 66.73 | 2.19  | 2.19 | 1.46 | 0.73 |     | 0.73 |       |       |     |      |      | 0.73  |
| CO3                    | 67.76 | 1.87  | 1.25 | 0.62 | 0.62 |     | 0.62 | 0.62  | 0.62  |     |      |      | 0.62  |
| CO4                    | 55.32 | 1.77  | 1.18 | 1.18 | 0.59 |     | 0.59 | 0.59  | 0.59  |     |      |      | 0.59  |
| CO5                    | 49.85 | 1.89  | 0.63 | 1.26 |      |     | 1.26 | 0.63  | 0.63  |     |      | 0.63 | 0.63  |
| AVERAGE                | 62.76 | 1.944 | 1.44 | 1.03 | 0.64 |     | 0.77 | 0.625 | 0.625 |     |      | 0.63 | 0.646 |
| FINAL ATTAINMENT LEVEL |       |       |      |      |      |     |      |       |       |     |      |      | 1.12  |

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| Academic year   | 2018-19        |     |       | SEM II         |     |       | Total strength |     |       | 83                      |     |     | Subject |     |               |      |      | BASIC ELECTRICAL ENGG |      |                      |        |        | Subject Code |        |                    |      |      | 18ELE23 |      |         |      |     |  |  |  |  |  |  |
|-----------------|----------------|-----|-------|----------------|-----|-------|----------------|-----|-------|-------------------------|-----|-----|---------|-----|---------------|------|------|-----------------------|------|----------------------|--------|--------|--------------|--------|--------------------|------|------|---------|------|---------|------|-----|--|--|--|--|--|--|
| SEM: I SEC: A&B | IA TEST 1(30M) |     |       | IA TEST 2(30M) |     |       | IA TEST 3(30M) |     |       | ASSIGNMENT / QUIZ(10 M) |     |     |         |     | SEE MARKS(60) |      |      |                       |      | Total Cos ATTAINMENT |        |        |              |        | % of individual CO |      |      |         |      | SEE Tot |      |     |  |  |  |  |  |  |
| USN             | CO1            | CO2 | TOTAL | CO1            | CO3 | TOTAL | CO4            | CO5 | TOTAL | CO1                     | CO2 | CO3 | CO4     | CO5 | CO1-1         | CO2  | CO3  | CO4                   | CO5  | CO1-29               | CO2-44 | CO3-29 | CO4-28       | CO5-24 | CO1                | CO2  | CO3  | CO4     | CO5  |         |      |     |  |  |  |  |  |  |
| 15V18CV001      | 8              | 8   | 16    | 4              | 5   | 9     | 4              | 4   | 8     | 2                       | 2   | 2   | 2       | 2   | 2.4           | 2.4  | 2.4  | 2.4                   | 2.4  | 2.4                  | 12.4   | 15.4   | 9.4          | 7.4    | 8.4                | 42.8 | 35.0 | 32.4    | 25.5 | 29.0    | 12   | 2.4 |  |  |  |  |  |  |
| 15V18CV002      | 10             | 10  | 20    | 10             | 13  | 23    | 4              | 0   | 4     | 2                       | 2   | 2   | 2       | 2   | 3.4           | 3.4  | 3.4  | 3.4                   | 3.4  | 15.4                 | 25.4   | 18.4   | 9.4          | 5.4    | 53.1               | 57.7 | 63.4 | 32.4    | 18.6 | 17      | 3.4  |     |  |  |  |  |  |  |
| 15V18CV003      | 14             | 13  | 27    | 14             | 14  | 28    | 10             | 12  | 22    | 2                       | 2   | 2   | 2       | 2   | 6.6           | 6.6  | 6.6  | 6.6                   | 6.6  | 22.6                 | 35.6   | 22.6   | 18.6         | 20.6   | 77.9               | 80.9 | 77.9 | 64.1    | 71.0 | 33      | 6.6  |     |  |  |  |  |  |  |
| 15V18CV004      | 10             | 5   | 15    | 14             | 13  | 27    | 9              | 11  | 20    | 2                       | 2   | 2   | 2       | 2   | 4.2           | 4.2  | 4.2  | 4.2                   | 4.2  | 16.2                 | 25.2   | 19.2   | 15.2         | 17.2   | 55.9               | 57.3 | 66.2 | 52.4    | 59.3 | 21      | 4.2  |     |  |  |  |  |  |  |
| 15V18CV005      | 7              | 3   | 10    | 10             | 9   | 19    | 4              | 4   | 8     | 2                       | 2   | 2   | 2       | 2   | 2.2           | 2.2  | 2.2  | 2.2                   | 2.2  | 11.2                 | 17.2   | 13.2   | 8.2          | 8.2    | 38.6               | 39.1 | 45.5 | 28.3    | 28.3 | 11      | 2.2  |     |  |  |  |  |  |  |
| 15V18CV007      | 10             | 15  | 25    | 14             | 13  | 27    | 7              | 6   | 13    | 2                       | 2   | 2   | 2       | 2   | 4.4           | 4.4  | 4.4  | 4.4                   | 4.4  | 16.4                 | 35.4   | 19.4   | 13.4         | 12.4   | 56.6               | 80.5 | 66.9 | 46.2    | 42.8 | 22      | 4.4  |     |  |  |  |  |  |  |
| 15V18CV008      | 10             | 9   | 19    | 10             | 13  | 23    | 10             | 9   | 19    | 2                       | 2   | 2   | 2       | 2   | 4.8           | 4.8  | 4.8  | 4.8                   | 4.8  | 16.8                 | 25.8   | 19.8   | 16.8         | 15.8   | 57.9               | 58.6 | 68.3 | 57.9    | 54.5 | 24      | 4.8  |     |  |  |  |  |  |  |
| 15V18CV009      | 10             | 7   | 17    | 10             | 11  | 21    | 4              | 3   | 7     | 2                       | 2   | 2   | 2       | 2   | 5.2           | 5.2  | 5.2  | 5.2                   | 5.2  | 17.2                 | 24.2   | 18.2   | 11.2         | 10.2   | 59.3               | 55.0 | 62.8 | 38.6    | 35.2 | 26      | 5.2  |     |  |  |  |  |  |  |
| 15V18CV010      | 0              | 0   | 0     | 10             | 8   | 18    | 5              | 5   | 10    | 2                       | 2   | 2   | 2       | 2   | 4.8           | 4.8  | 4.8  | 4.8                   | 4.8  | 6.8                  | 16.8   | 14.8   | 11.8         | 11.8   | 23.4               | 38.2 | 51.0 | 40.7    | 40.7 | 24      | 4.8  |     |  |  |  |  |  |  |
| 15V18CV011      | 10             | 8   | 18    | 14             | 14  | 28    | 10             | 8   | 18    | 2                       | 2   | 2   | 2       | 2   | 7.6           | 7.6  | 7.6  | 7.6                   | 7.6  | 19.6                 | 31.6   | 23.6   | 19.6         | 17.6   | 67.6               | 71.8 | 81.4 | 67.6    | 60.7 | 38      | 7.6  |     |  |  |  |  |  |  |
| 15V18CV012      | 5              | 5   | 10    | 7              | 7   | 14    | 7              | 6   | 13    | 2                       | 2   | 2   | 2       | 2   | 4.2           | 4.2  | 4.2  | 4.2                   | 4.2  | 11.2                 | 18.2   | 13.2   | 13.2         | 12.2   | 38.6               | 41.4 | 45.5 | 45.5    | 42.1 | 21      | 4.2  |     |  |  |  |  |  |  |
| 15V18CV013      | 10             | 12  | 22    | 15             | 15  | 30    | 10             | 9   | 19    | 2                       | 2   | 2   | 2       | 2   | 8.4           | 8.4  | 8.4  | 8.4                   | 8.4  | 20.4                 | 37.4   | 25.4   | 20.4         | 19.4   | 70.3               | 85.0 | 87.6 | 70.3    | 66.9 | 42      | 8.4  |     |  |  |  |  |  |  |
| 15V18CV014      | 10             | 12  | 22    | 15             | 15  | 30    | 10             | 6   | 16    | 2                       | 2   | 2   | 2       | 2   | 4.8           | 4.8  | 4.8  | 4.8                   | 4.8  | 16.8                 | 33.8   | 21.8   | 16.8         | 12.8   | 57.9               | 76.8 | 75.2 | 57.9    | 44.1 | 24      | 4.8  |     |  |  |  |  |  |  |
| 15V18CV015      | 10             | 11  | 21    | 12             | 12  | 24    | 7              | 8   | 15    | 2                       | 2   | 2   | 2       | 2   | 5.8           | 5.8  | 5.8  | 5.8                   | 5.8  | 17.8                 | 30.8   | 19.8   | 14.8         | 15.8   | 61.4               | 70.0 | 68.3 | 51.0    | 54.5 | 29      | 5.8  |     |  |  |  |  |  |  |
| 15V18CV016      | 1              | 0   | 1     | 10             | 11  | 21    | 3              | 3   | 6     | 2                       | 2   | 2   | 2       | 2   | 2.6           | 2.6  | 2.6  | 2.6                   | 2.6  | 5.6                  | 14.6   | 15.6   | 7.6          | 7.6    | 19.3               | 33.2 | 53.8 | 26.2    | 26.2 | 13      | 2.6  |     |  |  |  |  |  |  |
| 15V18CV017      | 14             | 13  | 27    | 15             | 14  | 29    | 11             | 1   | 12    | 2                       | 2   | 2   | 2       | 2   | 6             | 6    | 6    | 6                     | 6    | 22                   | 36     | 22     | 19           | 9      | 75.9               | 81.8 | 75.9 | 65.5    | 31.0 | 30      | 6    |     |  |  |  |  |  |  |
| 15V18CV018      | 10             | 15  | 25    | 14             | 14  | 28    | 10             | 12  | 22    | 2                       | 2   | 2   | 2       | 2   | 9.6           | 9.6  | 9.6  | 9.6                   | 9.6  | 21.6                 | 40.6   | 25.6   | 21.6         | 23.6   | 74.5               | 92.3 | 88.3 | 74.5    | 81.4 | 48      | 9.6  |     |  |  |  |  |  |  |
| 15V18CV019      | 10             | 8   | 18    | 14             | 15  | 29    | 10             | 3   | 13    | 2                       | 2   | 2   | 2       | 2   | 6.4           | 6.4  | 6.4  | 6.4                   | 6.4  | 18.4                 | 30.4   | 23.4   | 18.4         | 11.4   | 63.4               | 69.1 | 80.7 | 63.4    | 39.3 | 32      | 6.4  |     |  |  |  |  |  |  |
| 15V18CV020      | 9              | 6   | 15    | 10             | 8   | 18    | 9              | 6   | 15    | 2                       | 2   | 2   | 2       | 2   | 6.4           | 6.4  | 6.4  | 6.4                   | 6.4  | 17.4                 | 24.4   | 16.4   | 17.4         | 14.4   | 60.0               | 55.5 | 56.6 | 60.0    | 49.7 | 32      | 6.4  |     |  |  |  |  |  |  |
| 15V18CV021      | 9              | 4   | 13    | 10             | 7   | 17    | 2              | 0   | 2     | 2                       | 2   | 2   | 2       | 2   | 0.6           | 0.6  | 0.6  | 0.6                   | 0.6  | 11.6                 | 16.6   | 9.6    | 4.6          | 2.6    | 40.0               | 37.7 | 33.1 | 15.9    | 9.0  | 3       | 0.6  |     |  |  |  |  |  |  |
| 15V18CV023      | 10             | 13  | 23    | 10             | 7   | 17    | 7              | 4   | 11    | 2                       | 2   | 2   | 2       | 2   | 6             | 6    | 6    | 6                     | 6    | 18                   | 31     | 15     | 15           | 12     | 62.1               | 70.5 | 51.7 | 51.7    | 41.4 | 30      | 6    |     |  |  |  |  |  |  |
| 15V18CV024      | 10             | 11  | 21    | 10             | 15  | 25    | 7              | 0   | 7     | 2                       | 2   | 2   | 2       | 2   | 4.4           | 4.4  | 4.4  | 4.4                   | 4.4  | 16.4                 | 27.4   | 21.4   | 13.4         | 6.4    | 56.6               | 62.3 | 73.8 | 46.2    | 22.1 | 22      | 4.4  |     |  |  |  |  |  |  |
| 15V18CV025      | 11             | 8   | 19    | 13             | 11  | 24    | 10             | 5   | 15    | 2                       | 2   | 2   | 2       | 2   | 3.4           | 3.4  | 3.4  | 3.4                   | 3.4  | 16.4                 | 26.4   | 16.4   | 15.4         | 10.4   | 56.6               | 60.0 | 56.6 | 53.1    | 35.9 | 17      | 3.4  |     |  |  |  |  |  |  |
| 15V18CV026      | 10             | 14  | 24    | 10             | 15  | 25    | 9              | 8   | 17    | 2                       | 2   | 2   | 2       | 2   | 5.6           | 5.6  | 5.6  | 5.6                   | 5.6  | 17.6                 | 31.6   | 22.6   | 16.6         | 15.6   | 60.7               | 71.8 | 77.9 | 57.2    | 53.8 | 28      | 5.6  |     |  |  |  |  |  |  |
| 15V18CV027      | 10             | 7   | 17    | 14             | 14  | 28    | 8              | 9   | 17    | 2                       | 2   | 2   | 2       | 2   | 7.8           | 7.8  | 7.8  | 7.8                   | 7.8  | 19.8                 | 30.8   | 23.8   | 17.8         | 18.8   | 68.3               | 70.0 | 82.1 | 61.4    | 64.8 | 39      | 7.8  |     |  |  |  |  |  |  |
| 15V18CV028      | 11             | 9   | 20    | 14             | 14  | 28    | 9              | 6   | 15    | 2                       | 2   | 2   | 2       | 2   | 6.8           | 6.8  | 6.8  | 6.8                   | 6.8  | 19.8                 | 31.8   | 22.8   | 17.8         | 14.8   | 68.3               | 72.3 | 78.6 | 61.4    | 51.0 | 34      | 6.8  |     |  |  |  |  |  |  |
| 15V18CV029      | 11             | 5   | 16    | 10             | 11  | 21    | 7              | 2   | 9     | 2                       | 2   | 2   | 2       | 2   | 4.4           | 4.4  | 4.4  | 4.4                   | 4.4  | 17.4                 | 21.4   | 17.4   | 13.4         | 8.4    | 60.0               | 48.6 | 60.0 | 46.2    | 29.0 | 22      | 4.4  |     |  |  |  |  |  |  |
| 15V18CV030      | 10             | 8   | 18    | 10             | 9   | 19    | 6              | 5   | 15    | 2                       | 2   | 2   | 2       | 2   | 8.8           | 8.8  | 8.8  | 8.8                   | 8.8  | 20.8                 | 28.8   | 19.8   | 16.8         | 19.8   | 71.7               | 65.5 | 68.3 | 57.9    | 68.3 | 44      | 8.8  |     |  |  |  |  |  |  |
| 15V18CV031      | 7              | 7   | 14    | 15             | 15  | 30    | 4              | 4   | 8     | 2                       | 2   | 2   | 2       | 2   | 3.4           | 3.4  | 3.4  | 3.4                   | 3.4  | 12.4                 | 27.4   | 20.4   | 9.4          | 9.4    | 42.8               | 62.3 | 70.3 | 32.4    | 32.4 | 17      | 3.4  |     |  |  |  |  |  |  |
| 15V18CV032      | 8              | 8   | 16    | 10             | 8   | 18    | 4              | 5   | 9     | 2                       | 2   | 2   | 2       | 2   | 3             | 3    | 3    | 3                     | 3    | 13                   | 23     | 13     | 9            | 10     | 44.8               | 52.3 | 44.8 | 31.0    | 34.5 | 15      | 3    |     |  |  |  |  |  |  |
| 15V18CV033      | 10             | 7   | 17    | 10             | 11  | 21    | 6              | 6   | 12    | 2                       | 2   | 2   | 2       | 2   | 4.6           | 4.6  | 4.6  | 4.6                   | 4.6  | 16.6                 | 23.6   | 17.6   | 12.6         | 12.6   | 57.2               | 53.6 | 60.7 | 43.4    | 43.4 | 23      | 4.6  |     |  |  |  |  |  |  |
| 15V18CV034      | 5              | 5   | 10    | 7              | 6   | 13    | 5              | 4   | 9     | 2                       | 2   | 2   | 2       | 2   | 3.2           | 3.2  | 3.2  | 3.2                   | 3.2  | 10.2                 | 17.2   | 11.2   | 10.2         | 9.2    | 35.2               | 39.1 | 38.6 | 35.2    | 31.7 | 16      | 3.2  |     |  |  |  |  |  |  |
| 15V18CV035      | 9              | 9   | 18    | 11             | 11  | 22    | 7              | 0   | 7     | 2                       | 2   | 2   | 2       | 2   | 2.8           | 2.8  | 2.8  | 2.8                   | 2.8  | 13.8                 | 24.8   | 15.8   | 11.8         | 3.8    | 47.6               | 56.4 | 54.5 | 40.7    | 13.1 | 14      | 2.8  |     |  |  |  |  |  |  |
| 15V18CV036      | 10             | 13  | 23    | 15             | 15  | 30    | 15             | 14  | 29    | 2                       | 2   | 2   | 2       | 2   | 7.4           | 7.4  | 7.4  | 7.4                   | 7.4  | 19.4                 | 37.4   | 24.4   | 24.4         | 23.4   | 66.9               | 85.0 | 84.1 | 84.1    | 80.7 | 37      | 7.4  |     |  |  |  |  |  |  |
| 15V18CV037      | 10             | 11  | 21    | 10             | 11  | 21    | 6              | 6   | 12    | 2                       | 2   | 2   | 2       | 2   | 5             | 5    | 5    | 5                     | 5    | 17                   | 28     | 18     | 13           | 13     | 58.6               | 63.6 | 62.1 | 44.8    | 44.8 | 25      | 5    |     |  |  |  |  |  |  |
| 15V18ME001      | 10             | 8   | 18    | 10             | 18  | 28    | 7              | 0   | 7     | 2                       | 1   | 2   | 2       | 2   | 3             | 3    | 3    | 3                     | 3    | 15                   | 22     | 23     | 12           | 5      | 51.7               | 50.0 | 79.3 | 41.4    | 17.2 | 15      | 3    |     |  |  |  |  |  |  |
| 15V18ME002      | 10             | 12  | 22    | 15             | 15  | 30    | 14             | 15  | 29    | 2                       | 2   | 2   | 2       | 2   | 7.6           | 7.6  | 7.6  | 7.6                   | 7.6  | 19.6                 | 36.6   | 24.6   | 23.6         | 24.6   | 67.6               | 83.2 | 84.8 | 81.4    | 84.8 | 38      | 7.6  |     |  |  |  |  |  |  |
| 15V18ME003      | 10             | 8   | 18    | 14             | 13  | 27    | 10             | 4   | 14    | 2                       | 2   | 2   | 2       | 2   | 6             | 6    | 6    | 6                     | 6    | 18                   | 30     | 21     | 18           | 12     | 62.1               | 68.2 | 72.4 | 62.1    | 41.4 | 30      | 6    |     |  |  |  |  |  |  |
| 15V18ME004      | 12             | 14  | 26    | 14             | 14  | 28    | 8              | 8   | 16    | 2                       | 2   | 2   | 2       | 2   | 1.66          | 1.66 | 1.66 | 1.66                  | 1.66 | 15.66                | 31.66  | 17.66  | 11.66        | 11.66  | 54.0               | 72.0 | 60.9 | 40.2    | 40.2 | 8.3     | 1.66 |     |  |  |  |  |  |  |
| 15V18ME005      | 10             | 13  | 23    | 10             | 12  | 22    | 6              | 6   | 12    | 2                       | 2   | 2   | 2       | 2   | 4.2           | 4.2  | 4.2  | 4.2                   | 4.2  | 16.2                 | 29.2   | 18.2   | 12.2         | 12.2   | 55.9               | 66.4 | 62.8 | 42.1    | 42.1 | 21      | 4.2  |     |  |  |  |  |  |  |
| 15V18ME007      | 10             | 9   | 19    | 14             | 13  | 27    | 10             | 7   | 17    | 2                       | 2   | 2   | 2       | 2   | 2.8           | 2.8  | 2.8  | 2.8                   | 2.8  | 14.8                 | 27.8   | 17.8   | 14.8         | 11.8   | 51.0               | 63.2 | 61.4 | 51.0    | 40.7 | 14      | 2.8  |     |  |  |  |  |  |  |
| 15V18ME008      | 11             | 15  | 26    | 10             | 9   | 19    | 7              | 6   | 13    | 2                       | 2   | 2   | 2       | 2   | 4.2           | 4.2  | 4.2  | 4.2                   | 4.2  | 17.2                 | 31.2   | 15.2   | 13.2         | 12.2   | 59.3               | 70.9 | 52.4 | 45.5    | 42.1 | 21      | 4.2  |     |  |  |  |  |  |  |
| 15V18ME009      | 10             | 9   | 19    | 10             | 8   | 18    | 5              | 5   | 10    | 2                       | 2   | 2   | 2       | 2   | 3.2           | 3.2  | 3.2  | 3.2                   | 3.2  | 15.2                 | 24.2   | 13.2   | 10.2         | 10.2   | 52.4               | 55.0 | 45.5 | 35.2    | 35.2 | 16      | 3.2  |     |  |  |  |  |  |  |
| 15V18ME010      | 10             | 15  | 25    | 14             | 13  | 27    | 10             | 4   | 14    | 2                       | 2   | 2   | 2       | 2   | 5.2           | 5.2  | 5.2  | 5.2                   | 5.2  | 17.2                 | 36.2   | 20.2   | 17.2         | 11.2   | 59.3               | 82.3 | 69.7 | 59.3    | 38.6 | 26      | 5.2  |     |  |  |  |  |  |  |
| 15V18ME011      | 10             | 9   | 19    | 10             | 4   | 14    | 7              | 0   | 7     | 2                       | 2   | 2   | 2       | 2   | 4.2           | 4.2  | 4.2  | 4.2                   | 4.2  | 16.2                 | 25.2   | 10.2   | 13.2         | 6.2    | 55.9               | 57.3 | 35.2 | 45.5    | 21.4 | 21      | 4.2  |     |  |  |  |  |  |  |
| 15V18ME012      | 9              | 6   | 15    | 10             | 11  | 21    | 5              | 4   | 9     | 2                       | 2   | 2   | 2       | 2   | 2.8           | 2.8  | 2.8  | 2.8                   | 2.8  | 13.8                 | 20.8   | 15.8   | 9.8          | 8.8    | 47.6               | 47.3 | 54.5 | 33.8    | 30.3 | 14      | 2.8  |     |  |  |  |  |  |  |
| 15V18ME013      | 10             | 12  | 22    | 10             | 13  | 23    | 10             | 8   | 18    | 2                       | 2   | 2   | 2       | 2   | 5             | 5    | 5    | 5                     | 5    | 17                   | 29     | 20     | 17           | 15     | 58.6               | 65.9 | 69.0 | 58.6    | 51.7 | 25      | 5    |     |  |  |  |  |  |  |
| 15V18ECO01      | 10             | 7   |       |                |     |       |                |     |       |                         |     |     |         |     |               |      |      |                       |      |                      |        |        |              |        |                    |      |      |         |      |         |      |     |  |  |  |  |  |  |



## DEPARTMENT OF EEE

|                |                              |                     |            |
|----------------|------------------------------|---------------------|------------|
| <b>SUBJECT</b> | Basic Electrical Engineering | <b>SUBJECT CODE</b> | 18ELE13/23 |
|----------------|------------------------------|---------------------|------------|

### COURSE OUTCOME

|            |  |
|------------|--|
| <b>CO1</b> | Understand the dc circuits and electrical laws.  |
| <b>CO2</b> | Apply the basic electrical laws to solve ac and dc circuits  |
| <b>CO3</b> | Discuss the construction and operation of various electrical machines  |
| <b>CO4</b> | Identify suitable electrical machines for practical implementations  |
| <b>CO5</b> | Explain the concept of electrical transmission and distribution ,electricity billing, circuit protective devices and personal safety measures. |

### PROGRAM OUTCOME

- PO1** Engineering knowledge: An ability to apply knowledge of mathematics (including probability, statistics and discrete mathematics), science, and engineering for solving Engineering problems and Knowledge.
- PO2** Problem analysis: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- PO3** Design / development of solutions: An ability to design solution for engineering problems and design system components or process to meet desired specifications and needs.
- PO4** Conduct investigations of complex Problem: An ability to identify, formulate, comprehend, analyze, design synthesis of the information to solve complex engineering problems and provide valid conclusions.
- PO5** Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modeling to complex engineering activities.
- PO6** The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal, and cultural issues.
- PO7** Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- PO8** Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- PO9** Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- PO10** Communication: Communicate effectively on complex engineering activities with the engineering community and with the society.
- PO11** Project management and finance: An ability to use the modern engineering tools, techniques, skills and management principles to do work as a member and leader in a team, to manage projects in multidisciplinary environments.
- PO12** Life-long learning: A recognition of the need for, and an ability to engage in, to resolve contemporary issues and acquire lifelong learning.

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|                            |  |          |     |               |         |     |              |         |            |      |      |      |
|----------------------------|--|----------|-----|---------------|---------|-----|--------------|---------|------------|------|------|------|
| COLLEGE                    | SHRIDEVI INSTITUTE OF ENGINEERING & TECHNOLOGY |          |     |               |         |     |              |         |            |      |      |      |
| FACULTY NAME               | UMABAI   |          |     |               |         |     |              |         |            |      |      |      |
| BRANCH                     | EEE  |          |     | ACADEMIC YEAR |         |     |              | 2018-19 |            |      |      |      |
| COURSE                     | B.E  | SEMESTER |     |               | SECTION |     | A& B         |         |            |      |      |      |
| SUBJECT                    | Basic Electrical Engineering                   |          |     |               |         |     | SUBJECT CODE |         | 18ELE13/23 |      |      |      |
| <b>CO &amp; PO MAPPING</b> |  |          |     |               |         |     |              |         |            |      |      |      |
|                            | PO1  | PO2      | PO3 | PO4           | PO5     | PO6 | PO7          | PO8     | PO9        | PO10 | PO11 | PO12 |
| CO1                        | 3  | 2        | 1   | -             | -       | 1   | 1            | 1       | -          | -    | -    | 1    |
| CO2                        | 3  | 3        | 2   | 1             | -       | 1   | 0            | 0       | -          | -    | -    | 1    |
| CO3                        | 3  | 2        | 1   | 1             | -       | 1   | 1            | 1       | -          | -    | -    | 1    |
| CO4                        | 3  | 2        | 2   | 1             | -       | 1   | 1            | 1       | -          | -    | -    | 1    |
| CO5                        | 3  | 1        | 2   | -             | -       | 2   | 1            | 1       | -          | -    | 1    | 1    |
| AVERAGE                    | 3  | 2        | 1.6 | 1             | -       | 1.2 | 0.8          | 0.8     | -          | -    | 1    | 1    |
| OVERALL MAPPING OF SUBJECT |  |          |     |               |         |     |              |         |            |      |      | 1.37 |

#### CO AND PO ATTAINMENT

|                        | CO%   | PO1   | PO2  | PO3  | PO4  | PO5 | PO6  | PO7   | PO8   | PO9 | PO10 | PO11 | PO12  |
|------------------------|-------|-------|------|------|------|-----|------|-------|-------|-----|------|------|-------|
| CO1                    | 61.86 | 2.00  | 1.33 | 0.66 |      |     | 0.66 | 0.66  | 0.66  |     |      |      | 0.66  |
| CO2                    | 66.73 | 2.19  | 2.19 | 1.46 | 0.73 |     | 0.73 |       |       |     |      |      | 0.73  |
| CO3                    | 67.76 | 1.87  | 1.25 | 0.62 | 0.62 |     | 0.62 | 0.62  | 0.62  |     |      |      | 0.62  |
| CO4                    | 55.32 | 1.77  | 1.18 | 1.18 | 0.59 |     | 0.59 | 0.59  | 0.59  |     |      |      | 0.59  |
| CO5                    | 49.85 | 1.89  | 0.63 | 1.26 |      |     | 1.26 | 0.63  | 0.63  |     |      | 0.63 | 0.63  |
| AVERAGE                | 62.76 | 1.944 | 1.44 | 1.03 | 0.64 |     | 0.77 | 0.625 | 0.625 |     |      | 0.63 | 0.646 |
| FINAL ATTAINMENT LEVEL |       |       |      |      |      |     |      |       |       |     |      |      | 1.12  |

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| Academic year   | 2018-19        |     |       | SEM II         |     |       | Total strength |     |       | 83                      | Subject BASIC ELECTRICAL ENGG |     |     |     |               | Subject Code |      |      |      |                      | 18ELE23 |        |        |        |                    |      |      |      |      |         |     |      |
|-----------------|----------------|-----|-------|----------------|-----|-------|----------------|-----|-------|-------------------------|-------------------------------|-----|-----|-----|---------------|--------------|------|------|------|----------------------|---------|--------|--------|--------|--------------------|------|------|------|------|---------|-----|------|
| SEM: I SEC: A&B | IA TEST 1(30M) |     |       | IA TEST 2(30M) |     |       | IA TEST 3(30M) |     |       | ASSIGNMENT / QUIZ(10 M) |                               |     |     |     | SEE MARKS(60) |              |      |      |      | Total Cos ATTAINMENT |         |        |        |        | % of individual CO |      |      |      |      | SEE Tot |     |      |
| USN             | CO1            | CO2 | TOTAL | CO2            | CO3 | TOTAL | CO4            | CO5 | TOTAL | CO1                     | CO2                           | CO3 | CO4 | CO5 | CO1-1         | CO2          | CO3  | CO4  | CO5  | CO1-29               | CO2-44  | CO3-29 | CO4-29 | CO5-29 | CO1                | CO2  | CO3  | CO4  | CO5  |         |     |      |
| 15V18CV001      | 8              | 8   | 16    | 4              | 5   | 9     | 4              | 4   | 8     | 2                       | 2                             | 2   | 2   | 2   | 2.4           | 2.4          | 2.4  | 2.4  | 2.4  | 2.4                  | 12.4    | 15.4   | 9.4    | 7.4    | 8.4                | 42.8 | 35.0 | 32.4 | 25.5 | 29.0    | 12  | 2.4  |
| 15V18CV002      | 10             | 10  | 20    | 10             | 13  | 23    | 4              | 0   | 4     | 2                       | 2                             | 2   | 2   | 2   | 3.4           | 3.4          | 3.4  | 3.4  | 3.4  | 3.4                  | 15.4    | 25.4   | 18.4   | 9.4    | 5.4                | 53.1 | 57.7 | 63.4 | 32.4 | 18.6    | 17  | 3.4  |
| 15V18CV003      | 14             | 13  | 27    | 14             | 14  | 28    | 10             | 12  | 22    | 2                       | 2                             | 2   | 2   | 2   | 6.6           | 6.6          | 6.6  | 6.6  | 6.6  | 6.6                  | 22.6    | 35.6   | 22.6   | 18.6   | 20.6               | 77.9 | 80.9 | 77.9 | 64.1 | 71.0    | 33  | 6.6  |
| 15V18CV004      | 10             | 5   | 15    | 14             | 13  | 27    | 9              | 11  | 20    | 2                       | 2                             | 2   | 2   | 2   | 4.2           | 4.2          | 4.2  | 4.2  | 4.2  | 4.2                  | 16.2    | 25.2   | 19.2   | 15.2   | 17.2               | 55.9 | 57.3 | 66.2 | 52.4 | 59.3    | 21  | 4.2  |
| 15V18CV005      | 7              | 3   | 10    | 10             | 9   | 19    | 4              | 4   | 8     | 2                       | 2                             | 2   | 2   | 2   | 2.2           | 2.2          | 2.2  | 2.2  | 2.2  | 2.2                  | 11.2    | 17.2   | 13.2   | 8.2    | 8.2                | 38.6 | 39.1 | 45.5 | 28.3 | 28.3    | 11  | 2.2  |
| 15V18CV007      | 10             | 15  | 25    | 14             | 13  | 27    | 7              | 6   | 13    | 2                       | 2                             | 2   | 2   | 2   | 4.4           | 4.4          | 4.4  | 4.4  | 4.4  | 4.4                  | 16.4    | 35.4   | 19.4   | 13.4   | 12.4               | 56.6 | 80.5 | 66.9 | 46.2 | 42.8    | 22  | 4.4  |
| 15V18CV008      | 10             | 9   | 19    | 10             | 13  | 23    | 10             | 9   | 19    | 2                       | 2                             | 2   | 2   | 2   | 4.8           | 4.8          | 4.8  | 4.8  | 4.8  | 4.8                  | 16.8    | 25.8   | 19.8   | 16.8   | 15.8               | 57.9 | 58.6 | 68.3 | 57.9 | 54.5    | 24  | 4.8  |
| 15V18CV009      | 10             | 7   | 17    | 10             | 11  | 21    | 4              | 3   | 7     | 2                       | 2                             | 2   | 2   | 2   | 5.2           | 5.2          | 5.2  | 5.2  | 5.2  | 5.2                  | 17.2    | 24.2   | 18.2   | 11.2   | 10.2               | 59.3 | 55.0 | 62.8 | 38.6 | 35.2    | 26  | 5.2  |
| 15V18CV010      | 0              | 0   | 0     | 10             | 8   | 18    | 5              | 5   | 10    | 2                       | 2                             | 2   | 2   | 2   | 4.8           | 4.8          | 4.8  | 4.8  | 4.8  | 4.8                  | 6.8     | 16.8   | 14.8   | 11.8   | 11.8               | 23.4 | 38.2 | 51.0 | 40.7 | 40.7    | 24  | 4.8  |
| 15V18CV011      | 10             | 8   | 18    | 14             | 14  | 28    | 10             | 8   | 18    | 2                       | 2                             | 2   | 2   | 2   | 7.6           | 7.6          | 7.6  | 7.6  | 7.6  | 7.6                  | 19.6    | 31.6   | 23.6   | 19.6   | 17.6               | 67.6 | 71.8 | 81.4 | 67.6 | 60.7    | 38  | 7.6  |
| 15V18CV012      | 5              | 5   | 10    | 7              | 7   | 14    | 7              | 6   | 13    | 2                       | 2                             | 2   | 2   | 2   | 4.2           | 4.2          | 4.2  | 4.2  | 4.2  | 4.2                  | 11.2    | 18.2   | 13.2   | 13.2   | 12.2               | 38.6 | 41.4 | 45.5 | 45.5 | 42.1    | 21  | 4.2  |
| 15V18CV013      | 10             | 12  | 22    | 15             | 15  | 30    | 10             | 9   | 19    | 2                       | 2                             | 2   | 2   | 2   | 8.4           | 8.4          | 8.4  | 8.4  | 8.4  | 8.4                  | 20.4    | 37.4   | 25.4   | 20.4   | 19.4               | 70.3 | 85.0 | 87.6 | 70.3 | 66.9    | 42  | 8.4  |
| 15V18CV014      | 10             | 12  | 22    | 15             | 15  | 30    | 10             | 6   | 16    | 2                       | 2                             | 2   | 2   | 2   | 4.8           | 4.8          | 4.8  | 4.8  | 4.8  | 4.8                  | 16.8    | 33.8   | 21.8   | 16.8   | 12.8               | 57.9 | 76.8 | 75.2 | 57.9 | 44.1    | 24  | 4.8  |
| 15V18CV015      | 10             | 11  | 21    | 12             | 12  | 24    | 7              | 8   | 15    | 2                       | 2                             | 2   | 2   | 2   | 5.8           | 5.8          | 5.8  | 5.8  | 5.8  | 5.8                  | 17.8    | 30.8   | 19.8   | 14.8   | 15.8               | 61.4 | 70.0 | 68.3 | 51.0 | 54.5    | 29  | 5.8  |
| 15V18CV016      | 1              | 0   | 1     | 10             | 11  | 21    | 3              | 3   | 6     | 2                       | 2                             | 2   | 2   | 2   | 2.6           | 2.6          | 2.6  | 2.6  | 2.6  | 2.6                  | 5.6     | 14.6   | 15.6   | 7.6    | 7.6                | 19.3 | 33.2 | 53.8 | 26.2 | 26.2    | 13  | 2.6  |
| 15V18CV017      | 14             | 13  | 27    | 15             | 14  | 29    | 11             | 1   | 12    | 2                       | 2                             | 2   | 2   | 2   | 6             | 6            | 6    | 6    | 6    | 6                    | 22      | 36     | 22     | 19     | 9                  | 75.9 | 81.8 | 75.9 | 65.5 | 31.0    | 30  | 6    |
| 15V18CV018      | 10             | 15  | 25    | 14             | 14  | 28    | 10             | 12  | 22    | 2                       | 2                             | 2   | 2   | 2   | 9.6           | 9.6          | 9.6  | 9.6  | 9.6  | 9.6                  | 21.6    | 40.6   | 25.6   | 21.6   | 23.6               | 74.5 | 92.3 | 88.3 | 74.5 | 81.4    | 48  | 9.6  |
| 15V18CV019      | 10             | 8   | 18    | 14             | 15  | 29    | 10             | 3   | 13    | 2                       | 2                             | 2   | 2   | 2   | 6.4           | 6.4          | 6.4  | 6.4  | 6.4  | 6.4                  | 18.4    | 30.4   | 23.4   | 18.4   | 11.4               | 63.4 | 69.1 | 80.7 | 63.4 | 39.3    | 32  | 6.4  |
| 15V18CV020      | 9              | 6   | 15    | 10             | 8   | 18    | 9              | 6   | 15    | 2                       | 2                             | 2   | 2   | 2   | 6.4           | 6.4          | 6.4  | 6.4  | 6.4  | 6.4                  | 17.4    | 24.4   | 16.4   | 17.4   | 14.4               | 60.0 | 55.5 | 56.6 | 60.0 | 49.7    | 32  | 6.4  |
| 15V18CV021      | 9              | 4   | 13    | 10             | 7   | 17    | 2              | 0   | 2     | 2                       | 2                             | 2   | 2   | 2   | 0.6           | 0.6          | 0.6  | 0.6  | 0.6  | 0.6                  | 11.6    | 16.6   | 9.6    | 4.6    | 2.6                | 40.0 | 37.7 | 33.1 | 15.9 | 9.0     | 3   | 0.6  |
| 15V18CV023      | 10             | 13  | 23    | 10             | 7   | 17    | 7              | 4   | 11    | 2                       | 2                             | 2   | 2   | 2   | 6             | 6            | 6    | 6    | 6    | 6                    | 18      | 31     | 15     | 15     | 12                 | 62.1 | 70.5 | 51.7 | 51.7 | 41.4    | 30  | 6    |
| 15V18CV024      | 10             | 11  | 21    | 10             | 15  | 25    | 7              | 0   | 7     | 2                       | 2                             | 2   | 2   | 2   | 4.4           | 4.4          | 4.4  | 4.4  | 4.4  | 4.4                  | 16.4    | 27.4   | 21.4   | 13.4   | 6.4                | 56.6 | 62.3 | 73.8 | 46.2 | 22.1    | 22  | 4.4  |
| 15V18CV025      | 11             | 8   | 19    | 13             | 11  | 24    | 10             | 5   | 15    | 2                       | 2                             | 2   | 2   | 2   | 3.4           | 3.4          | 3.4  | 3.4  | 3.4  | 3.4                  | 16.4    | 26.4   | 16.4   | 15.4   | 10.4               | 56.6 | 60.0 | 56.6 | 53.1 | 35.9    | 17  | 3.4  |
| 15V18CV026      | 10             | 14  | 24    | 10             | 15  | 25    | 9              | 8   | 17    | 2                       | 2                             | 2   | 2   | 2   | 5.6           | 5.6          | 5.6  | 5.6  | 5.6  | 5.6                  | 17.6    | 31.6   | 22.6   | 16.6   | 15.6               | 60.7 | 71.8 | 77.9 | 57.2 | 53.8    | 28  | 5.6  |
| 15V18CV027      | 10             | 7   | 17    | 14             | 14  | 28    | 8              | 9   | 17    | 2                       | 2                             | 2   | 2   | 2   | 7.8           | 7.8          | 7.8  | 7.8  | 7.8  | 7.8                  | 19.8    | 30.8   | 23.8   | 17.8   | 18.8               | 68.3 | 70.0 | 82.1 | 61.4 | 64.8    | 39  | 7.8  |
| 15V18CV028      | 11             | 9   | 20    | 14             | 14  | 28    | 9              | 6   | 15    | 2                       | 2                             | 2   | 2   | 2   | 6.8           | 6.8          | 6.8  | 6.8  | 6.8  | 6.8                  | 19.8    | 31.8   | 22.8   | 17.8   | 14.8               | 68.3 | 72.3 | 78.6 | 61.4 | 51.0    | 34  | 6.8  |
| 15V18CV029      | 11             | 5   | 16    | 10             | 11  | 21    | 7              | 2   | 9     | 2                       | 2                             | 2   | 2   | 2   | 4.4           | 4.4          | 4.4  | 4.4  | 4.4  | 4.4                  | 17.4    | 21.4   | 17.4   | 13.4   | 8.4                | 60.0 | 48.6 | 60.0 | 46.2 | 29.0    | 22  | 4.4  |
| 15V18CV030      | 10             | 8   | 18    | 10             | 9   | 19    | 6              | 9   | 15    | 2                       | 2                             | 2   | 2   | 2   | 8.8           | 8.8          | 8.8  | 8.8  | 8.8  | 8.8                  | 20.8    | 28.8   | 19.8   | 16.8   | 19.8               | 71.7 | 65.5 | 68.3 | 57.9 | 68.3    | 44  | 8.8  |
| 15V18CV031      | 7              | 7   | 14    | 15             | 15  | 30    | 4              | 4   | 8     | 2                       | 2                             | 2   | 2   | 2   | 3.4           | 3.4          | 3.4  | 3.4  | 3.4  | 3.4                  | 12.4    | 27.4   | 20.4   | 9.4    | 9.4                | 42.8 | 62.3 | 70.3 | 32.4 | 32.4    | 17  | 3.4  |
| 15V18CV032      | 8              | 8   | 16    | 10             | 8   | 18    | 4              | 5   | 9     | 2                       | 2                             | 2   | 2   | 2   | 3             | 3            | 3    | 3    | 3    | 3                    | 13      | 23     | 13     | 9      | 10                 | 44.8 | 52.3 | 44.8 | 31.0 | 34.5    | 15  | 3    |
| 15V18CV033      | 10             | 7   | 17    | 10             | 11  | 21    | 6              | 6   | 12    | 2                       | 2                             | 2   | 2   | 2   | 4.6           | 4.6          | 4.6  | 4.6  | 4.6  | 4.6                  | 16.6    | 23.6   | 17.6   | 12.6   | 12.6               | 57.2 | 53.6 | 60.7 | 43.4 | 43.4    | 23  | 4.6  |
| 15V18CV034      | 5              | 5   | 10    | 7              | 6   | 13    | 5              | 4   | 9     | 2                       | 2                             | 2   | 2   | 2   | 3.2           | 3.2          | 3.2  | 3.2  | 3.2  | 3.2                  | 10.2    | 17.2   | 11.2   | 10.2   | 9.2                | 35.2 | 39.1 | 38.6 | 35.2 | 31.7    | 16  | 3.2  |
| 15V18CV035      | 9              | 9   | 18    | 11             | 11  | 22    | 7              | 0   | 7     | 2                       | 2                             | 2   | 2   | 2   | 1             | 2.8          | 2.8  | 2.8  | 2.8  | 2.8                  | 13.8    | 24.8   | 15.8   | 11.8   | 3.8                | 47.6 | 56.4 | 54.5 | 40.7 | 13.1    | 14  | 2.8  |
| 15V18CV036      | 10             | 13  | 23    | 15             | 15  | 30    | 15             | 14  | 29    | 2                       | 2                             | 2   | 2   | 2   | 7.4           | 7.4          | 7.4  | 7.4  | 7.4  | 7.4                  | 19.4    | 37.4   | 24.4   | 24.4   | 23.4               | 66.9 | 85.0 | 84.1 | 84.1 | 80.7    | 37  | 7.4  |
| 15V18CV037      | 10             | 11  | 21    | 10             | 11  | 21    | 6              | 6   | 12    | 2                       | 2                             | 2   | 2   | 2   | 5             | 5            | 5    | 5    | 5    | 5                    | 17      | 28     | 18     | 13     | 13                 | 58.6 | 63.6 | 62.1 | 44.8 | 44.8    | 25  | 5    |
| 15V18ME001      | 10             | 8   | 18    | 10             | 18  | 28    | 7              | 0   | 7     | 2                       | 1                             | 2   | 2   | 2   | 3             | 3            | 3    | 3    | 3    | 3                    | 15      | 22     | 23     | 12     | 5                  | 51.7 | 50.0 | 79.3 | 41.4 | 17.2    | 15  | 3    |
| 15V18ME002      | 10             | 12  | 22    | 15             | 15  | 30    | 14             | 15  | 29    | 2                       | 2                             | 2   | 2   | 2   | 7.6           | 7.6          | 7.6  | 7.6  | 7.6  | 7.6                  | 19.6    | 36.6   | 24.6   | 23.6   | 24.6               | 67.6 | 83.2 | 84.8 | 81.4 | 84.8    | 38  | 7.6  |
| 15V18ME003      | 10             | 8   | 18    | 14             | 13  | 27    | 10             | 4   | 14    | 2                       | 2                             | 2   | 2   | 2   | 6             | 6            | 6    | 6    | 6    | 6                    | 18      | 30     | 21     | 18     | 12                 | 62.1 | 68.2 | 72.4 | 62.1 | 41.4    | 30  | 6    |
| 15V18ME004      | 12             | 14  | 26    | 14             | 14  | 28    | 8              | 8   | 16    | 2                       | 2                             | 2   | 2   | 2   | 1.66          | 1.66         | 1.66 | 1.66 | 1.66 | 1.66                 | 15.66   | 31.66  | 17.66  | 11.66  | 11.66              | 54.0 | 72.0 | 60.9 | 40.2 | 40.2    | 8.3 | 1.66 |
| 15V18ME005      | 10             | 13  | 23    | 10             | 12  | 22    | 6              | 6   | 12    | 2                       | 2                             | 2   | 2   | 2   | 4.2           | 4.2          | 4.2  | 4.2  | 4.2  | 4.2                  | 16.2    | 29.2   | 18.2   | 12.2   | 12.2               | 55.9 | 66.4 | 62.8 | 42.1 | 42.1    | 21  | 4.2  |
| 15V18ME007      | 10             | 9   | 19    | 14             | 13  | 27    | 10             | 7   | 17    | 2                       | 2                             | 2   | 2   | 2   | 2.8           | 2.8          | 2.8  | 2.8  | 2.8  | 2.8                  | 14.8    | 27.8   | 17.8   | 14.8   | 11.8               | 51.0 | 63.2 | 61.4 | 51.0 | 40.7    | 14  | 2.8  |
| 15V18ME008      | 11             | 15  | 26    | 10             | 9   | 19    | 7              | 6   | 13    | 2                       | 2                             | 2   | 2   | 2   | 4.2           | 4.2          | 4.2  | 4.2  | 4.2  | 4.2                  | 17.2    | 31.2   | 15.2   | 13.2   | 12.2               | 59.3 | 70.9 | 52.4 | 45.5 | 42.1    | 21  | 4.2  |
| 15V18ME009      | 10             | 9   | 19    | 10             | 8   | 18    | 5              | 5   | 10    | 2                       | 2                             | 2   | 2   | 2   | 3.2           | 3.2          | 3.2  | 3.2  | 3.2  | 3.2                  | 15.2    | 24.2   | 13.2   | 10.2   | 10.2               | 52.4 | 55.0 | 45.5 | 35.2 | 35.2    | 16  | 3.2  |
| 15V18ME010      | 10             | 15  | 25    | 14             | 13  | 27    | 10             | 4   | 14    | 2                       | 2                             | 2   | 2   | 2   | 5.2           | 5.2          | 5.2  | 5.2  | 5.2  | 5.2                  | 17.2    | 36.2   | 20.2   | 17.2   | 11.2               | 59.3 | 82.3 | 69.7 | 59.3 | 38.6    | 26  | 5.2  |
| 15V18ME011      | 10             | 9   | 19    | 10             | 4   | 14    | 7              | 0   | 7     | 2                       | 2                             | 2   | 2   | 2   | 4.2           | 4.2          | 4.2  | 4.2  | 4.2  | 4.2                  | 16.2    | 25.2   | 10.2   | 13.2   | 6.2                | 55.9 | 57.3 | 35.2 | 45.5 | 21.4    | 21  | 4.2  |
| 15V18ME012      | 9              | 6   | 15    | 10             | 11  | 21    | 5              | 4   | 9     | 2                       | 2                             | 2   | 2   | 2   | 2.8           | 2.8          | 2.8  | 2.8  | 2.8  | 2.8                  | 13.8    | 20.8   | 15.8   | 9.8    | 8.8                | 4    |      |      |      |         |     |      |

