Roll No. ..... Total No. of Pages : 2

BT-2/J07 8248

Physics-II

Paper : Phy-102 E

Time : Three Hours] [Maximum Marks : 100

Note :– Attempt FIVE questions in all, selecting at least ONE from each unit

UNIT–I

1. (a) Discuss the following structures :

Zinc blende, Sodium Chloride and Magnesium. 9

(b) Calculate the maximum radius of the interstitial sphere that can just fit into the void between the body centred atom of bcc structure 6

(c) Differentiate between primitive cell and non-primitive cell. 5

2. (a) Explain X-ray powder method for investigating crystalline structure. 12

(b) What do you understand by X-ray Spectra ? Discuss different types of X-ray Spectra. 8

UNIT–II

3. (a) What were the difficulties encountered with Classical Physics ? How were they solved ? Explain. 10

(b) Derive Schrödinger wave equations. 10

4. Discuss quantum theory of free electrons and derive Richardson's thermionic equation. 20

UNIT–III

5. (a) What is HALL effect ? Derive necessary equations. 12

(b) What are BRILLOUIN zones ? Explain. 8

6. (a) Differentiate between the classical model based concept of formation of energy bands and explain by Kronig Penny Model 15

(b) Show that the width of allowed band decreases with increasing value of binding energy of electrons 5

UNIT–IV

7. What do you understand by photoconductivity in insulating Crystals ? Describe a simple model which would explain the effect of variation of illumination and effect of traps. 20

8. Write detailed notes on :

(a) Superconductivity

(b) Ferromagnetism. 10×2= 20