SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech I Year II Semester(R16) Supplementary Examinations December 2018
ENGINEERING PHYSICS
(Common to ECE, CSE & CSIT)

Time: 3 hours   Max. Marks:60

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

UNIT-I

1 **a** Discuss Fraunhofer single slit diffraction.   6M
   b Explain the interference in the films by reflection.   6M

OR

2 **a** Explain the construction and working of He-Ne laser with suitable energy level diagram.   6M
   b Differentiate step index and graded index fibers.   6M

UNIT-II

3 **a** Describe the seven crystal systems with diagrams.   6M
   b What are Miller indices? Mention the procedure to find Miller indices.   6M

OR

4 **a** Define Reverberation and Reverberation time?   4M
   b What are the basic requirements of acoustically good hall? Explain.   8M

UNIT-III

5 **a** Describe the behavior of particle in a one dimensional infinite potential box or well in terms of Eigen values and function.   8M
   b Draw normalized wave functions for ground and first excited states.   4M

OR

6 **a** What are the salient features of classical free electron theory? Derive an expression for electrical conductivity in a metal.   8M
   b Find relaxation time of conduction electron in metal if its resistivity is $1.54 \times 10^{-8} \Omega m$ and it has 5.8×10^{28} conduction electron/m3 . Given m= 9.1×10^{-31} kg, e= 1.6×10^{-19} C.   4M

UNIT-IV

7 **a** Explain P-type semiconductor.   4M
   b Explain Drift and Diffusion processes in semiconductors.   8M

OR

8 **a** Describe the classification of magnetic materials based on spin magnetic moments.   8M
   b Discuss the applications of soft magnetic materials.   4M

UNIT-V

9 **a** Explain Type-I and Type-II superconductors.   6M
   b Mention the applications of super conductors.   4M
   c Calculate the critical current for a lead wire of 0.5mm radius at 4.2k. Given for lead $T_c = 7.18K$, $H_o=6.5 \times 10^4 A/m$.   2M

OR

10 **a** Describe the synthesis of nanomaterial by sol-gel technique.   8M
   b Write the applications of nanomaterial.   4M

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