

Code No: 51004

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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