# **ODD SEM-2019-20**



### SIRA ROAD, TUMKUR- 572 106.

# **Department of Physics**

### Course Outcomes and COs-POs Mapping

Batch 2019-20

Semester – I

Subjec	t: Engineering Physics	Subject Code: 18PHY12									
	Course Outcomes										
CO1	Understand various types of oscillations and their in in various fields and Recognize the elastic properties applications.	nplications, the role of Shock waves s of materials for engineering									
CO2	Realize the interrelation between time varying electric field and magnetic field, the transverse nature of the EM waves and their role in optical fiber communication.										
CO3	Compute Eigenvalues, Eigenfunctions, the momentu using Time independent 1-D Schrodinger's wave eq	um of Atomic and subatomic particles ution.									
CO4	Apprehend the theoretical background of laser, co types of laser and its applications in different fields.	onstruction, and working of different									
CO5	Understand various electrical and thermal prop- semiconductors and dielectrics using different theory	erties of materials like conductors, etical models.									

#### 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		SHR	IDEVI I	NSTIT	UTE (	OF EN	GINE	ERING	AND 7	ГЕСНИ	OLOGY	Y			
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BRAN	СН		CSE/IS	E		A	CAD	EMIC Y	EAR		2019	-20			
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CO & PO M	O & PO MAPPING														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12			
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# CO AND PO ATTAINMENT

CC	C0%	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
<b>CO1</b>	62.52662	1.87	1.87										1.25
CO2	58.30382	1.75	1.75										1.17
CO3	55.50792	1.66	1.66										1.11
CO4	55.41473	1.66	1.66										1.11
C05	59.20472	1.78	1.78			- -				in e	R. M. A.		1.18
AVERAGE	58.19156	1.74	1.74									•	1.16
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FACULTY

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HOD H.O.D Dept. of Physics S.I.E.T., TUMKUR - 6 PRINCIPAL PRINCIPAL SHRIDEVI INSTITUTE OF NGINEERING AND TECHNOLOGY TUMKUR - 572106.

SEM: I	Tot	al S	trength	1	11			Co	urse:	Engin	eering Phy	ysics		-	Cour	se Code:	18PI	IY12		2019-20	dil.				est lips	Cale of the	Annealth	Steeler.		
SEC. A & B	L	A TE	ST 1		IA	TES	т 2	14.1	TEST 3			ASSI	GNEMEN	T (10M)		C. C.	SE	E MARKS	(60)			Total Co	S ATTAI	NMENT			%	of individual	со	
USN	CO3	CC	A TOT	LC	01 0	COI	TOTA	COS	CO2	TOTAL	COI	CO2	CO3	CO4	COS	CO1=12	CO2	CO3	CO4	CO5	CO1=44	CO2=29	CO3=29	CO4=29	CO5=29	CO1	CO2	CO3	C04	CO5
15V19C5001	15	5	14	29	14	15	25	9	9 9	18	2	2	2	2	2	2 8.2	8.2	8.2	8.2	8.2	39.2	19.2	25.2	24.2	19.2	89.09091	66.2069	86.89655	83.44828	66.2069
15V19CS002		5	5	10	4	4	1	8	4 5	9	2	2	2	2	2	2 1	1	1	1	1	11	8	8	8	7	25	27.58621	27.58621	27.58621	24.13793
15V19C5003	10	0	9	19	12	13	2	5 1	0 9	19	2	-	2	2	2	2 5	5	5	5	5	32	16	17	16	17	72.72727	55.17241	58.62069	55.17241	58.62069
15V19C5004		3	3	6	5	5	10	0	4 5	9	2		2	2	2	2 4.2	4.2	4.2	4.2	4.2	16.2	11.2	9.2	9.2	10.2	36.81818	38.62069	31.72414	31.72414	35.17241
15V19CS005	-	7	7	4	6	- 11	1	3	6 3	11			2	2	2	2 2.2	7.2	7.2	7.2	7.2	20.2	9.2	17.2	17.2	10.2	59.09091	51.72414	50 21034	50 21024	50 21024
15V19C5006		8	8	16	5	5	1		8 10	20				2	2	2 28	2.2	2.8	2.8	28	14.8	14.8	12.8	17.2	14.8	33,63636	51.03448	44 13793	44 13797	51.03448
15V19C5007	1	5	15	30	15	14	2	9 1	4 13	27			2	2	2	2 6	6	6	6	6	37	21	23	23	22	84.09091	72.41379	79.31034	79.31034	75.86207
15V19C5009	-	2	2	4	8	9	1	7 1	1 3	13	2		2	2	2	2 1.2	1.2	1.2	1.2	1.2	20.2	5.2	5.2	5.2	14.2	45.90909	17.93103	17.93103	17.93103	48.96552
15V19C5010		3	3	6	7	7	1	4	4 5	9	2		2	2	2	2 2.8	2.8	2.8	2.8	2.8	18.8	9.8	7.8	7.8	8.8	42.72727	33.7931	26.89655	26.89655	30.34483
15V19CS011		5	6	11	8	8	1	6	5 5	10	2		2	2	2	2 1.6	1.6	1.6	1.6	1.6	19.6	8.6	8.6	9.6	8.6	44.54545	29.65517	29.65517	33.10345	29.65517
15V19C5012	1	1	12	23	12	12	2	4 1	10 9	19	2		2	2	2	2 2	2	2	2	2	28	13	15	16	14	63.63636	44.82759	51.72414	55.17241	48.27586
15V19C5013	1	0	9	19	11	11	2	2 1	4 1	29	2	2	2	2	2	2 4.2	4.2	4.2	4.2	4.2	28.2	21.2	16.2	15.2	20.2	64.09091	73.10345	55.86207	52.41379	69.65517
15V19C5014	1	2	13	25	14	13	2	7	8 9	17	2		2	2	2	2 4.6	4.6	4.6	4.6	4.6	33.6	15.6	18.6	19.6	14.6	76.36364	53.7931	64.13793	67.58621	50.34483
15V19C5015	1	1	12	23	13	13	2	6 1	15 15	30	2		2	2	2	2 10	10	10	10	10	38	27	23	24	27	86.36364	93.10345	79.31034	82.75862	93.10345
15V19C5016		6	7	13	8	1	1	5 1	0	19			2	2	2	2 5.2	5.2	5.2	5.2	5.2	22.2	16.2	13.2	14.2	17.2	50.45455	34 49376	45.51/24	48.90552	34 49376
15V19C5017		/	6	13		11	1 2	2 1	5 10	10	-			2	2	2 5	5	5	6	6	30	23	12	11	23	68 18182	79 31034	62 06897	65 51724	79 31034
15V19C5018	1	2	1	3	- 0	- 11			1 1	27				2	2	2 2.4	24	24	2.4	2.4	4.4	15.4	6.4	5.4	15.4	10	53.10345	22.06897	18.62069	53.10345
15V19C5019		8	9	17	12	12	2	4	8	15				2	2	2 4.2	4.2	4.2	4.2	4.2	30.2	13.2	14.2	15.2	14.2	68.63636	45.51724	48.96552	52.41379	48.96552
15V19C5020	1	5	15	30	14	14	2	8 1	15 1	30			2	2	2	2 10	10	10	10	10	40	27	27	27	27	90.90909	93.10345	93.10345	93.10345	93.10345
15V19C5022	1	1	11	22	9	9	1	8 1	1 1	22		2	2	2	2	2 7.6	7.6	7.6	7.6	7.6	27.6	20.6	20.6	20.6	20.6	62.72727	71.03448	71.03448	71.03448	71.03448
15V19C5023	1110	8	7	15	6	7	1	3 1	10 9	9 19		2	2	2	2	2 5.4	5.4	5.4	5.4	5.4	20.4	16.4	15.4	14.4	17.4	46.36364	56.55172	53.10345	49.65517	60
1SV19C5024		6	7	13	7	7	1	4 1	10 9	9 19		2	2	2	2	2 0.8	0.8	0.8	0.8	0.8	16.8	11.8	8.8	9.8	12.8	38.18182	40.68966	30.34483	33.7931	44.13793
15V19C5025	1	4	15	29	12	12	. 2	4	8 1	3 16	1	2	2	2	2	2 5.4	5.4	5.4	5.4	5.4	31.4	15.4	21.4	22.4	15.4	71.36364	53.10345	73.7931	77.24138	53.10345
15V19C5026		1	1	2	4	3	-	7	8 1	3 16		2	2	2	2	2 1.4	1.4	1.4	1.4	1.4	10.4	11.4	4,4	4.4	11.4	23.63636	39.31034	15.17241	15.17241	39.31034
15V19C5027	1	4	14	28	15	15	3	0	9 9	18		2	2	2	2	2 7.8	7.8	7.8	7.8	7.8	39.8	18.8	23.8	23.8	18.8	90.45455	64.82759	82.06897	82.06897	64.82759
15V19C5028		6	5	11	7	/	1	4	0	13	-			2	2	2 7.2	6.6	6.6	5.6	6.6	23.2	15.2	19.2	19.2	16.6	51 36364	53 7031	67 58621	48.90332	57 24138
15V19C5029	1	1	12	27	12	14	2	7 .	15 1	30				2	2	2 8.8	8.8	8.8	8.8	8.8	37.8	25.8	24.8	23.8	25.8	85 90909	88 96552	85 51724	82 06897	88 96552
15V19C5030	-	0	1	1	6	5	1	1	7 1	5 13			2	2	2	2 3.4	3.4	3.4	3.4	3.4	16.4	11.4	5.4	6.4	12.4	37.27273	39.31034	18.62069	22.06897	42.75862
15V19C5032	1	0	10	20	9	9	1	8 1	10 1	20		2	2	2	2	2 6.6	6.6	6.6	6.6	6.6	26.6	18.6	18.6	18.6	18.6	60.45455	64.13793	64.13793	64.13793	64.13793
15V19C5033	1.1.1.5	7	6	13	8	9	1	7	6	5 12		2	2	2	2	2 6.8	6.8	6.8	6.8	6.8	25.8	14.8	15.8	14.8	14.8	58.63636	51.03448	54.48276	51.03448	51.03448
15V19C5034	1	5	14	29	14	14	2	8 1	15 1	5 30		2	2	2	2	2 9.4	9.4	9.4	9.4	9.4	39.4	26.4	26.4	25.4	26.4	89.54545	91.03448	91.03448	87.58621	91.03448
15V19C5035	1	1	11	22	10	10	2	0 1	13 1	3 26		2	2	2	2	2 4.8	4.8	4.8	4.8	4.8	26.8	19.8	17.8	17.8	19.8	60.90909	68.27586	61.37931	61.37931	68.27586
15V19C5036		4	3	7	12	13	2	5	3	3 6		2	2	2	2	2 2.2	2.2	2.2	2.2	2.2	29.2	7.2	8.2	7.2	7.2	66.36364	24.82759	28.27586	24.82759	24.82759
15V19C5037		1	1	2	9	9	1	8	4	3 7	-	2	2	2	2	2 2.8	2.8	2.8	2.8	2.8	22.8	7.8	5.8	5.8	8.8	51.81818	26.89655	20	20	30.34483
15V19C5038	1	2	12	23	10	10	2	0	7	14	-		2	2	2	2 3.2	3.2	3.2	3.2	3.2	17.9	12.2	16.2	17.2	12.2	57.27273	42.06897	33.86207	36 90655	42.06897
15V19C5039		2	3	3	15	10	1	3	3 1				2	2	2	2 2.0	9.2	9.2	9.2	9.2	41.0	25.2	24.2	7.0	25.2	93 63636	86 89655	83 44828	20.89033	86 89655
15V19C5040	1 1	4	15	29	12	11	1 2	3	12 1	2 24			2	2	2	2 4.8	4.8	4.8	4.8	4.8	29.8	18.8	20.8	21.8	18.8	67.72727	64.82759	71.72414	75.17241	64.82759
15V19C5042	1	5	5	10	8	8	1	6	8	9 17		2	2	2	2	2 7.8	7.8	7.8	7.8	7.8	25.8	18.8	14.8	14.8	17.8	58.63636	64.82759	51.03448	51.03448	61.37931
15V19C5043	1	1	1	2	7	8	1	5	9	9 18		2	2	2	2	2 3.6	3.6	3.6	3.6	3.6	20.6	14.6	6.6	6.6	14.6	46.81818	50.34483	22.75862	22.75862	50.34483
15V19C5044	1074.01	9	9	18	13	13	2	6	14 1	5 29		2	2	2	2	2 4.8	4.8	4.8	4.8	4.8	32.8	21.8	15.8	15.8	20.8	74.54545	75.17241	54.48276	54.48276	71.72414
1SV19CS045	1	14	13	27	12	13	2	5	8	9 17	1	2	2	2	2	2 7.8	7.8	7.8	7.8	7.8	34.8	18.8	23.8	22.8	17.8	79.09091	64.82759	82.06897	78.62069	61.37931
15V19C5046		6	6	12	11	11	2	2	8	7 15	1	2	2	2	2	2 5.2	5.2	5.2	5.2	5.2	29.2	14.2	13.2	13.2	15.2	66.36364	48.96552	45.51724	45.51724	52.41379
15V19C5047	1	13	12	25	15	15	3	0	13 1	3 26	i :	2	2	2	2	2 5.8	5.8	5.8	5.8	5.8	37.8	20.8	20.8	19.8	20.8	85.90909	71.72414	71.72414	68.27586	71.72414
15V19C5048	1	12	11	23	8	9	1	7	11 1	0 21	1	2	2	2	2	2 6.6	6.6	6.6	6.6	6.6	25.6	18.6	20.6	19.6	19.6	58.18182	64.13793	71.03448	67.58621	67.58621
15V19C5049	-	8	8	16	11	11	2	2	6	11		2	2	2	2	2 6	6	6	6	6	30	13	16	16	14	68.18182	44.82759	55.17241	55.17241	48.27586
15V19C5050	1	12	12	24	15	14	2	9	14 1	29				2	2	2 8.4	8.4	8.4	8.4	8.4	39.4	12.4	15.2	15 3	12.3	89.54545	87.58621	52 41220	52 41270	45 51734
15V19C5051		9	9	16	4	11	-	1	0	0 19			2	2	2	2 4.2	4.2	4.2	4.2	4.2	27.2	15.2	14.2	14.2	15.2	61,81819	52 41379	48 96552	48.96553	52 41370
15V19C5052	-	12	12	24	15	11	1	0	14 1	3 21		2	2	2	2	2 9.4	9.4	9.4	9.4	9.4	41.4	24.4	23.4	23.4	25.4	94.09091	84.13793	80.68966	80.68966	87.58621
15V19C5054	1	1	1	2	5	4	1	1	7	6 13		2	2	2	2	2 4.2	4.2	4.2	4.2	4.2	17.2	12.2	7.2	7.2	13.2	39.09091	42.06897	24.82759	24.82759	45.51724
15V19C5055	1.51.00	4	3	7.	12	11	2	3	5	5 10	1.1	8 1.1	8 1	.8 1.	.8 1.	8 1.6	1.6	1.6	1.6	1.6	26.4	8.4	7.4	• 6.4	8.4	60	28.96552	25.51724	22.06897	28.96552
15V19C5056		5	6	11	12	12	2	4	6	6 12	2	2	2	2	2	2 2.2	2.2	2.2	2.2	2.2	28.2	10.2	9.2	10.2	10.2	64.09091	35.17241	31.72414	35.17241	35.17241
15V19C5057	1	12	13	25	14	13	2	7	13 1	3 26	5	2	2	2	2	2 9.6	9.6	9.6	9.6	9.6	38.6	24.6	23.6	24.6	24.6	87.72727	84.82759	81.37931	84.82759	84.82759
15V19CS058	1	12	12	24	12	13	2	25	15 1	5 30		2	2	2	2	2 9.2	9.2	9.2	9.2	9.2	36.2	26.2	23.2	23.2	26.2	82.27273	90.34483	80	80	90.34483
15V19C5059	1	13	13	26	11	12	2 2	3	11 1	1 22	2	2	2	2	2	2 6.6	6.6	6.6	6.6	6.6	31.6	19.6	21.6	21.6	19.6	71.81818	67.58621	74.48276	74.48276	67.58621
1SV19CS060		6	7	13	4	3	3	7	12 1	2 24		2	2	2	2	2 6	6	6	6	6	15	20	14	15	20	34.09091	68.96552	48.27586	51.72414	68.96552

15V19C5061	12	12	24	11	12	1	23	9	10	19	2	2	2 2	2 58	5.8	5.8	5.8	5.8	30.8	17.8	19.8	19.8	16.8	70	61 37931	68 27586	68 27586	57 93103
15V19C5062	8	8	16	14	13	11	27	10	9	19	2	2	2 2	2 42	4.2	4.2	4.2	4.2	33.2	15.2	14.2	14.2	16.2	75 45455	52 41379	48 96552	49 96552	55 96207
15/19/5062	7	7	14	6	7		13	9	9	18	2	2 3	2 2	2 72	7.2	7.2	7.2	7.2	22.2	18.2	16.2	16.2	19.2	50 45455	62 75862	55 96207	55 96207	63 75963
15V19C5064	5	5	10	8	7		15	10	10	20	2	2	2 2	2 54	5.4	54	54	5.4	22.4	17.4	12.4	12.4	17.4	50,90909	60	42 75862	42 75862	60
15V19CS065	12	12	24	7	8		15	12	12	24	2	2	2 2	2 9.2	9.2	9.2	9.2	9.2	26.2	23.2	23.2	23.2	23.2	59 54545	80	80	80	80
15V19C5066	12	11	23	10	11	1	21	8	8	16	2	2	2 2	2 6.2	6.2	6.2	6.2	6.2	29.2	16.2	20.2	19.2	16.2	66 36364	55.86207	69 65517	66 2069	55 86207
15V19C5067	6	7	13	11	10		21	8	7	15	2	2	2 2	2 6	6	6	6	6	29	15	14	15	16	65 90909	51 72414	48 27586	51 72414	55 17241
15V19C5068	4	3	7	5	5	-	10	6	7	13	2	2	2 2	2 3.2	3.2	3.2	3.2	3.2	15.2	12.2	9.2	82	11.2	34 54545	42 06897	31 72414	28 27586	38 62069
15V19C5069	11	10	21	12	12		24	9	8	17	2	2	2 2	2 7.8	7.8	7.8	7.8	7.8	33.8	17.8	20.8	19.8	18.8	76 81818	61 37931	71 72414	68 27586	64 82759
15V19C5070	15	15	30	15	15		30	15	14	29	2	2	2 2	2 11.4	11.4	11.4	11.4	11.4	43.4	27.4	28.4	28.4	28.4	98.63636	94 48276	97 93103	97 93103	97 93103
15V19C5071	14	14	28	15	15		30	12	12	24	2	2	2 2	2 10.2	10.2	10.2	10.2	10.2	42.2	24.2	26.2	26.2	24.2	95 90909	83 44828	90 34483	90 34483	83 44828
15V19C5072	11	11	22	11	11		22	14	14	28	2	2	2 2	2 4.8	4.8	4.8	4.8	4.8	28.8	20.8	17.8	17.8	20.8	65 45455	71 72414	61 37931	61 37931	71 72414
15V19C5073	4	4	8	2	3		5	6	7	13	2	2	2 2	2 0.8	0.8	0.8	0.8	0.8	7.8	9.8	6.8	6.8	8.8	17.72727	33,7931	23.44828	23.44828	30 34483
15V19C5074	6	7	13	10	9		19	11	10	21	2	2	2 2	2 5.6	5.6	5.6	5.6	5.6	26.6	17.6	13.6	14.6	18.6	60 45455	60,68966	46.89655	50 34483	64 13793
15V19C5075			A			A	-	13	13	26	2	2	2 2	2 1.6	1.6	1.6	1.6	1.6	3.6	16.6	3.6	3.6	16.6	8.181818	57.24138	12,41379	12 41379	57 24138
15V19C5076	6	7	13	12	11	1	23	10	11	21	2	2	2 2	2 3	3	3	3	3	28	16	11	12	15	63 63636	55 17241	37 93103	41 37931	51 72414
15V19C5077	7	7	14	14	15		29	10	9	19	2	2	2 2	2 5.8	5.8	5.8	5.8	5.8	36.8	16.8	14.8	14.8	17.8	83,63636	57 93103	51.03448	51 03448	61 37931
15V19C5078	11	11	22	14	14		28	11	11	22	2	2	2 2	2 72	7.2	7.2	7.2	7.2	37.2	20.2	20.2	20.2	20.2	84 54545	69.65517	69 65517	69 65517	69 65517
1511905079	6	6	12	6	6		12	2	1	3	2	2	2 2	2 48	4.8	4.8	4.8	4.8	18.8	78	12.8	12.8	8.8	42 72727	26 89655	AA 13793	44 13793	30 34492
15V19C5080	14	14	28	13	13		26	13	12	25	2	2	2 2	2 52	5.2	5.2	5.2	5.2	33.2	19.2	21.0	21.0	20.2	75 45455	66 2069	73 10345	73 10345	60 65517
15/1905081	0	0	18	14	13		27	15	15	30	2	2	2 2	2 48	4.8	4.8	4.8	4.8	33.8	21.8	15.8	15.8	20.2	76 91919	75 17241	54 49276	54 49276	75 17241
15V19C5082	15	15	30	15	14		29	14	15	29	2	2	2 2	2 10.8	10.8	10.8	10.8	10.8	41.8	27.8	27.8	27.8	21.0	70.01010	95 86207	95 86207	95 86207	07 41270
15V19C5082	13	12	26	12	13	-	25	15	15	30	2	2	2 2	2 96	9.6	9.6	9.6	9.6	36.6	26.6	27.6	27.0	20.0	92 19192	93.80207	93.80207	93.00207	92.41379
15V19C5084	12	11	23	11	17	1	23	9	8	17	2	2	2 2	2 22	2.0	2.2	2.0	2.0	27.2	12.2	16.2	15.2	12 20.0	61 91919	42 06897	55 86207	52 41270	A5 51774
15/19/5085	12	11	19	12	12		25	12	11	23	2	2	2 2	2 5.4	5.4	5.4	5.4	5.4	37.4	19.4	16.4	15.2	10.4	72 62626	62 44939	55.80207	52.41379	45.51724
15/1905086	3	3	6	10	10		20	7	7	14	2	2	2 2	2 48	4.8	4.8	4.8	4.8	26.8	13.9	0.4	0.4	12.4	60.00000	47 59621	22 7021	33 7021	47 59631
15/19/5001	8	8	16	14	13	-	27	11	12	23	2	2	2 2	2 6	4.0	6	6	4.0	20.0	20	16	16	13.0	70 54545	68 96552	55 17241	55 17241	65 51724
15V19IS003	6	6	12	4	4	1	8	8	7	15	2	2	2 2	2 42	4.2	4.2	4.2	4.2	14.2	13.2	12.2	12.2	14.2	32 27273	45 51724	42 06897	42 06897	48 96552
15/19/5005	9	8	16	10	9		19	9	8	17	2	2	2 2	2 42	4.2	4.2	4.2	4.2	25.2	14.2	14.2	14.2	15.2	57 37373	48 96552	48 96552	48.06552	52 41270
15/19/5006	10	10	20	8			16	12	12	24	2	2	2 2	2 44	4.4	4.4	4.4	4.4	224	18.4	16.4	16.4	18.4	50 90909	63 44828	56 55172	56 55172	63 44978
15V19IS007	10	9	19	14	14	1	28	13	14	27	2	2	2 2	2 7.8	7.8	7.8	7.8	7.8	37.8	23.8	19.8	18.8	22.8	85,90909	82 06897	68 27586	64 82759	78 62069
15/19/5008	7	8	15	6	7		13	6	6	12	2	2	2 2	2 42	4.2	4.2	4.2	4.2	19.2	12.2	13.2	14.2	12.0	43 63636	42 06897	45 51724	48 96552	42.06897
15V19I5009	0	0	0	0	0		0	13	13	26	2	2	2 2	2 1.6	1.6	1.6	1.6	1.6	3.6	16.6	3.6	3.6	16.6	8 181818	57 24138	12 41379	12 41379	57 24138
15V19IS010	4	3	7	3	3		6	7	7	14	2	2	2 2	2 3.4	3.4	3.4	3.4	3.4	11.4	12.4	9.4	8.4	12.4	25,90909	42,75862	32 41379	28 96552	42 75862
15V19IS011	6	7	13	7	7	,	14	-	1		2	2	2 2	2 4.6	4.6	4.6	4.6	4.6	20.6	6.6	12.6	13.6	6.6	46.81818	22.75862	43,44828	46.89655	22,75862
15V19IS012	11	10	21	14	15		29	15	14	29	2	2	2 2	2 9.6	9.6	9.6	9.6	9.6	40.6	25.6	22.6	21.6	26.6	92 27273	88.27586	77.93103	74.48276	91 72414
15V19IS013	11	11	22	13	14	1	27	15	15	30	2	2	2 2	2 9	9	9	9	9	38	26	22	22	26	86.36364	89.65517	75.86207	75.86207	89.65517
15V19IS014	12	12	24	12	13	3	25	15	15	30	2	2	2 2	2 1.6	1.6	1.6	1.6	1.6	28.6	18.6	15.6	15.6	18.6	65	64.13793	53,7931	53.7931	64.13793
15V19IS015	9	9	18	10	6		19	6	6	12	2	2	2 2	2 4.8	4.8	4.8	4.8	4.8	25.8	12.8	15.8	15.8	12.8	58.63636	44,13793	54,48276	54.48276	44,13793
15V19IS016	10	9	19	12	17	2	24	10	10	20	2	2	2 2	2 6.6	6.6	6.6	6.6	6.6	32.6	18.6	18.6	17.6	18.6	74.09091	64.13793	64.13793	60.68966	64.13793
15V19IS017	13	13	26	14	15	5	29	15	14	29	2	2	2 2	2 8.2	8.2	8.2	8.2	8.2	39.2	24.2	23.2	23.2	25.2	89.09091	83.44828	80	80	86.89655
15V19IS018	9	9	18	12	12	2	24	10	9	19	2	2	2 2	2 5.8	5.8	5.8	5.8	5.8	31.8	16.8	16.8	16.8	17.8	72 27273	57,93103	57.93103	57.93103	61 37931
15V19IS019	10	10	20	12	17	2	24	13	12	25	2	2	2 2	2 8.8	8.8	8.8	8.8	8.8	34.8	22.8	20.8	20.8	23.8	79.09091	78.62069	71.72414	71.72414	82.06897
15V19IS020	6	6	12	10	6	9	19	8	8	16	2	2	2 2	2 7	7	7	7	7	28	17	15	15	17	63.63636	58.62069	51 72414	51 72414	58 62069
15V19IS021	6	7	13	5		5	10	4	3	7	2	2	2 2	2 3.6	3.6	3.6	3.6	3.6	15.6	8.6	11.6	12.6	9.6	35.45455	29.65517	40	43 44828	33 10345
15V19IS022	8	8	16	13	13	3	26	6	5	11	2	2	2 2	2 2.6	2.6	2.6	2.6	2.6	30.6	9.6	12.6	12.6	10.6	69.54545	33,10345	43.44828	43.44828	36.55172
15V19IS023	12	12	24	12	1	2	24	7	7	14	2	2	2 2	2 6.2	6.2	6.2	6.2	6.2	32.2	15.2	20.2	20.2	15.2	73.18182	52.41379	69.65517	69.65517	52.41379
15V19I5024	13	13	26	15	15		30	14	14	28	2	2	2 2	2 8	8	8	8	8	40	24	23	23	24	90,90909	82,75862	79.31034	79 31034	82 75862
15V19IS025	13	13	26	12	13	3	25	6	7	13	2	2	2 2	2 5.6	5.6	5.6	5.6	5.6	32.6	14.6	20.6	20.6	13.6	74.09091	50.34483	71.03448	71.03448	46.89655
15V19IS026	8	7	15	10	-		19	5	4	9	2	2	2 2	2 4.2	4.2	4.2	4.2	4.2	25.2	10.2	14.2	13.2	11.2	57.27273	35 17241	48 96552	45 51724	38 62069
15V19I5027	10	10	20	11	10	2	21	13	12	25	2	2	2 2	2 6	6	6	6	. 6	29	20	18	18	21	65,90909	68.96552	62.06897	62.06897	72 41379
					-	-					-1	-								-		10		62:52662	58.30382	55,50792	55.41473	59.20472

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## H.O.D Dept. of Physics S.I.E.T., TUMKUR -6,

PRINCIPAL SHRIDEVI INSTITUTE OF ENGINEERING AND TECHNOLOGY TUMKUR = 572106

# **EVEN SEM-2019-20**



## SIRA ROAD, TUMKUR- 572 106.

# **Department of Physics**

### Course Outcomes and COs-POs Mapping

Batch 2019-20

Semester - II

Subje	ct: Engineering Physics	Subject Code: 18PHY22
	Course Outcomes	
C01	Understand various types of oscillations and their i in various fields and Recognize the elastic propertie applications.	mplications, the role of Shock waves es of materials for engineering
CO2	Realize the interrelation between time varying elec transverse nature of the EM waves and their role in	tric field and magnetic field, the optical fiber communication.
CO3	Compute Eigenvalues, Eigenfunctions, the momen using Time independent 1-D Schrodinger's wave e	tum of Atomic and subatomic particles equation.
CO4	Apprehend the theoretical background of laser, of types of laser and its applications in different fields	construction, and working of different s.
CO5	Understand various electrical and thermal prop semiconductors and dielectrics using different theo	perties of materials like conductors, oretical models.

#### 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		SHRI	DEVI I	NSTIT	UTE (	OF EN	GINE	ERING	AND 7	ГЕСНИ	OLOG	Y
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BRAN	СН	H	EC/EE/0	CV/ME	2	A	CAD	EMIC Y	EAR		2019	-20
COURSE	B.F	E	SEM	ESTEI	2	Π		SECTIO	N		C & D	
SUBJECT		ENG	GINEE	RING	PHYSI	CS		SUBJE	ст со	DDE	18PH	Y22
CO & PO M	APPIN	١G										
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C01	3	3										2
COLLEGE CO2	3	3	N.VI.)								01.00	2
FACILTY CO3	3	3	in Salt	\SIH	ALAI	P 37	(RTI	1 1 1 1				2
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CO & PO M	APPE		OVERA	LL M	APPIN	G OF	SUBJ	ECT		Л	Л	2.66

# CO AND PO ATTAINMENT

e ce	CO%	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	81.6986	2.45	2.45									2	1.63
CO2	75.06944	2.25	2.25									2.1	1.50
CO3	74.09722	2.22	2.22									2	1.48
CO4	75.17361	2.25	2.25										1.50
CO5	79.86733	2.40	2.40										1.60
AVERAGE	77.18124	2.31	2.31										1.54
CO ANI	PO ATT	UNME	<u>NI</u>					FINA	AL AT	TAINN	1ENT L	EVEL	2.05

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Dept. of Physics S.I.E.T., TUMKUR -6.

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PRINCIPAL PRINCIPAL SHRIDEVI INSTITUTE OF ENGINEERING AND TECHNOLOGY TUMKUR - 572106.

SEM: II	Total Streng	th	90		Co	ourse:	Engineering	Physics		Course	Code:	18P	HY22		2019-20						6 14								
SEC:C&D	IA TEST I		IA	TEST 2			IA TEST	3			ASSIC	INEMEN	Г (10M)	-		SE	E MARKS	(50)			Total C	os ATTAIN	MENT			% of	Individua	CO	
USN	CO1 CO5 T	OTALC	01 CO3	COS	TOTA	COL	CO1 CO2	CO4 CO5	TOTAL	COI	CO2	CO3	CO4	COS	CO1=10	CO2	CO3	CO4	CO5	CO1=87	CO2=32	CO3=32	CO4=32	CO5=67	CO1	CO2	CO3	CO4	COS
15V19EC001	13 13	26	20 2	0 20	64	0 20	20 20 20	20 20	100	2	2	2			6.4	6.4	6.4	6.4	6.4	81.4	28.4	28.4	28.4	61.4	93.56322	88.75	88.75	88.75	91.64179
15V19EC002	14 14	28	20 1	0 20	6	0 20	20 20 20	20 20	100	2	2	2		2 7	7.4	7.4	7.4	7.4	7.4	63.4	29.4	29.4	29.4	63.4	72.87356	91.875	91.875	91.875	94.62687
15V19EC005	15 15	30	20 2	0 19	5	9 20	20 20	20 20	100	2	2	2		2 2	7.4	7.4	7.4	7.4	7.4	84.4	29.4	29.4	29.4	63.4	97.01149	91.875	91.875	91.875	94.62687
15V19EC006	15 15	30	20 2	0 19	5	9 20	20 20	20 20	100	2	2	2	2	2 2	6	6	6	6	6	83	28	28	28	62	95.4023	87.5	87.5	87.5	92.53731
15V19EC007	15 15	30	20 2	0 19	5	9 16	5 15 15	15 15	76	0.8	0.8	8.0	0.1	3.0.8	4.8	4.8	4.8	4.8	4.8	71.6	20.6	25.6	20.6	54.6	82.29885	64.375	80	64.375	81.49254
15V19EC008	15 15	30	20 2	0 19	5	9 20	20 20	20 20	100	1.9	19	1.9	1	1 15	6.4	0.4	6.4	0.4	6.4	83.4	28.4	28.4	28.4	62.4	95.86207	88.75	88.75	88.75	93.13433
15V19EC010	15 15	30	20 2	0 20	6	0 20	20 20	20 20	100	2	2	2		2 2	4.6	4.6	4.6	4.6	4.6	81.6	26.6	26.6	26.6	61.6	93,7931	83.125	83.125	83.125	91,9403
15V19EC011	15 15	30	20 2	0 19	5	9 20	20 20	20 20	100	1.6	1.6	1.6	1.0	5 1.6	5.2	5.2	5.2	5.2	5.2	81.8	26.8	26.8	26.8	60.8	94.02299	83.75	83.75	83.75	90.74627
15V19EC012	14 13	27	20 2	0 19	5	9 20	20 20	20 20	100	2	2	2	2	2 7	6.4	6.4	6.4	6.4	6.4	82.4	28.4	28.4	28.4	60.4	94.71264	88.75	88.75	88.75	90.14925
15V19EC013	15 15	30	20 2	0 19	5	9 20	20 20	20 20	100	2	2	2	2	2 2	6	6	6	6	6	83	28	28	28	62	95.4023	87.5	87.5	87.5	92.53731
15V19EC014	15 15	30	10 1	0 10	3	0 20	20 20	20 20	100	2	2	2			6.4	6.4	6.4	6.4	6.4	73.4	28.4	18.4	28.4	53.4	84.36782	88.75	57.5	88.75	79.70149
15V19EC015	15 15	30	18 1	8 18	5	4 20	20 20 20	20 20	100	2	2	2			6.2	6.2	62	62	6.2	81.2	29	29	29	61.2	96.551/2	90.625	90.625	90.625	95.52239
15V19EC017	15 15	30	20 2	0 20	6	0 20	20 20	20 20	100	2	2	2		2 7	7	7	7	7	7	84	29	29	29	64	96.55172	90.625	90.625	90.625	95.52239
15V19EC018	15 15	30	20 2	0 19	5	9 20	20 20	20 20	100	1.2	1.2	1.2	1.3	2 1.2	6.8	6.8	6.8	6.8	6.8	83	28	28	28	62	95.4023	87.5	87.5	87.5	92.53731
15V19EC019	15 15	30	20 2	0 20	6	0 20	0 20 20	20 20	100	2	2	2	1	2 2	6	6	6	6	6	83	28	28	28	63	95.4023	87.5	87.5	87.5	94.02985
15V19EC021	15 15	30	20 2	0 19	5	9 20	20 20	20 20	100	2	2	2		2 2	5.6	5.6	5.6	5.6	5.6	82.6	27.6	27.6	27.6	61.6	94.94253	86.25	86.25	86.25	91.9403
15V19EC022	14 14	28	20 2	0 19	5	9 20	20 20 20	20 20	100	2	2	2		2	52	7	52	1 53	1 63	83	29	29	29	62	95.4023	90.625	90.625	90.625	92.53731
15V19EC023	0 0	0	20 2	0 20	6	0 0	0 0 0	0 0	0	1.8	1.8	1.8	1	3 15	3.2	3.2	3.2	3.2	3.2	25	5	25	5	25	28,73563	15 625	78.125	15 625	37.3134328
15V19EC025	15 15	30	20 1	9 20	5	9 20	20 20	20 20	100	2	2	2		2 2	6.8	6.8	6.8	6.8	6.8	83.8	28.8	27.8	28.8	63.8	96.32184	90	86.875	90	95.22388
15V19EC027	14 13	27	20 1	9 20	5	9 20	20 20	20 20	100	2	2	2	1	2 2	6.4	6.4	6.4	6.4	6.4	82.4	28.4	27.4	28.4	61.4	94.71264	88.75	85.625	88.75	91.64179
15V19EC028	14 14	28	18 1	8 18	5	4 20	20 20	20 20	100	1.2	1.2	1.2	1.3	1.2	2	2	2	2	2	75.2	23.2	21.2	23.2	55.2	86.43678	72.5	66.25	72.5	82.38806
15V19EC029	15 15	30	19 2	0 20	5	9 16	6 16 16	16 16	80	1.6	1.6	1.6	1.0	1.6	4.4	4.4	4.4	4.4	4.4	72	22	26	22	57	82.75862	68.75	81.25	68.75	85.07463
15V19EC030	15 15	28	19 1	0 0	2	0 0		16 16	08	1.8	1.8	1.8	1.1	1.6	3.8	3.8	3.8	3.8	3.8	19.6	5.6	5.6	5.6	19.6	22 52874	17.5	17.5	17.5	84.1/91
15V19CV001	14 15	29	20 2	0 20	6	0 20	0 20 20	20 20	100	1.6	1.6	1.6	1.0	5 1.6	2.8	2.8	2.8	2.8	2.8	78.4	24.4	24.4	24.4	59.4	90.11494	76.25	76.25	76.25	88.65672
15V19CV002	15 15	30	19 1	8 19	5	6 20	0 20 20	20 20	100	2	2	2	2	2 2	4.8	4.8	4.8	4.8	4.8	80.8	26.8	24.8	26.8	60.8	92.87356	83.75	77.5	83.75	90.74627
15V19CV003	15 15	30	0	0 0		0 16	6 16 16	16 16	80	0.4	0.4	0.4	0.4	0.4	3.8	3.8	3.8	3.8	3.8	51.2	20.2	4.2	20.2	35.2	58.85057	63.125	13.125	63.125	52.53731
15V19CV004	15 15	30	20 2	0 20	6	0 20	0 20 20	20 20	100	2	2	2		2 2	3.8	3.8	3.8	3.8	3.8	80.8	25.8	25.8	25.8	60.8	92.87356	80.625	80.625	80.625	90.74627
15V19CV005	12 12	24	18 1	8 20	5	4 12	20 20 20	12 12	60	12	12	1.2	1	1.7	3.4	3.4	3.4	3.4	3.4	59.6	16.6	22.2	16.6	42.6	68 50575	51 875	69.375	51.875	63 58209
15V19CV007	15 15	30	20 2	0 19	5	9 20	0 20 20	20 20	100	1.6	1.6	1.6	1.0	5 1.6	4.2	4.2	4.2	4.2	4.2	80.8	25.8	25.8	25.8	59.8	92.87356	80.625	80.625	80.625	89.25373
15V19CV008	14 13	27	10 1	0 10	3	0 16	6 16 16	16 16	80	0.8	0.8	0.8	3 0.1	3 0.8	3.4	3.4	3.4	3.4	3.4	60.2	20.2	14.2	20.2	43.2	69.1954	63.125	44.375	63.125	64.47761
15V19CV009	14 14	28	20 2	0 19	5	9 20	0 20 20	20 20	100	0	0	0	) (	0 0	5.8	5.8	5.8	5.8	5.8	79.8	25.8	25.8	25.8	58.8	91.72414	80.625	80.625	80.625	87.76119
15V19CV010	14 14	28	20 2	0 19	5	9 20	0 20 20	20 20	100	0.4	0.4	0.4	0,4	0.4	5.6	5.6	5.6	5.6	5.6	80	26	26	26	59	91.95402	81.25	81.25	81.25	88.0597
15V19CV011	15 15	30	10 1	8 10	6	6 20	0 20 20	20 20	100	16	16	16	1	16	4.0	4.6	4.6	4.6	4.6	81.6	20.0	26.6	26.6	61.6	93.7931	83.125	83.125	83.125	91.9403
15V19CV012	14 15	29	20 2	0 20	6	0 20	0 20 20	20 20	100	2	2	2		2 2	6.6	6.6	6.6	6.6	6.6	82.6	28.6	28.6	28.6	63.6	94.94253	89.375	89.375	89.375	94.92537
15V19CV014		0	0	0 0		0 18	8 18 18	18 18	90	2	2	2	1	2 2	4	4	4	4	4	42	24	6	24	24	48.27586	75	18.75	75	35.8209
15V19CV015	13 13	26	16 1	6 16	4	8 15	5 15 15	16 15	76	0.8	0.8	0.8	8 0.8	8 0.8	5	5	5	5	5	64.8	20.8	21.8	21.8	49.8	74.48276	65	68.125	68.125	74.32836
15V19CV016	15 15	30	19 1	9 19	5	7 20	0 20 20	20 20	100	2	2	2		2 2	4.4	4.4	4.4	4.4	4.4	80.4	26.4	25.4	26.4	60.4	92.41379	82.5	79.375	82.5	90.14925
15V19CV017	10 11	21	20 2	0 19	5	9 1:	5 15 15	15 14	100	16	16	16	1	16	6.4	6.4	6.4	6.4	6.4	68.4	23.4	28.4	23.4	52.4	78 62069	73.125	88.75	73.125	78.20896
15V19CV019	13 13	26	20 2	0 19	5	9 20	0 20 20	20 20	100	2	2	2		2 2	4.8	4.8	4.8	4.8	4.8	79.8	26.8	26.8	26.8	58.8	91.72414	83.75	83.75	83.75	87.76119
15V19CV020	10 10	20	13 1	3 12	3	18 (	0 0 0	0 0	0	1.2	1.2	1.2	1.2	1.2	5.2	5.2	5.2	5.2	5.2	29.4	6.4	19.4	6.4	28.4	33.7931	20	60.625	20	42.38806
15V19CV021	15 15	30	20 2	0 19	5	9 20	0 20 20	20 20	100	2	2	2	2 3	2 2	6	6	6	6	6	83	28	28	28	62	95.4023	87.5	87.5	87.5	92.53731
15V19CV022	14 13	27	20 2	0 20	6	0 20	0 20 20	20 20	100	2	2	2	1	2 2	5	5	5	5	5	81	27	27	27	60	93.10345	84.375	84.375	84.375	89.55224
15V19CV023	11 11	0	20	0 0	-	0 18	8 18 18	18 18	90	2	2	2		2	2.4	2.4	2.4	2.4	2.4	40.4	22.4	4.4	22.4	22.4	46.43678	70	13.75	70	33.43284
15V19CV024	15 15	27	14	4 15	1 4	3 13	2 12 12	12 12	60	2	2	1		2 2	24	24	24	24	24	56.4	16.4	18.4	16.4	44.4	64.82759	51.25	57 5	51.25	51.04478
15V19CV027	14 14	28	15 1	5 16	4	16 20	0 20 20	20 20	100	2	2	2		2 2	4	4	4	4	4	75	26	21	26	56	86.2069	81.25	65.625	81.25	83.58209
15V19CV028	15 15	30	20 2	0 20	6	0 20	0 20 20	20 20	100	2	2	2	2 2	2 2	5.2	5.2	5.2	5.2	5.2	82.2	27.2	27.2	27.2	62.2	94.48276	85	85	85	92.83582
15V19CV029	15 15	30	20	0 20	6	0 20	0 20 20	20 20	100	2	2	2	2 3	2 2	6.2	6.2	6.2	6.2	6.2	83.2	28.2	28.2	28.2	63.2	95.63218	88.125	88.125	88.125	94.32836
15V19CV030	15 15	30	20	0 19	5	9 20	0 20 20	20 20	100	2	2	2		2 2	4.2	4.2	4.2	4.2	4.2	81.2	26.2	26.2	26.2	60.2	93.33333	81.875	81.875	81.875	89.85075
15V19CV031	14 14	28	20 2	20 20	6	0 20	20 20 20	20 20	100	2	2	2		2	7	7	7	7	7	83	29	29	29	63	95.4023	90.625	90.625	90.625	94.02985
15V19EE001	14 13	27	20 1	20 20	6	0 10	6 16 16	16 16	80	1.6	1.6	1.6	1.	1.6	3.4	3.4	3.4	3.4	3.4	79.0	21.0	27.6	27.6	54	81.6092	65.625	78.125	65.625	80.59701
15V19EE004	15 15	30	20	0 20	6	50 16	6 16 16	16 16	80	2	2	2	2	2 2	4.2	4.2	4.2	4.2	4.2	73.2	22.2	26.2	22.2	57.2	84.13793	69.375	81.875	69.375	85.37313
15V19EE005	14 13	27	20	0 20	6	50 20	0 20 20	20 20	100	2	2	2	2	2 2	5.2	5.2	5.2	5.2	5.2	81.2	27.2	27.2	27.2	60.2	93.33333	85	85	85	89.85075
15V19EE006		0	18	8 18	5	4 1	5 15 14	14 12	70	0.6	0.6	0.6	5 <u>0.</u>	0.6	6	6	6	6	6	54.6	20.6	24.6	20.6	36.6	62.75862	64.375	76.875	64.375	54.62687
15V19EE007	15 15	30	20 2	0 19	5	9 20	0 20 20	20 20	100	2	2	2		2	6.6	6.6	6.6	6.6	6.6	83.6	28.6	28.6	28.6	62.6	96.09195	89.375	89.375	89.375	93.43284
15V19EE008	14 13	27	13	3 14	5	10 20	0 20 20	20 20	100	12	12	1.2	1 1	1 12	56	56	56	56	56	73.8	26.8	19.8	26.8	53.8	93.10345	84.375	61.875	84.375	80 29851
15V19EE011	15 15	30	20	20 20	6	0 20	0 20 20	20 20	100	2	2	2	2 2	2 2	7.4	7.4	7.4	7.4	7.4	84.4	29.4	29.4	29.4	64.4	97.01149	91.875	91.875	91.875	96.1194
15V19EE012	15 15	30	20	20 20	6	50 10	6 16 16	16 16	80	2	2	2		2 2	4.2	4.2	4.2	4.2	4.7	73.2	22.2	26.2	22.2	57.2	84 13793	69 375	81 875	69 375	85 37313

15V19EE013	14	11	25	20	20	20	60	11	1	1	1 1	1 1	12	56	2	2	2		2	2	6.4	6.4	6.4	6.4	6.4	64.4	19.4	28.4	19.4	51.4	74.02299	60.625	88.75	60.625	76.71642
15V19EE014	15	15	30	0	0	0	0	20	20	2	0 2	0 2	20	100	1.2	1.2	1.2	1.3	2 1	.2	2.6	2.6	2.6	2.6	2.6	58.8	23.8	3.8	23.8	38.8	67.58621	74.375	11.875	74.375	57.91045
1SV19EE015	1.1.1.1.1.1		0	20	20	19	59	20	20	2	0 2	0 2	0	100	1.6	1.6	1.6	1.6	5 1	.6	4	4	4	4	4	65.6	25.6	25.6	25.6	44.6	75.4023	80	80	80	66.56716
1SV19EE016	13	12	25	13	13	14	40	16	5 10	1	6 1	6 1	16	80	2	2	2		2	2	4.4	4.4	4.4	4.4	4.4	64.4	22.4	19.4	22.4	48.4	74.02299	70	60.625	70	72.23881
15V19EE017	15	15	30	20	20	20	60	20	20	2	0 2	0 2	0	100	2	2	2		2	2	7	7	7	7	7	84	29	29	29	64	96.55172	90.625	90.625	90.625	95.52239
15V19EE018	15	15	30	20	20	20	60	20	20	2	0 2	0 2	20	100	2	2	2	1	2	2	5.4	5.4	5.4	5.4	5.4	82.4	27.4	27.4	27.4	62.4	94.71264	85.625	85.625	85.625	93.13433
15V19EE019	1.1.1		0	20	20	19	59	0	) (	)	0	0	0	0	1.8	1.8	1.8	1.4	8 1	.8	4.2	4.2	4.2	4.2	4.2	26	6	26	6	25	29.88506	18.75	81.25	18.75	37.31343
15V19EE020	14	14	28	20	20	19	59	20	20	2	0 2	0 2	20	100	2	2	2		2	2	5.4	5.4	5.4	5.4	5.4	81.4	27.4	27.4	27.4	60.4	93.56322	85.625	85.625	85.625	90.14925
15V19ME001	15	15	30	20	20	20	60	20	20	2	0 7	0 2	0	100	2	2	2		2	2	5.4	5.4	5.4	5.4	5.4	82.4	27.4	27.4	27.4	62.4	94.71264	85.625	85.625	85.625	93.13433
15V19ME002	14	13	27	20	20	20	60	10	10	1	0 1	1 1	1	52	2	2	2	1	2	2	5.6	5.6	5.6	5.6	5.6	61.6	17.6	27.6	18.6	51.6	70.8046	55	86.25	58.125	77.01493
15V19ME003	15	14	29	20	20	20	60	20	20	2	0 2	0 2	0	100	2	2	2		2	2	4.2	4.2	4.2	4.2	4.2	81.2	26.2	26.2	26.2	60.2	93.33333	81.875	81.875	81.875	89.85075
15V19ME004	14	11	25	20	20	19	59	20	20	) 2	0 7	0 2	20	100	1.2	1.2	1.2	1.3	2 1	.2	3.4	3.4	3.4	3.4	3.4	78.6	24.6	24.6	24.6	54.6	90.34483	76.875	76.875	76.875	81.49254
15V19ME005	15	15	30	20	19	19	58	20	20	2	0 2	0 2	20	100	0.4	0.4	0.4	0.4	\$ O	.4	4.4	4.4	4.4	4.4	4.4	79.8	24.8	23.8	24.8	58.8	91.72414	77.5	74.375	77.5	87.76119
15V19ME006			0	20	20	20	60	20	20	2	0 2	0 2	20	100	1.6	1.6	1.6	1.6	5 1	.6	6.2	6.2	6.2	6.2	6.2	67.8	27.8	27.8	27.8	47.8	77.93103	86.875	86.875	86.875	71.34328
15V19ME008	15	15	30	20	20	20	60	20	2	2	0 2	0 2	20	100	2	2	2	1	2	2	6.2	6.2	6.2	6.2	6.2	83.2	28.2	28.2	28.2	63.2	95.63218	88.125	88.125	88.125	94.32836
15V19ME010	14	11	25	20	20	19	59	20	20	2	0 2	0 2	20	100	1.2	1.2	1.2	1.2	2 1	.2	4.8	4.8	4.8	4.8	4.8	80	26	26	26	56	91.95402	81.25	81.25	81.25	83.58209
15V19ME011			0	12	12	12	36	14	1 14	1	4 1	5 1	15	72	1	1	1	1	1	1	3.2	3.2	3.2	3.2	3.2	44.2	18.2	16.2	19.2	31.2	50.8046	56.875	50.625	60	46.56716
15V19ME012	13	13	26	0	0	0	0			)	0	0	0	0	2	2	2		2	2	5.6	5.6	5.6	5.6	5.6	20.6	7.6	7.6	7.6	20.6	23.67816	23.75	23.75	23.75	30.74627
15V19ME013	13	14	27	9	9	9	27	12	1	1	2 1	2 1	12	60	2	2	2		2	2	2.6	2.6	2.6	2.6	2.6	50.6	16.6	13.6	16.6	39.6	58.16092	51.875	42.5	51.875	59.10448
15V19ME014	15	15	30	0	0	0	0	0 0		)	0	0	0	0	1.8	1.8	1.8	1.8	3 1	.8	3.2	3.2	3.2	3.2	3.2	20	5	5	5	20	22.98851	15.625	15.625	15.625	29.85075
15V19ME015	11	11	22	0	0	0	0	20	20	2	0 1	0 2	20	100	0.4	0.4	0.4	0.4	1 0	.4	4	. 4	4	4	4	55.4	24.4	4.4	24.4	35.4	63.67816	76.25	13.75	76.25	52.83582
15V19I5002	14	14	28	20	20	20	60	20	2	2	0 1	0 2	20	100	2	2	2		2	2	4.8	4.8	4.8	4.8	4.8	80.8	26.8	26.8	26.8	60.8	92.87356	83.75	83.75	83.75	90.74627
1	1.00		100							10.53								100				12				2.1	100		1000	1000	81.6986	75.06944	74.09722	75.17361	79.86733

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