

Bhoj Reddy Engineering College for Women: Hyderabad

Department of Physics

Lesson plan of faculty member for the academic year 2019–20

Class: I B Tech

Branch: IT-B

Semester: II

Subject: Applied Physics

Lectures per week: 3 + 1 (Tutorial)

Lecture Number	Topics to be covered	Date (s)
UNIT – I: Quantum Mechanics		
1	Introduction to quantum physics	16 January 2020
2	Black body radiation, Planck's law	17 January 2020
3	Photoelectric effect, Compton effect	18 January 2020
4	Tutorial: de-Broglie's hypothesis, Wave-particle duality	20 January 2020
5	Davisson and Germer experiment, Heisenberg's Uncertainty principle	23 January 2020
6	Born's interpretation of the wave function, Schrodinger's time independent wave equation	24 January 2020
7	Particle in one dimensional box	25 January 2020
8	Tutorial: Problems	27 January 2020
UNIT-II: Semiconductor Physics		
9	Introduction to Intrinsic semiconductors	30 January 2020
10	Extrinsic semiconductors	31 January 2020
11	Dependence of Fermi level on carrier-concentration and temperature	01 February 2020
12	Tutorial: Carrier generation and recombination, Carrier transport: diffusion and drift	03 February 2020
13	Hall effect	06 February 2020
14	Discussion of Objective questions	07 February 2020
15	p-n junction diode	08 February 2020
16	Tutorial: Zener diode and their V-I Characteristics,	10 February 2020
17	Bipolar Junction Transistor (BJT): Construction, Principle of operation	13 February 2020
18	Problems	14 February 2020
UNIT-III: Optoelectronics		
19	Radiative and non-radiative recombination mechanisms in semiconductors	15 February 2020
20	Tutorial: Discussion of Objective questions	17 February 2020
21	LED	20 February 2020
22	semiconductor lasers: Device structure, Materials, Characteristics and figures of merit	22 February 2020
23	Tutorial: Problems	24 February 2020
24	Semiconductor photodetectors: Solar cell	27 February 2020
25	PIN their structure Materials	28 February 2020
26	PIN working principle and Characteristics	29 February 2020
27	Tutorial: Discussion of Objective questions	02 March 2020
28	Avalanche Photo diode	07 March 2020
29	Avalanche working principle and Characteristics and their structure Materials	12 March 2020
UNIT-IV: Lasers and Fibre Optics		

30	Tutorial: Lasers: Introduction to interaction of radiation with matter, Coherence, Principle and working of Laser	13 March 2020
31	Population inversion, Pumping	14 March 2020
32	Tutorial: Problems	16 March 2020
33	Einsteins coefficients	19 March 2020
34	Types of Lasers: Ruby laser	20 March 2020
35	Carbon dioxide (CO ₂) laser	21 March 2020
36	Tutorial: Problems	23 March 2020
37	He-Ne laser	26 March 2020
38	Applications of laser	27 March 2020
39	Fibre Optics: Introduction, Optical fibre as a dielectric wave guide, Total internal reflection	28 March 2020
41	Tutorial: Acceptance angle, Acceptance cone	30 March 2020
41	Numerical aperture, Step and Graded index fibres	03 April 2020
42	Problems	04 April 2020
43	Tutorial: Losses associated with optical fibres, Applications of optical fibres	06 April 2020
UNIT-V: Electromagnetism and Magnetic Properties of Materials		
44	Laws of electrostatics, Electric current and the continuity equation	09 April 2020
45	Ampere's and Faraday's laws, Maxwell's equations, Polarisation, Permittivity and Dielectric constant	11 April 2020
46	Tutorial: Problems	13 April 2020
47	Internal fields in a solid	16 April 2020
48	Clausius-Mossotti equation	17 April 2020
49	Ferroelectrics and Piezoelectrics	18 April 2020
50	Tutorial: Magnetisation, permeability and susceptibility, Classification of magnetic materials,	20 April 2020
51	Ferromagnetism and ferromagnetic domains	23 April 2020
52	Discussion of Objective questions	24 April 2020
53	Hysteresis	25 April 2020
54	Tutorial: Applications of magnetic materials	27 April 2020
55	Revision	30 April 2020
56	Revision	01 May 2020

Text books

1. Engineering Physics, B.K. Pandey, S. Chaturvedi - Cengage Learning.
2. Halliday and Resnick, Physics - Wiley.
3. A textbook of Engineering Physics, Dr. M.N.Avadhanulu, Dr. P.G. Kshirsagar - S. Chand

REFERENCES:

1. Richard Robinett, Quantum Mechanics
2. J. Singh, Semiconductor Optoelectronics: Physics and Technology, Mc Graw-Hill inc. (1995).
3. Online Course: "Optoelectronic Materials and Devices" by Monica Katiyar and Deepak Gupta onNPTEL

Name and signature of the faculty: G Vijayalaxmi

Name and signature of Head- Physics Faculty: G Vijayalaxmi

