

## TEACHING PLAN FOR THEORY

**Subject Teacher : Dr. R. V. Suryawanshi**

<b>Subject: Engineering Physics(BPHL102)</b>		<b>Class: B</b>	<b>Branch: F.Y.B.Tech.</b>	<b>Year 2017-2018</b>
<b>Lecture No</b>	<b>Scheduled Date</b>	<b>Topics to be covered on the scheduled date</b>		
1	17/7/2017	Syllabus Discussion, Discussion on course objective & course outcome		
<b>Unit I : Electron Ballistics</b>				
2	18/7/2017	Introduction, Motion of electron in a uniform electric field a) parallel to uniform electric field		
3	19/7/2017	b) Perpendicular to uniform electric field		
4	20/7/2017	Motion of electron in a magnetic field a) Perpendicular to an extensive uniform magnetic field, Motion of electron in transverse uniform limited magnetic field		
5	21/7/2017	b) Deflection of electron due to transverse magnetic field, Motion of electron in crossed electric & magnetic field		
	21/7/2017	<b>Tutorial 1</b>		
6	25/7/2017	Electrostatic focusing, Magnetic focusing		
7	26/7/2017	Devices-CRT, CRO		
8	27/7/2017	Cyclotron,MCQ		
9	28/7/2017	Problems and Revision		
	28/7/2017	<b>Tutorial 2</b>		
	2/8/2017	<b>TAE 1</b>		
<b>Unit II : Ultrasonics</b>				
10	1/8/2017	Introduction, Prtroduction of ultrasonics waves		
11	2/8/2017	Piezoelectric and magnetostriction oscillator		
12	3/8/2017	Detection of ultrasonics, engineering applications of ultrasonics		
13	4/8/2017	<b>Acoustics of Building:</b> Definitions: Velocity, frequency, wavelength, intensity, loudness, timber, reflection of sound, echo		
	4/8/2017	<b>Tutorial 3</b>		
14	8/8/2017	Reverberation, reverberation time, Sabine's formula, remedies over reverberation, Absorption of sound, absorbent materials		

15	9/8/2017	Conditions for good acoustics of the building, Noise,
16	10/8/2017	Its effects and remedies
17	11/8/2017	Problems, MCQ and <b>REVISION</b>
	11/8/2017	<b>Tutorial 4</b>
	17/8/2017	<b>TAE 2 : Surprise Test</b>
	21/8/2017 TO 23/8/2017	<b>CAE I</b>
<b>Unit : III LASER &amp; HOLOGRAPHY:</b>		
18	16/8/2017	Absorption, spontaneous emission, requirement for lasing action (Stimulated emission, population inversion),
19	18/8/2017	Metastable state, active medium, resonant cavity, various pumping
	18/8/2017	<b>Tutorial 5</b>
20	24/8/2017	Characteristics of laser, various levels of laser systems with examples i) two level - semiconductor laser
21	29/8/2017	<b>TAE 3 (HOME ASSIGNMENT)</b> ii) Three level - ruby laser
22	29/8/2017	iii) Four level - He - Ne laser
23	30/8/2017	Applications of Laser in Communication and Optical Fiber
24	31/8/2017	Applications in industry (drilling, welding etc), Medicine, Communication (Principle and advantages only),
25	1/9/2017	Information Technology (Holography - Recording and reconstruction), MCQ, Numericals
	1/9/2017	<b>Tutorial 6</b>
<b>Unit IV : BAND THEORY OF SOLIDS</b>		
26	5/9/2017	Band theory in solids, free electron theory (qualitative), electrical conductivity in conductor and semiconductor,
27	6/9/2017	Influence of external factors on conductivity (temperature, ; light and impurity), Fermi energy concept of effective mass, electron and holes,
28	7/9/2017	Fermi - Dirac probability distribution function, position of fermi level in intrinsic semiconductor with derivation and extrinsic semiconductor.
29	8/9/2017	intrinsic semiconductor with derivation and extrinsic semiconductors
	8/9/2017	<b>Tutorial 7</b>

30	12/9/2017	Dependence of fermi level on temperature and Doping concentration, diffusion and drift current
31	13/9/2017	<b>TAE 4 : ATTENDANCE</b> Bans structure of PN junction diode under i) zero bias ii) forward bias iii) reverse bias, Working of transistors (NPN only) on the basis of Band diagram
32	14/9/2017	Hall effect, Numericals, Applications: Photovoltaic effect, working of solar cell on the basis of band diagram and its applications, MCQ
	14/9/2017	<b>TAE 5 (SEMINAR)</b>
33	15/9/2017	Problems
	15/9/2017	<b>Tutorial 8</b>
	21/9/2017 TO 23/9/2017	<b>CAE II</b>
<b>Unit V : QUANTUM MECHANICS</b>		
34	19/9/2017	Wave particle duality of radiation & matter, de broglie concept of matter waves, expressing de broglie wavelength in terms of kinetic energy and potential
35	20/9/2017	Concept and derivation of group and phase velocity, matter waves,
36	21/9/2017	Heisenberg's uncertainty principle, Illustation of it by electron diffraction at single slit, why an electron cannot exit in the nucleus, Numericals
37	22/9/2017	Concept of wave function and probability interpretation, Schrodinger's time independent and dependent form
	22/9/2017	<b>Tutorial 9</b>
38	26/9/2017	applications of schrodinger's time independent wave equations i) particle in 1-D rigid box (infinite potential well)
39	27/9/2017	Comparison of Quantum mechanical and classical mechanical predictions ii) Particle in 1-D non rigid box (finite potential well qualitative, results only)
40	28/9/2017	Tunneling effect, example of tunneling effect in tunnel diode and scanning tunneling microscope, MCQ
41	29/9/2017	Numericals
	29/9/2017	<b>Tutorial 10</b>
<b>Unit VI : ADVANCED TRENDS IN PHYSICS (X RAYS)</b>		
42	3/10/2017	Introduction, origin of X rays, Control of intensity and penetrating power
43	4/10/2017	Properties of X-rays, X-rays spectra, Continuous X-ray Spectrum
		<b>TAE 6 : EXTRA CURRICULAR</b>

44	5/10/2017	Characteristics of X-ray Spectrum : Line Spectrum
45	6/10/2017	MOSELEY'S Law, Explanation based on Bohr's theory, Important of Moseley's Law
	6/10/2017	<b>Tutorial 11</b>
46	10/10/2017	Practical Application of X-rays
47	11/10/2017	Practises,MCQ Practises
48	12/10/2017	Numericals
	12/10/2017	<b>TAE 7 ANY OTHER</b>
	<b>23/10/2017 TO 25/10/2017</b>	<b>CAE III</b>
49	<b>13/10/2017</b>	<b>REVISION</b>
50	<b>24/10/2017</b>	<b>REVISION</b>
51	<b>25/10/2017</b>	<b>REVISION</b>
52	<b>26/10/2017</b>	<b>REVISION</b>
53	<b>27/10/2017</b>	<b>REVISION</b>
54	<b>31/10/2017</b>	<b>REVISION</b>
	<b>6/11/2017 TO 8/11/2017</b>	<b>CAE IV</b>
55,56	<b>9/11/2017 TO 10/11/2017</b>	<b>REVISION</b>