

Chemistry (Paper-IV) (Theory)

Time Allowed : 3 hrs
 Max. Marks : 37
 Pass Marks : 33%

Attempt FIVE Questions in all, Section-A is Compulsory. Select TWO questions from Section-B, and TWO from Section C.

SECTION-A

1- Briefly answer FIVE of the following:

1x5

- What are isoelectronic species? Give example.
- What is meant by bond order?
- Explain the change in structure of methyl orange in the presence of acid and base.
- Among the halogens, which halogen never show (+ve) oxidation state?
- Write the formulas of ortho and meta phosphoric acid.
- Write name of $[\text{Co}(\text{NH}_3)_6]^{3+}$.

SECTION-B

2- a) Discuss commercial uses of noble gases.

4

b) Explain electrochemical series of elements. Give its three applications.

1,3

3- a) Explain the term “ionization energy” of elements. How various factors affect it?

4

b) Discuss SP^3d^3 hybridization giving an example.

4

4- a) Describe advantages and disadvantages of Lewis Acid Base concept.

4

b) What is solubility of substances? How various factors control the solubility?

4

5- a) Discuss structure of NaCl . (Sodium Chloride)

4

b) O_2 (Oxygen) is paramagnetic; it can be explained by MOT and not by VBT. Justify.

4

SECTION-C

6- a) Explain the term alums, giving examples. How potash alum is commercially obtained? Give its uses.

4

b) Give four similarities and four dissimilarities between carbon and silicon.

4

7- a) Discuss four properties of halogens as group trend.

4

b) Write four reactions to prepare hydroxyl amine.

4

8- a) What is meant by Thionic acid? Give two reactions of for preparation of tetrathionic acid.

Draw its structure.

4

b) Discuss role of SO_2 (Sulfur dioxide) in air pollution.

4

9- a) $[\text{C}_6\text{F}_6]^{3-}$ is an example of outer orbital complex. Discuss the statement.

4

b) Give two examples of Bridged Complexes. Write their formulas and names.

4