R09

Code No: 51004

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech I Year Examinations, May/June - 2019
ENGINEERING PHYSICS
(Common to CE, EEE, ME, ECE, CSE, CHEM, EIE, BME, IT, AE, BT, AME, MIE)

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

Answer any five questions
All questions carry equal marks
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1.a) What are the properties of ionic bond solids?
b) Classify the Bravais lattices on the basis of lattice parameters.
c) Calculate the radius of the atom for SC, BCC and FCC lattices. [4+6+5]

2.a) What are the applications of X-ray diffraction.
b) Derive the formula for concentration of Schottky defects.
c) Write a note on surface and volume defects. [4+6+5]

3.a) What are the salient features of Bose – Einstein statistics?
b) Describe Thomson's experiment and explain the results.
c) State Wien's law and Rayliegh – Jeans law? [5+6+4]

4.a) State and explain Block theorem.
b) Derive an expression for effective mass of an electron.
c) On the basis of band theory, distinguish between good, semi and bad conductors. [5+6+4]

5.a) Derive the carrier concentration of an n-type semiconductor.
b) Discuss the energy diagram of PN junction diode.
c) Discuss the working principle of LED and Photo diode. [6+4+5]

6.a) Explain the theory of origin of magnetic moment.
b) Derive the expression for internal fields in a dielectric.
c) Explain the principle of magnetic levitation and mention the applications of superconductors. [5+5+5]

7.a) What are the main parts of a Laser?
b) Describe the construction and working of He – Ne laser.
c) Derive the relation for numerical aperture and acceptance angle of a fiber. [4+6+5]

8.a) What are the basic requirements of an acoustically good hall.
b) Derive expression for time of reverberation using suitable formula.
c) What is acoustic quieting? What are different methods of quieting? [6+5+4]

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