Code No: 132AA

R16

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech I Year II Semester Examinations, July/August - 2021
ENGINEERING PHYSICS – II
(Common to EEE, ECE, CSE, EIE, IT, ETM)

Time: 3 Hours   Max. Marks: 75

Answer any five questions
All questions carry equal marks
- - -

1.a)   Explain the concept of dual nature of light.
  b)   Describe the experimental verification of matter waves using Davisson Germer experiment?   [7+8]

2.   State and explain Heisenberg's uncertainty principle. Using uncertainty principle explain the absence of electrons in the nucleus.   [15]

3.a)   Derive an expression for carrier concentration in p-type semiconductor.
  b)   Explain the formation of PN junction. And draw the I-V characteristics of PN junction.
                                                                                                                    [7+8]

4.   Derive an expression for carrier concentration in intrinsic semiconductors.   [15]

5.   Explain electronic polarizability in atoms and obtain an expression for electronic polarizability in terms of radius of the atom.   [15]

6.a)   Derive an expression for calculation of internal field for a cubic dielectric crystal.
  b)   Explain Piezoelectricity, pyroelectricity and ferroelectricity and give examples of each.
                                                                                                                    [7+8]

7.a)   Explain classification of dia, para and ferro magnetic materials on the basis of magnetic moment.
  b)   How are superconductors classified? Explain Meissner effect. Write application of superconductivity.   [7+8]

8.   What are nanomaterials? Explain the three methods for the fabrication of nanomaterials.
                                                                                                                    [15]

---ooOoo---