Reg. No:

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech I Year II Semester Supplementary Examinations July-2021
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 about Fraunhofer single slit diffraction. Draw intensity distribution curves **9M**
and give condition for bright and dark fringes in single slit diffraction pattern.
b Explain how the wavelength of light sources is determined by using Newton's ring **3M**
method.

OR

2 a Write about the population inversion? **4M**
b Discuss the construction and working of Nd:YAGlaser with suitable energy level **8M**
diagram.

UNIT-II

3 a Derive the packing factors of SC, BCC and FCC. **10M**
b Define unit cell and basis. **2M**

OR

4 a Write the properties of Ultrasonic waves. **5 M**
b Describe the production of ultrasonic by piezoelectric method. **7 M**

UNIT-III

5 a Derive Schrödinger's time independent wave equation. **8M**
b Explain the properties of matter waves. **4M**

OR

6 a Classify the solids into conductor, semiconductor and insulators based on band **9M**
theory.
b Find relaxation time of conduction electron in metal if its resistivity is $1.54 \times 10^{-8} \Omega m$ **3M**
and it has 5.8×10^{28} conduction electron/m3. Given m= 9.1×10^{-31} kg, e= 1.6×10^{-19} C.

UNIT-IV

7 a Define intrinsic and extrinsic semiconductors? What is Fermi level? Show that Fermi **6M**
level $E_f = (E + E_{cv})/2$
b Derive Einstein's relation in semiconductors? **6M**

OR

8 a Derive relation between μ_r and χ. **5M**
b Describe the classification of magnetic materials based on spin magnetic moments. **7M**

UNIT-V

9 a Classify the types of superconductors. **6M**
b Explain BCS theory of superconductors. **6M**

OR

10 a Explain the basic principle of nanomaterials. **6M**
b Write the applications of nanomaterial. **6M**

*** END ***