I/IV B. Tech. DEGREE EXAMINATIONS, DECEMBER - 2016
Second Semester
BT / CSE / ECE / EEE
ENGINEERING PHYSICS - II

Time : **Three Hours**   Maximum Marks : **60**

Answer Question No. 1 Compulsory.   **12x1=12 M**

Answer ONE question from each Unit.   **4x12=48 M**

1. Write the following in brief :

    a)   Write any two properties of a matter wave.

    b)   Write the expression for Heisenberg's uncertainity principle.

    c)   Write the equation for deBroglie wavelength.

    d)   Define mean free path.

    e)   What is fermi energy ?

    f)   What is the use of Hall-effect ?

    g)   Define polarizability.

    h)   What is Bohr magneton ?

    i)   Give two examples for Ferrites.

    j)   What is Photo diode ?

    k)   What is Meissner effect ?

    l)   What is carbon nano-tube ?

UNIT - I

2. a)   Explain the de-Broglie's concept of matter waves.

    b)   Describe the experiment of Davisson and Germer to demonstrate it.

(OR)

3. a)   What is the physical significance of wave function.

    b)   Show that energies of a particle in a potential box are quantized.

P.T.O.

UNIT - II

4. a) Explain Quantum free electron theory.

   b) Explain the Fermi-Dirac distribution function of the electrons. Explain the effect of temperature on it.

(OR)

5. a) What is Bloch theorem ?

   b) Discuss the formation of allowed and forbidden energy bands on the basis of the kronig-penny model.

UNIT - III

6. a) Describe various types of polarizations.

   b) Explain the properties of Ferroelectrics and mention their applications.

(OR)

7. a) Define Magnetic moment of an atom.

   b) Discuss the classification of dia, para, ferro magnetic materials on the basis of magnetic moment.

UNIT - IV

8. a) Explain type I and type II super conductors.

   b) Explain Solar cell and its characteristics.

(OR)

9. a) What is Nano-Technology ? Describe the fabrication of nanomaterials by Sol-Gel method.

   b) Describe the properties of carbon nano-tubes.

Total No. of Questions : 09]   [Total No.of Pages : 02

I/IV B. Tech. DEGREE EXAMINATIONS, APRIL / MAY - 2016
SECOND SEMESTER
BT / CSE / ECE / EEE
ENGINEERING PHYSICS - II

Time : **Three Hours**   Maximum Marks : **60**

Answer Question No. 1 Compulsory.   12x1=12 M

Answer ONE question from each Unit.   4x12=48 M

1. Write the following in brief :

   a)   What is dual nature of light ?

   b)   Write the expression for de-Broglie wavelength.

   c)   Write any two properties of wave function.

   d)   Define relaxation time.

   e)   Define Fermi Energy.

   f)   What is Hall coefficient ?

   g)   What is energy band ?

   h)   Define Semiconductor.

   i)   Define dielectric constant.

   j)   Write any two applications of Ferrites.

   k)   What is Bohr Magneton ?

   l)   What is Solar cell ?

UNIT - I

2. a)   Explain Heisenberg's uncertainity principle.

   b)   Derive one-dimensional time independent Schrodinger's wave equation.

(OR)

3. a)   Explain the de-Broglie's concept of matter waves. How is it experimentally verified ?

   b)   What is the physical significance of wave function ?

P.T.O.

UNIT - II

4. a) Discuss the drawbacks of classical free electron theory.

    b) Explain the classification of materials into conductors, semiconductors and insulators.

(OR)

5. a) Explain the Fermi-Dirac distribution function of the electrons. Explain the effect of temperature on it.

    b) Explain the concept of effective mass of an electron.

UNIT - III

6. a) What is Polarization ? Explain various types of polarizations.

    b) Explain the properties and applications of Ferroelectrics.

(OR)

7. a) What is hysteresis curve ? Explain how hysteresis curve is drawn and give its significance.

    b) Give examples for soft and hard magnetic materials.

UNIT - IV

8. a) Discuss BCS theory. Explain applications of super conductors.

    b) What is photo diode ? Write its characteristics.

(OR)

9. a) Explain the preparation of carbon nano-tubes and write their properties in brief.

    b) Explain applications of nanomaterials.