Code No: 51004 **R09**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech I Year Examinations, December - 2018
ENGINEERING PHYSICS
(Common to CE, EEE, ME, ECE, CSE CHEM, EIE, BME, IT, MCT, AE, BT, AME, MIE, AGE)

Time: 3 hours **Max. Marks: 75**

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

1.a) Explain various types of bonding in the solids with suitable example.
b) Deduce the packing factor for simple cubic, BCC and FCC structures. [7+8]

2.a) Explain Bragg's law and its uses. Derive Bragg's law.
b) Explain schottky and Frankel defects with the help of suitable figures. [7+8]

3.a) Explain the de-Broglie hypothesis.
b) Derive time independent Schrödinger's wave equation for a free particle. [7+8]

4.a) Discuss the salient features of Kronig-Penny model of a crystal.
b) Define density of states with an example and state its importance. [7+8]

5.a) Derive an expression for the density of holes in an intrinsic semiconductor.
b) What is the Hall Effect? Obtain an expression for Hall co efficient for p-type of semiconductor. [7+8]

6.a) What is meant by polarization mechanism in dielectrics? Discuss the different types of polarization mechanisms in dielectrics.
b) Explain Clausius-Mosotti relation in dielectrics subjected to static fields. [7+8]

7.a) What is population inversion? How is it achieved?
b) Describe the construction and working of Ruby laser? [7+8]

8.a) What are the basic requirements of an acoustically good hall?
b) Explain the various factors that affect architectural acoustics. What are their remedies? [7+8]

---ooOoo---