

(i) Printed Pages: 3

Roll No.

(ii) Questions : 9

Sub. Code :

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Exam. Code :

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B.A./B.Sc. (General) 2nd Semester

1059

CHEMISTRY

Paper-V (Inorganic Chemistry-B)

(Same for B.Sc. Microbial and Food Tech.)

Time Allowed : Three Hours]

[Maximum Marks : 22

Note :— Attempt **five** questions in all including Q.No. 1 which is compulsory and taking at least **one** question from each Unit I-IV.

(Compulsory Question)

1. (a) Ionic radii of Rb^+ and Br^- are 1.47 and 1.95 Å respectively.
Predict the structure of RbBr . 1
- (b) Write two applications of fullerenes. 1
- (c) The “like dissolves like” rule is the reason why water cannot dissolve :
(i) salt
(ii) sugar
(iii) vinegar
(iv) oil 1

(d) In which of the following defect the density of the crystal is affected ?

- (i) Schottky defect
- (ii) Frenkel defect
- (iii) Stone-Wales defect
- (iv) None

1

(e) Arrange the decreasing order of stability of following oxides of group 15 :

- (i) P_2O_5
- (ii) As_2O_5
- (iii) Sb_2O_5
- (iv) Bi_2O_5

1

(f) Why fluorine is more reactive than other halogens ? 1

UNIT—I

2. (a) How the solid are classified on the basis of their electrical conductivity ? 2

(b) What are point defects ? Write two consequences of metal excess defect. 2

3. (a) Draw and explain the structure CaF_2 using close packing model. 2

(b) Compare the effect of temperature on conductivity of metal and semiconductor. 2

UNIT—II

4. (a) What is meant by metallic bond ? Explain the nature of metallic bond on the basis of free electron model. 2

(b) What is meant by Hydrogen bonding ? Why do H_2O and HF have abnormally high boiling point ? 2

5. (a) Which one of the following has the greatest Lattice Energy ? Explain why.
- (i) NaCl
 - (ii) CaCl_2
 - (iii) AlCl_3
 - (iv) KCl 2
- (b) The melting point of AgCl is only 455°C , while that of KCl is 776°C although crystal radii of both the cations are almost the same. Explain the fact with suitable explanation. 2

UNIT—III

6. (a) Discuss in detail the hydrides of boron with special reference to diborane. 2
- (b) $\text{B}(\text{OH})_3$ is acidic, $\text{Al}(\text{OH})_3$ is amphoteric while $\text{Tl}(\text{OH})_3$ is basic. How do you account for this ? 2
7. (a) $[\text{Al}(\text{OH})_6]^{3-}$ forms but $[\text{B}(\text{OH})_6]^{3-}$ is not known. Explain. 2
- (b) Carbon has high catenation properties than Si. Explain. 2

UNIT—IV

8. (a) Give a brief account of the halides of group 15 elements with special reference to the properties of PCl_3 and PCl_5 . 2
- (b) Discuss two important properties and structure of
 (i) H_2SO_3 and (ii) H_2SO_4 . 2
9. (a) List any important oxides of S. Discuss their structures. 2
- (b) Discuss the geometry of the following molecules :
 (i) ClF_3
 (ii) ICl_4^- 2