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SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)

B.Tech I Year II Semester Supplementary Examinations May-2022

APPLIED PHYSICS

(Common to EEE & ECE)

Time: 3 hours

Max. Marks: 60

(Answer all Five Units 5 x 12 = 60 Marks)

UNIT-I

- 1 a Explain how the wavelength of light sources is determined by forming Newton's ring. L4 8M
- b In a Newton's rings experiment the diameter of the 8th ring was 0.35cm and the diameter of the 18th ring was 0.65cm. If the wavelength of the light used is 6000Å then find the radius of curvature of the plano-convex lens. L4 4M

OR

- 2 a Explain the theory of Fraunhofer diffraction due to single slit. L4 8M
- b Obtain conditions for bright and dark fringes in single slit diffraction pattern and draw intensity distribution. L4 4M

UNIT-II

- 3 a Describe the various sources of electrical resistance in metals. L3 4M
- b Classify the solids into conductor, semiconductor & insulators based on band theory. L2 8M

OR

- 4 Write Maxwell's equations in differential and integral form and derive an expression for energy flow by electromagnetic waves. L1 12M

UNIT-III

- 5 a Describe the important characteristic of laser beam. L3 6M
- b Explain the difference between spontaneous and stimulated emission of radiation. L4 6M

OR

- 6 a What is the acceptance angle of an optical fiber and derive an expression for it. L1 8M
- b An optical fibre has a core refractive index of 1.44 and cladding refractive index of 1.40. Find its numerical aperture and θ_a . L1 4M

UNIT-IV

- 7 a What is intrinsic semiconductor and explain the formation of extrinsic semiconductors through doping? L1 6M
- b Derive the expression for intrinsic carrier concentration. L4 6M

OR

- 8 a Describe the Hall Effect in semiconductors. L3 8M
- b Write the applications of Hall Effect. L1 4M

UNIT-V

- 9 a Explain Josephson effect in superconductors. L4 8M
- b Write the applications of superconductors. L1 4M

OR

- 10 a Explain why surface area to volume ratio very large for nano materials. L4 7M
- b Write the applications of nanomaterials in different fields. L1 5M

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