

**ODD SEM-2021-22**



**Department of Physics**

**Course Outcomes and COs-POs Mapping**

**Batch 2021-22**

**Semester – I**

<b>Subject: Engineering Physics</b>		<b>Subject Code: 21PHY12</b>
<b>Course Outcomes</b>		
CO1	Interpret the types of mechanical vibrations and their applications, the role of Shock waves in various fields.	
CO2	Demonstrate the quantisation of energy for microscopic system.	
CO3	Apply LASER and Optical fibers in optoelectronic system.	
CO4	Illustrate merits of quantum free electron theory and applications of Hall effect.	
CO5	Analyse the importance of XRD and Electron Microscopy in Nano material characterization.	

**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.

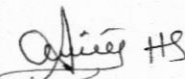
**PO11 Project management and finance:** An ability to use the modern engineering tools, techniques, skills and management principles to do work as a member and leader in a team, to manage projects in multidisciplinary environments.


**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 AND TECHNOLOGY											
FACULTY NAME	Dr. SADASHIVAIAH P J / ARPITHA H S											
BRANCH	CSE/CV/EEE/ME			ACADEMIC YEAR				2021-22				
COURSE	B.E	SEMESTER			I	SECTION			A & B			
SUBJECT	ENGINEERING PHYSICS						SUBJECT CODE		21PHY12			
CO & PO MAPPING												
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3										2
CO2	3	3										2
CO3	3	3										2
CO4	3	3										2
CO5	3	3										2
AVERAGE	3	3										2
OVERALL MAPPING OF SUBJECT												2.66


### CO AND PO ATTAINMENT

CO	CO%	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	77.10053	2.31	2.31										1.54
CO2	63.60847	1.91	1.91										1.27
CO3	65.67196	1.97	1.97										1.31
CO4	61.61552	1.85	1.85										1.23
CO5	63.4902	1.90	1.90										1.27
AVERAGE	66.29733	1.99	1.99										1.32
FINAL ATTAINMENT LEVEL													1.77

  
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ENGINEERING AND TECHNOLOGY  
TUMKUR - 572106.







**EVEN SEM-2021-22**



**Department of Physics****Course Outcomes and COs-POs Mapping****Batch 2021-22****Semester –II**

<b>Subject: Engineering Physics</b>		<b>Subject Code: 21PHY22</b>
<b>Course Outcomes</b>		
CO1	Interpret the types of mechanical vibrations and their applications, the role of Shock waves in various fields.	
CO2	Demonstrate the quantisation of energy for microscopic system.	
CO3	Apply LASER and Optical fibers in opto electronic system.	
CO4	Illustrate merits of quantum free electron theory and applications of Hall effect.	
CO5	Analyse the importance of XRD and Electron Microscopy in Nano material characterization.	

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COLLEGE	SHRIDEVI INSTITUTE OF ENGINEERING AND TECHNOLOGY											
FACULTY NAME	Dr. SADASHIVAIAH P J / ARPITHA H S											
BRANCH	AI&DS/ISE/ECE			ACADEMIC YEAR				2021-22				
COURSE	B.E	SEMESTER			II	SECTION			C & D			
SUBJECT	ENGINEERING PHYSICS					SUBJECT CODE			21PHY22			
CO & PO MAPPING												
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3										2
CO2	3	3										2
CO3	3	3										2
CO4	3	3										2
CO5	3	3										2
AVERAGE	3	3										2
OVERALL MAPPING OF SUBJECT												2.66

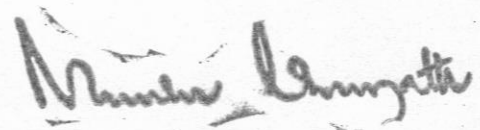
### CO AND PO ATTAINMENT

CO	CO%	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	78.04084	2.34	2.34										1.56
CO2	69.19695	2.07	2.07										1.38
CO3	61.49533	1.84	1.84										1.22
CO4	54.57252	1.63	1.02										1.09
CO5	60.47828	1.81	1.81										1.21
AVERAGE	64.75679	1.94	1.94										1.29
FINAL ATTAINMENT LEVEL													1.72

  
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TUMKUR - 572106.



SEM: II	Total Strength	107	Course: Engineering Physics	Course Code:	21PHY22	2021-22	Total Cos ATTAINMENT																				% of Individual CO						
SEC:C&D	IA TEST 1			IA TEST 2			IA TEST 3					ASSIGNMENT / QUIZ(20M)					SEE MARKS(50)					Total Cos ATTAINMENT					% of Individual CO						
USN	CO1	CO4	TOTAL	CO2	CO3	TOTAL	CO1	CO2	CO3	CO4	CO5	TOTAL	CO1	CO2	CO3	CO4	CO5	CO1	CO2	CO3	CO4	CO5	CO1-54	CO2-54	CO3-54	CO4-54	CO5-54	CO1	CO2	CO3	CO4	CO5	
1SV21AD001	13	3	16	20	4	24	16	12				13	41	2.8	2.8	2.8	2.8	2.8	2	2	2	2	2	33.8	36.8	8.8	7.8	17.8	62.59259	68.14815	16.2963	14.4444	52.35294
1SV21AD002	10	1	11	10	5	15	18	2	11	7	16	54	3.4	3.4	3.4	3.4	3.4	2.8	2.8	2.8	2.8	2.8	34.2	18.2	22.2	14.2	22.2	63.3333	33.7037	41.1111	26.2963	65.29412	
1SV21AD003	15	9	24	12	19	31	14	8	19	12	10	63	3	3	3	3	3	2.8	2.8	2.8	2.8	2.8	34.8	25.8	43.8	26.8	15.8	64.4444	47.7778	81.1111	49.62963	46.47059	
1SV21AD004	13	4	17	12	4	16	17	1	4			14	36	2.8	2.8	2.8	2.8	2.8	4	4	4	4	4	36.8	19.8	14.8	10.8	20.8	68.14815	36.6667	27.40741	20	61.17647
1SV21AD005	18	4	22	13	6	19	20	6	12	11	6	55	3.2	3.2	3.2	3.2	3.2	3.6	3.6	3.6	3.6	3.6	44.8	25.8	24.8	21.8	12.8	82.96296	47.7778	45.92593	40.37037	37.64706	
1SV21AD006	20	4	24	8	8	16	20	18	8	9		55	3.2	3.2	3.2	3.2	3.2	4	4	4	4	4	47.2	33.2	23.2	20.2	7.2	87.40741	61.48148	42.96296	37.40741	21.17647	
1SV21AD008	19	6	25	16	0	16	10	15	0	10	11	46	3.4	3.4	3.4	3.4	3.4	0.2	0.2	0.2	0.2	0.2	32.6	34.6	3.6	19.6	14.6	60.37037	64.07407	6.66667	36.2963	42.94118	
1SV21AD009	20	18	38	20	16	36	20	19	18	18	20	95	3.4	3.4	3.4	3.4	3.4	7.6	7.6	7.6	7.6	7.6	51	50	45	47	31	94.4444	92.59259	83.33333	87.03704	91.17647	
1SV21AD011	12	3	15	16	12	28	20	11	10	4	3	48	3.2	3.2	3.2	3.2	3.2	1.6	1.6	1.6	1.6	1.6	36.8	31.8	26.8	11.8	7.8	68.14815	58.88889	49.62963	21.85185	22.94118	
1SV21AD012	20	11	31	20	20	40	20	20	20	20	20	100	3.4	3.4	3.4	3.4	3.4	6	6	6	6	6	49.4	49.4	49.4	40.4	29.4	91.48148	91.48148	91.48148	74.81481	86.47059	
1SV21AD013	12	13	25	17	17	34	14	17	19	7	20	77	2.8	2.8	2.8	2.8	2.8	4.6	4.6	4.6	4.6	4.6	33.4	41.4	43.4	27.4	27.4	61.85185	76.6667	80.37037	50.74074	80.58824	
1SV21AD015	19	7	26	20	19	39	20	11	14	9	19	73	3.2	3.2	3.2	3.2	3.2	5.6	5.6	5.6	5.6	5.6	47.8	39.8	41.8	24.8	27.8	88.51852	73.7037	77.40741	45.92593	81.76471	
1SV21AD016	20	8	28	20	11	31	20	20	3	20	12	75	3.4	3.4	3.4	3.4	3.4	3.6	3.6	3.6	3.6	3.6	47	47	21	35	19	87.03704	87.03704	38.88889	64.81481	55.88235	
1SV21AD017	19	11	30	20	12	32	19	20	9	20	8	76	3.2	3.2	3.2	3.2	3.2	3.8	3.8	3.8	3.8	3.8	45	47	28	38	15	83.3333	87.03704	51.85185	70.37037	44.11765	
1SV21AD018	14	0	14	12	10	22	2	0	1	0	0	3	3.2	3.2	3.2	3.2	3.2	0.2	0.2	0.2	0.2	0.2	19.4	15.4	14.4	3.4	3.4	35.92593	28.51852	26.6667	6.296296	10	
1SV21AD019	16	12	28	12	12	24	20	19	11	15	8	73	3.2	3.2	3.2	3.2	3.2	5	5	5	5	5	44.2	39.2	31.2	35.2	16.2	81.85185	72.59259	57.77778	65.18519	47.64706	
1SV21AD020	20	14	34	20	18	38	20	20	16	14	18	88	3.4	3.4	3.4	3.4	3.4	6	6	6	6	6	49.4	49.4	43.4	37.4	27.4	91.48148	91.48148	80.37037	69.25926	80.58824	
1SV21AD021	20	14	34	18	20	38	20	19	17	15	17	88	3.2	3.2	3.2	3.2	3.2	6	6	6	6	6	49.2	46.2	46.2	38.2	26.2	91.1111	85.55556	85.55556	70.74074	77.05882	
1SV21AD022	20	17	37	20	17	37	20	19	18	12	14	83	3.2	3.2	3.2	3.2	3.2	7.8	7.8	7.8	7.8	7.8	51	50	46	40	25	94.4444	92.59259	85.18519	74.07407	73.52941	
1SV21AD023	6	1	7	5	15	20	17		7	2	4	20	3	3	3	3	3	1.8	1.8	1.8	1.8	1.8	27.8	9.8	26.8	7.8	8.8	51.48148	18.14815	49.62963	14.4444	25.88235	
1SV21AD024	20		20	3	6	6	5					11	3.4	3.4	3.4	3.4	3.4	0.8	0.8	0.8	0.8	0.8	30.2	12.2	7.2	4.2	4.2	55.92593	22.59259	13.33333	7.77778	12.35294	
1SV21AD025	20	12	32	20	4	24	20	20	7	17	4	68	3.4	3.4	3.4	3.4	3.4	3.6	3.6	3.6	3.6	3.6	47	47	18	36	11	87.03704	87.03704	33.33333	66.6667	32.35294	
1SV21AD026	20	20	40	20	19	39	20	19	19	20	98	4	4	4	4	4	4	7.4	7.4	7.4	7.4	7.4	51.4	51.4	50.4	31.4	95.18519	95.18519	91.48148	93.33333	92.35294		
1SV21AD027	14	10	24	15	8	23	18	6	3	10	12	49	3.4	3.4	3.4	3.4	3.4	2.6	2.6	2.6	2.6	2.6	38	27	17	26	18	70.37037		50	31.48148	48.14815	52.94118
1SV21AD028	12	11	23	17	8	25	19	16	11	14	18	78	3.4	3.4	3.4	3.4	3.4	5.4	5.4	5.4	5.4	5.4	39.8	41.8	27.8	33.8	26.8	73.7037	77.40741	51.48148	62.59259	78.82353	
1SV21AD029	20	7	27	20	4	24	19	15	3	12	11	60	3	3	3	3	3	0.8	0.8	0.8	0.8	0.8	42.8	38.8	10.8	22.8	14.8	79.25926	71.85185	20	42.22222	43.52941	
1SV21AD030	17	3	20	11	4	15	20	17	3	6	6	52	3	3	3	3	3	3.8	3.8	3.8	3.8	3.8	43.8	34.8	13.8	15.8	12.8	81.1111	64.4444	25.55556	29.25926	37.64706	
1SV21AD031	14	7	21	13	18	31	8	15	9	14	6	52	3.4	3.4	3.4	3.4	3.4	3.8	3.8	3.8	3.8	3.8	29.2	35.2	34.2	28.2	13.2	54.07407	65.18519	63.33333	52.22222	38.82353	
1SV21AD032	20	1	21	17	17	34	20	9	15	14	16	74	3.8	3.8	3.8	3.8	3.8	5.2	5.2	5.2	5.2	5.2	49	35	41	24	25	90.74074	64.81481	75.92593	44.4444	73.52941	
1SV21AD033	12	10	22	17	18	35	15	8	11		7	41	3.8	3.8	3.8	3.8	3.8	2.6	2.6	2.6	2.6	2.6	33.4	31.4	35.4	16.4	13.4	61.85185	58.14815	65.55556	30.37037	39.41176	
1SV21AD034	20	16	36	13	19	31	20	11	18	16	7	72	3.4	3.4	3.4	3.4	3.4	2.8	2.8	2.8	2.8	2.8	46.2	30.2	43.2	38.2	13.2	85.55556	55.92593	80	70.74074	38.82353	
1SV21AD035	20	12	32	20	20	40	20	19	19	14	12	84	3.4	3.4	3.4	3.4	3.4	8.8	8.8	8.8	8.8	8.8	52.2	51.2	51.2	38.2	24.2	96.6667	94.81481	94.81481	70.74074	71.17647	
1SV21AD036	12	9	21	8	4	12	11	6	8	5		30	3.4	3.4	3.4	3.4	3.4	2.6	2.6	2.6	2.6	2.6	29	20	18	20	6	53.7037	37.03704	33.33333	37.03704	17.64706	
1SV21AD037	12	16	28	20	4	24	20	15	17	19	13	84	3.6	3.6	3.6	3.6	3.6	4.2	4.2	4.2	4.2	4.2	39.8	42.8	28.8	42.8	20.8	73.7037	79.25926	53.33333	79.25926	61.17647	
1SV21AD038	20	20	40	20	20	40	20	20	19	20	20	99	4	4	4	4	4	7.8	7.8	7.8	7.8	7.8	51.8	51.8	50.8	51.8	31.8	95.92593	95.92593	94.07407	95.92593	93.52941	
1SV21AD039	14	7	21	17	20	37	18	13	16	5	2	54	3.6	3.6	3.6	3.6	3.6	4.8	4.8	4.8	4.8	4.8	40.4	38.4	44.4	20.4	10.4	74.81481	71.1111	82.22222	37.77778	30.58824	
1SV21AD040	16		16	18		18	8	8				20	3.6	3.6	3.6	3.6	3.6	0.6	0.6	0.6	0.6	0.6	28.2	30.2	4.2	8.2	4.2	52.22222	55.92593	7.77778	15.18519	12.35294	
1SV21I5001	15	7	23	20	15	35	11	17	18	15	19	80	3.8	3.8	3.8	3.8	3.8	6.4	6.4	6.4	6.4	6.4	36.2	47.2	43.2	32.2	29.2	67.03704	87.40741	80	59.62963	85.88235	
1SV21I5002	17	7	24	19	12	31	20	7	15	5	18	65	3.6	3.6	3.6	3.6	3.6	6.4	6.4	6.4	6.4	6.4	47	36	37	22	28	87.03704	66.6667	68.51852	40.74074	82.35294	
1SV21I5003	12	12	24	15	11	26	19	5	10	6	20	60	4	4	4	4	4	5.2	5.2	5.2	5.2	5.2	40.2	29.2	30.2	27.2	29.2	74.4444	54.07407	55.92593	50.37037	85.88235	
1SV21I5004	16	16	32	19	20	39	18	18	8	19	17	80	4	4	4	4	4	4.6	4.6	4.6	4.6	4.6	42.6	45.6	36.6	43.6	25.6	78.88889	84.4444	67.77778	80.74074	75.29412	
1SV21I5005	11	20	31	19	8	27	11	20	7	20	20	78	3.8	3.8	3.8	3.8	3.8	4.6	4.6	4.6	4.6	4.6	47.4	47.4	23.4	48.4	28.4	56.2963	87.7778	43.33333	89.62963	83.52941	
1SV21I5006	20	13	33	20																													

15V21IS028	17	2	19	16	17	33	20	7	15	10	11	63	3.8	3.8	3.8	3.8	3.8	7.6	7.6	7.6	7.6	7.6	48.4	34.4	43.4	23.4	22.4	89.62963	63.7037	80.37037	43.33333	65.88235	
15V21IS029	19	9	28	19	19	38	20	20	19	18	20	97	3.4	3.4	3.4	3.4	3.4	5	5	5	5	5	47.4	47.4	46.4	35.4	28.4	87.77778	87.77778	85.92593	65.55556	83.52941	
15V21IS030	17	17	19	6	25	20	18	3			2	43	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	44.6	44.6	16.6	7.6	9.6	82.59259	82.59259	30.74074	14.07407	28.23529		
15V21IS031	20	0	20	18	20	38	14	16	0	10	12	52	3.8	3.8	3.8	3.8	3.8	6	6	6	6	6	43.8	43.8	29.8	19.8	21.8	81.11111	81.11111	55.18519	36.66667	64.11765	
15V21IS032	20	12	32	14	20	34	20	16	18	18	6	78	3.8	3.8	3.8	3.8	3.8	5.8	5.8	5.8	5.8	5.8	49.6	39.6	47.6	39.6	15.6	91.85185	73.33333	88.14815	73.33333	45.88235	
15V21IS033	17	0	17	15	8	23	20	12	13	17	15	77	3.8	3.8	3.8	3.8	3.8	3.6	3.6	3.6	3.6	3.6	44.4	34.4	28.4	24.4	22.4	82.22222	63.7037	52.59259	45.18519	65.88235	
15V21IS034	12	5	17	16	12	28	20	13	11	2	8	54	3.8	3.8	3.8	3.8	3.8	4.2	4.2	4.2	4.2	4.2	40	37	31	15	16	74.07407	68.51852	57.40741	27.77778	47.05882	
15V21IS035	20	12	32	19	20	39	18	17	19	16	20	90	3.8	3.8	3.8	3.8	3.8	7.4	7.4	7.4	7.4	7.4	49.2	47.2	50.2	39.2	31.2	91.11111	87.40741	92.96296	72.59259	91.76471	
15V21IS036	18	9	27	20	20	40	20	19	16	16	20	91	3.8	3.8	3.8	3.8	3.8	8.2	8.2	8.2	8.2	8.2	50	51	48	37	32	92.59259	94.44444	88.88889	68.51852	94.11765	
15V21IS037	20	10	30	20	20	40	20	12	20	16	20	88	4	4	4	4	4	8	8	8	8	8	52	44	52	38	32	96.2963	81.48148	96.2963	70.37037	94.11765	
15V21EC001	10	8	18	20	16	36	18	9	12	13	3	55	3.8	3.8	3.8	3.8	3.8	2.8	2.8	2.8	2.8	34.6	35.6	34.6	27.6	9.6	64.07407	65.92593	64.07407	51.11111	28.23529		
15V21EC002	20	20	40	20	20	40	20	19	20	19	20	98	4	4	4	4	4	9	9	9	9	9	53	52	53	53	32	98.14815	96.2963	98.14815	98.14815	94.11765	
15V21EC003	20	20	40	20	20	40	20	20	17	20	97	4	4	4	4	4	8.6	8.6	8.6	8.6	8.6	52.6	52.6	52.6	49.6	32.6	97.40741	97.40741	97.40741	91.85185	95.88235		
15V21EC004	7	7	8	14	22	19	5	7	0	8	39	3.8	3.8	3.8	3.8	3.8	2	2	2	2	2	31.8	18.8	26.8	5.8	13.8	58.88889	34.81481	49.62963	10.74074	40.58824		
15V21EC005	10	10	6	12	18	18	5	8	3	13	47	3.8	3.8	3.8	3.8	3.8	3.6	3.6	3.6	3.6	3.6	35.4	18.4	27.4	10.4	20.4	65.55556	34.07407	50.74074	19.25926	60		
15V21EC006	19	10	29	18	4	22	20	15	18	20	93	3.8	3.8	3.8	3.8	3.8	5.6	5.6	5.6	5.6	5.6	48.4	47.4	28.4	37.4	29.4	89.62963	87.77778	52.59259	69.25926	86.47059		
15V21EC007	14	7	21	13	13	26	18	12	9	11	14	64	4	4	4	4	4	3.6	3.6	3.6	3.6	3.6	39.6	32.6	29.6	25.6	21.6	73.33333	60.37037	54.81481	47.40741	63.52941	
15V21EC008	18	15	33	20	20	40	20	18	19	20	97	3.8	3.8	3.8	3.8	3.8	7	7	7	7	7	48.8	50.8	48.8	44.8	30.8	90.37037	94.07407	90.37037	82.96296	90.58824		
15V21EC009	20	15	35	18	19	37	20	19	20	17	96	3.8	3.8	3.8	3.8	3.8	6.2	6.2	6.2	6.2	6.2	50	48	48	45	27	92.59259	88.88889	88.88889	83.33333	79.41176		
15V21EC010	19	20	39	18	18	36	20	20	18	20	19	97	3.8	3.8	3.8	3.8	3.8	7.2	7.2	7.2	7.2	7.2	50	49	47	51	30	92.59259	90.74074	87.03704	94.44444	88.23529	
15V21EC011	11	16	27	20	16	36	19	20	20	20	18	97	3.8	3.8	3.8	3.8	3.8	7	7	7	7	7	40.8	50.8	46.8	46.8	28.8	75.55556	94.07407	86.66667	86.66667	84.70588	
15V21EC012	12	8	20	17	4	21	17	20	7		3	47	3.8	3.8	3.8	3.8	3.8	1.2	1.2	1.2	1.2	1.2	34	42	16	13	8	62.96296	77.77778	29.62963	24.07407	23.52941	
15V21EC013	19	15	34	19	20	39	20	13	17	20	15	85	3.8	3.8	3.8	3.8	3.8	7	7	7	7	7	49.8	42.8	47.8	45.8	25.8	92.22222	79.25926	88.51852	84.81481	75.88235	
15V21EC014	16	13	29	20	20	40	20	10	18	6	15	69	3.6	3.6	3.6	3.6	3.6	5.2	5.2	5.2	5.2	5.2	44.8	38.8	46.8	27.8	23.8	82.96296	71.85185	86.66667	51.48148	70	
15V21EC015	20	18	38	19	16	35	20	18	19	20	10	87	3.6	3.6	3.6	3.6	3.6	7	7	7	7	7	50.6	47.6	45.6	48.6	20.6	93.7037	88.14815	84.44444	90	60.58824	
15V21EC016	16	16	6	6	6	20						20	3.4	3.4	3.4	3.4	3.4	2.2	2.2	2.2	2.2	2.2	41.6	11.6	5.6	5.6	5.6	77.03704	21.48148	10.37037	10.37037	16.47059	
15V21EC017	14	2	16	11		11	20	8				28	3.8	3.8	3.8	3.8	3.8	0.2	0.2	0.2	0.2	0.2	38	23	4	6	4	70.37037	42.59259	7.407407	11.11111	11.76471	
15V21EC018	20	18	38	20	20	40	20	8	19	15	13	75	3.6	3.6	3.6	3.6	3.6	6.4	6.4	6.4	6.4	6.4	50	38	49	43	23	92.59259	70.37037	90.74074	79.62963	67.64706	
15V21EC019	20	20	40	19	20	39	20	20	19	20	20	99	4	4	4	4	4	7.8	7.8	7.8	7.8	7.8	51.8	50.8	50.8	51.8	31.8	95.92593	94.07407	94.07407	95.92593	93.52941	
15V21EC020	14	11	25	8	4	12	20	5	8	8	16	57	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	41.2	20.2	19.2	26.2	23.2	76.2963	37.07407	35.55556	48.51852	68.23529		
15V21EC021	7	7	8	4	4	12	7	8				15	3.2	3.2	3.2	3.2	3.2	0.8	0.8	0.8	0.8	0.8	18	20	8	4	4	33.33333	37.03704	14.81481	7.407407	11.76471	
15V21EC022	20	20	20	14	4	18	16	9	8	2	7	42	3.4	3.4	3.4	3.4	3.4	4.4	4.4	4.4	4.4	4.4	43.8	30.8	19.8	9.8	14.8	81.11111	57.03704	36.66667	18.14815	43.52941	
15V21EC023	20	15	35	19	20	39	20	15	18	15	7	75	3.4	3.4	3.4	3.4	3.4	5.8	5.8	5.8	5.8	5.8	49.2	43.2	47.2	39.2	16.2	91.11111	80	87.40741	72.59259	47.64706	
15V21EC024	20	12	32	20	20	40	20	20	19	18	18	95	3.6	3.6	3.6	3.6	3.6	7.8	7.8	7.8	7.8	7.8	51.4	51.4	50.4	41.4	29.4	95.18519	95.18519	93.33333	76.66667	86.47059	
15V21EC025	17	2	19	15	3	18	20	8	16	9	17	70	3.2	3.2	3.2	3.2	3.2	5.4	5.4	5.4	5.4	5.4	45.6	31.6	27.6	19.6	25.6	84.44444	58.51852	51.11111	36.2963	75.29412	
15V21EC027	19	15	34	17	4	21	20	15	15	17	14	81	3.6	3.6	3.6	3.6	3.6	5.6	5.6	5.6	5.6	5.6	48.2	41.2	28.2	41.2	23.2	89.25926	76.2963	52.22222	76.2963	68.23529	
15V21EC028	6	4	10	4	4	8	1	4	1	4	0	10	3.4	3.4	3.4	3.4	3.4	1	1	1	1	1	11.4	12.4	9.4	12.4	4.4	21.11111	22.96296	17.40741	22.96296	12.94118	
15V21EC029	8	0	8	0	0	0	6					6	3.8	3.8	3.8	3.8	3.8	0.2	0.2	0.2	0.2	0.2	18	4	4	4	4	33.33333	7.407407	7.407407	7.407407	11.76471	
15V21EC030	20	9	29	19	16	35	20	6	12	16	19	73	3.6	3.6	3.6	3.6	3.6	6.6	6.6	6.6	6.6	6.6	50.2	35.2	38.2	35.2	29.2	92.96296	65.18519	70.74074	65.18519	85.88235	
15V21EC031	18	18	17	3	20	18	12	5	4	7	46	3.8	3.8	3.8	3.8	3.8	3.6	3.6	3.6	3.6	3.6	43.4	36.4	15.4	11.4	14.4	80.37037	67.40741	28.51852	21.11111	42.35294		
15V21EC032	17	17	8	2	10	11	6				6	4	27	3.6	3.6	3.6	3.6	3.6	2.2	2.2	2.2	2.2	2.2	33.8	19.8	7.8	11.8	9.8	62.59259	36.66667	14.44444	21.85185	28.82353
15V21EC033	18	13	31	18	20	38	20	14	19	11	19	83	3.6	3.6	3.6	3.6	3.6	8.6	8.6	8.6	8.6	8.6	50.2	44.2	51.2	36.2	31.2	92.96296	81.85185	94.81481	67.03704	91.76471	
15V21EC034	18	17	35	19	20	39	20	15	14	15	20	84	3.6	3.6	3.6	3.6	3.6	6.4	6.4	6.4	6.4	6.4	48	44	44	42	30	88.88889	81.48148	81.48148	77.77778	88.23529	
15V21EC035	14	14	28	18	20	38	20	9	18	12	14	73	3.6	3.6	3.6	3.6	3.6	5.4	5.4	5.4	5.4	5.4	43	36	47	35	23	79.62963	66.66667	87.03704	64.81481	67.64706	