

SECTION-A

1- Write short answers of any EIGHT.

1x8

- i) Draw the structure and hybridization of complex $[\text{Co}(\text{NH}_3)_6]^{3+}$
- ii) What are the electron deficient compounds?
- iii) Draw the Lewis structure of NO_3^{-1} .
- iv) What is the hybridization of Cl in HClO_3 ?
- v) What are the Bronsted Acids?
- vi) How atomic radii change in periodic table?
- vii) What are the interhalogen compounds?
- viii) Draw the molecular orbital diagram for O_2 molecule.
- ix) Why d-block elements are called “transition elements”?

SECTION-B

- 2- a) Discuss in detail the valence shell electron pair repulsion theory? 4
 b) Discuss the Lewis concept of acids and bases. 4
- 3- a) Define the ionization energy and explain its periodicity. 4
 b) Explain the separation and purification of inert gases. 4
- 4- a) Discuss in detail the orbital hybridization and its use in the prediction of molecular geometry. 4
 b) Explain metallic bonding and various theories about it. 4
- 5- a) Explain the role of redox indicators in volumetric analysis. 4
 b) Write a note on the chemistry of Xenon gas. 4

SECTION-C

- 6- a) Discuss the preparation and properties of boric acid. 4
 b) Discuss the chemistry of carbides. 4
- 7- a) What are the chelates and explain their importance. 4
 b) Discuss the preparation and reactions of peroxy acids of sulphur. 4
- 8- a) Discuss the general characteristics of halogens. 4
 b) Discuss the application of molecular orbital theory to the coordination complexes. 4
- 9- a) Write an explanatory note on the oxides of nitrogen. 4
 b) Discuss in detail the isomerism in coordination complexes. 4