

NOVEMBER/DECEMBER 2018

MCH12 — INORGANIC CHEMISTRY — I

Time : Three hours

Maximum : 75 marks

SECTION A — (5 × 6 = 30 marks)

Answer ALL questions.

1. (a) How is  $S_4N_4$  prepared? Discuss its structure.

Or

- (b) How do the silicones acquire the extraordinary thermal stability and chemical stability?

2. (a) What are metal cluster? Explain the basis for their classification.

Or

- (b) Write a note on molecular sieves.

3. (a) Describe spectrophotometric method of determining stability constant.

Or

- (b) Differentiate between thermodynamic stability and kinetic inertness.

4. (a) Write notes on crown ethers with two examples.

Or

- (b) Discuss the optical activity exhibited by dichlorobis(ethylenediamine) cobalt(III) ion.

5. (a) Explain the charge transfer bands are much stronger than d-d bands.

Or

- (b) Draw and explain an Orgel diagram for  $d^7$  configuration.

SECTION B — (3 × 15 = 45 marks)

Answer any THREE questions.

6. Give a brief account of the isopoly anions of V, Mo and W.
7. Discuss the preparation and structure of carboranes. Explain the isomerism exhibited them.
8. Explain the factors affecting stability of complexes.
9. Explain stereo isomerism in 4- and 6- coordinated complexes using suitable examples.
10. Draw and explain the MO diagram for  $[Co(NH_3)_6]^{3+}$  ion.