

(i) Printed Pages : 7]

Roll No.

(ii) Questions : 9]

Sub. Code :

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Exam. Code :

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

1047

CHEMISTRY

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

Paper : V (Inorganic Chemistry-B)

Time : 3 Hours]

[Max. Marks : 22

Note :- (i) Attempt *five* questions in all, selecting *one* question from each Unit.

(ii) Unit-V is compulsory.

(iii) Be brief and specific in your answer.

N-28

(1)

Turn Over

Unit-I

1. (a) Define and draw Tetrahedral and Octahedral voids. What are their sizes ? How many of it are associated with each constituents particle in a closed packed structure ?

- (b) Show that there are four NaCl formula units in a unit cell of sodium chloride.

2,2

2. (a) Show that by changing size of cation or anion, co-ordination number also changes.

- (b) What are the consequences of Shottky defects ?

- (c) What is basic difference in n -type and p -type semiconductor ?

2,1,1

Unit-II

3. Give reasons to explain :

(i) Which have high B.P. – H_2O or H_2S ?

(ii) Which have high B.P. – Kr or Ar ?

(iii) Which have high M.P. – HgCl_2 or CaCl_2 ?

(iv) Covalent or Ionic bonding is not possible in

metals.

1,1,1,1

4. (a) Draw BORN-HABER cycle to calculate proton

Affinity for Ammonia in the formation of

$\text{NH}_4\text{Cl(s)}$.

(b) Is covalent character possible in Ionic

compounds ? Explain polarization and

polarizability giving example.

2,2

Unit-III

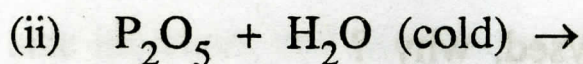
5. (a) While moving down the group in periodic table size increases but aluminium (143 pm) has larger size as compared to Gallium (135 pm), why ?
- (b) Show various products while H_3BO_3 is heated at different temperature.
- (c) Draw structure of Borazine. Why it is called inorganic benzene ?
- (d) Draw bonding in B_2H_6 , showing important parameters. 1,1,1,1
6. (a) How many pentagonal and hexagonal faces are therein C_{60} fullerene ?
- (b) How CaC_2 and Al_4C_3 differs ?

- (c) Lewis acid character of BF_3 is very low, why ?
(d) CCl_4 cannot be hydrolysed but SiCl_4 can be easily hydrolysed, why ? 1,1,1,1

Unit-IV

7. (a) What is the structure of PCl_5 in solid and vapour state ?
(b) Why H_2SO_4 act as oxidising agent ? Give an example to show its oxidising character.
(c) Give an example of oxide of N, which have/is :
(i) blue solid
(ii) laughing gas
(iii) N have +2 oxidation state
(iv) paramagnetic character 1,1,2

8. (a) Complete the reactions :



(b) Why reactivity of interhalogen compounds is more as compared to parent halogens ?

(c) I_3^- exists but F_3^- not exists, why ?

(d) Bond angle in OF_2 is smaller than Cl_2O , why ?
1,1,1,1

Unit-V

9. (a) How many particles are there in FCC unit cell ?

(b) Give an example which shows both Schottky and Frankel defects.

(c) Boric acid is not a protonic acid, how ?

- (d) Give structure of S_4N_4 .
- (e) What is oxidation state of nitrogen in hydrozoic acid HN_3 ?
- (f) Arrange in order of increasing acidic strength :

