R09

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech I Year Examinations, June - 2022
ENGINEERING PHYSICS
(Common to CE, EEE, ME, ECE, CSE, IT, AE, MIE)

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

Answer any five questions
All questions carry equal marks
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1.a)   Distinguish between ionic bond and covalent bond. Obtain the expression for cohesive energy in ionic crystals.
  b)   Deduce packing factor for simple cubic and body centered cubic.   [10+5]

2.a)   Describe Laue method for determination of crystal structure.
  b)   Distinguish between edge and screw dislocations. What is a Burger's vector?   [8+7]

3.a)   Explain black body radiation in detail.
  b)   Write the properties of matter waves. Describe the Davison and Germer experiment to verify the wave nature of matter.   [7+8]

4.a)   Describe the salient features of Kronig-Penny model.
  b)   Explain the classification of metals, semiconductors and insulators based on band theory.
                                                                                       [7+8]

5.a)   With diagram explain the position of Fermi level in intrinsic semiconductor and extrinsic (p and n) semiconductors.
  b)   What is biasing in p-n junction? Explain forward and reverse biasing in p-n junction.
                                                                                       [8+7]

6.a)   Explain ionic and orientations polarizations and obtain the expression of polarizability in orientation polarization.
  b)   Write the domain theory of ferromagnetism.   [9+6]

7.a)   Write in detail principle and working of Ruby laser with diagram.
  b)   Write any five applications of optical fibres.   [10+5]

8.a)   What are the basic requirements for acoustically good hall.
  b)   Write the synthesis of nanomaterials by sol gel method.   [8+7]

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