

(i) Printed Pages: 4

Roll No.

(ii) Questions : 9

Sub. Code :

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Exam. Code :

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B.A./B.Sc. (General) 2nd Semester
(2054)

CHEMISTRY

Paper-V : Inorganic Chemistry-B
(Same for B.Sc. Microbial & 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 each from each Units I to IV.

1. (a) Which of the following compound shows both Schottky and Frankel defects ?

- (i) AgF (ii) AgBr
(iii) AgCl (iv) NaCl. 1

(b) What is the order of the following cations from least to most polarizing power ?

- (i) Cs⁺ (ii) Ba²⁺
(iii) Li⁺ (iv) Ca²⁺ 1

(c) Which of the following oxides is amphoteric in nature ?

- (i) SiO₂ (ii) CO₂
(iii) GeO₂ (iv) SnO₂ 1

- (d) Boric acid is an acid because its molecule :
- (i) Contains replaceable H^+
 - (ii) Gives a proton
 - (iii) Accepts OH^- from water
 - (iv) None of the above 1
- (e) Inter-halogen compounds can be :
- (i) ICl_3 (ii) BrF_5
 - (iii) IF_7 (iv) All of the above 1
- (f) The respective oxidation states of P in $H_4P_2O_5$, $H_4P_2O_6$ and $H_4P_2O_7$:
- (i) +3, +5, and +4 (ii) +5, +4 and +3
 - (iii) +5, +3 and +4 (iv) +3, +4 and +5 1

UNIT—I

2. (a) In the ionic solid AB, the radius of cation A is 1.29 Å while that of anion B is 1.76 Å. Predict the structure of AB and coordination number of A. 2
- (b) Draw and compare the close packing exist in zinc blende & wurtzite structures. 2
3. (a) Compare the Schottky defects with Frenkel defects. Provide examples of each type. 2
- (b) Discuss the classification of semiconductors with examples of each type. 2

UNIT—II

4. (a) Discuss the favourable factors for the formation of ionic bonds. 2
- (b) Define van der Waals forces. Compare the London dispersion forces with dipole to dipole interactions. 2
5. (a) Compare and discuss the covalent nature of following sodium salts based on Fajan's rule : NaF, Na₂O and NaN. 2
- (b) Define lattice energy. Calculate lattice energy for NaCl using the Born-Haber Cycle. 2

UNIT—III

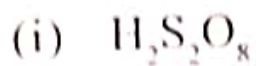
6. (a) Name any two oxoacids of phosphorus. Write their basicity and draw structure of each. 2
- (b) How can you explain the higher stability of BCl₃ as compared to TlCl₃ ? 2
7. (a) What are fluorocarbons ? Give their two important uses with example. 2
- (b) What is carbide ? Discuss the nature and use of silicon carbide. 2

UNIT—IV

8. (a) What is allotropy ? Compare the structure and properties of White phosphorus with Red phosphorus. 2
- (b) What are the Pseudohalogens and Pseudohalides ? Give examples. 2

9. (a) Inter halogen compounds are more reactive than pure halogens. Explain the fact with suitable examples. 2

(b) Draw the structures of the following :



(ii) Red P₄.

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