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SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
 (AUTONOMOUS)
B.Tech I Year I Semester (R16) Supplementary Examinations June 2017
ENGINEERING PHYSICS
 (Common to CE, EEE & ME)
 (For Students admitted in 2016 only)

Time: 3 hours

Max. Marks: 60

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

UNIT-I

- 1 a. Describe the formation of Newton's rings and derive the expression for diameter of bright and dark rings. 8M
 b. Explain the characteristics of laser lights. 4M

OR

- 2 a. What is the acceptance angle of an optical fibre and derive an expression for it. 9M
 b. An optical fibre has a core refractive index of 1.44 and cladding refractive index of 1.40. Find its acceptance angle? 3M

UNIT-II

- 3 a. Deduce the expression for the interplanar distances in terms of miller indices for a cubic system. 9M
 b. X-ray of wave length 1.5418 \AA are diffracted by (111) planes in a crystal at an angle $\theta=30^\circ$ in the first order. Calculate inter atomic spacing. 3M

OR

- 4 a. Define reverberation and reverberation time. 2M
 b. What is piezoelectric effect? Describe the production of ultrasonic waves by piezoelectric method. 10M

UNIT-III

- 5 a. What is the significance of wave function? 4M
 b. Derive Schrodinger's time independent wave equations. 8M

OR

- 6 a. Classify the solids into conductors, semiconductors and insulators based on energy band structure. 6M
 b. Mention the merits and demerits of classical free electron theory. 6M

UNIT-IV

- 7 a. What is Hall effect? Derive the expression for Hall voltage and Hall coefficient. 10M
 b. Write any two distinguish features between direct and indirect band gap semiconductors. 2M

OR

- 8 a. Describe the origin of magnetic moments in an atom. 6M
 b. Explain soft and hard magnetic materials. 6M

UNIT-V

- 9**
- a. Describe Type I and Type II super conductors. 6M
 - b. What is Meissner effect in superconductor? 3M
 - c. A lead superconductor with $T_c = 7.2$ K has a critical magnetic field of 6.5×10^3 A/m at absolute zero. What would be the value of critical field at 5K? 3M

OR

- 10**
- a. What is Quantum Confinement effect of nanomaterials? 3M
 - b. Describe the synthesis of nanomaterials by chemical vapour deposition. 9M

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