

C. ABDUL HAKEEM COLLEGE (AUTONOMOUS),

MELVISHARAM - 632 509.

SEMESTER EXAMINATIONS, NOVEMBER - 2018

M.Sc., CHEMISTRY

SEMESTER I

P18MCH102 / P15MCH102 – STRUCTURAL AND COORDINATION

CHEMISTRY

Time: Three Hours

Maximum: 75 Marks

SECTION - A (5 X 6 = 30 Marks)

Answer ALL Questions.

1. a) Discuss briefly the types and structure of silicates.
(Or)
b) How are sulphur nitrogen ring compounds (S_2N_2) prepared? Discuss their characteristics properties. Explain the structure and relative stability of sulphur nitrogen ring compounds.
2. a) Explain the salient features of $Re_2Cl_8^{2-}$.
(Or)
b) Give a brief account on metallocarboranes.
3. a) What is meant by thermodynamic stability of complexes? Among $[Ni(NH_3)_6]^{2+}$ and $[Ni(en)_3]^{2+}$ which would have higher stability.
(Or)
b) Give the general picture of the various factors that contribute to variations in stability constants.
4. a) Write the isomeric structures possible for Ma_2b_2cd type complexes. Identify the chiral and achiral isomer.
(Or)

b) Explain in detail about the crown ethers.

5. a) Explain the Jahn-Teller distortion in $[Cu(H_2O)_6]^{2+}$.
(Or)

b) Describe in detail about the nephelauxetic effect and spin orbit coupling process.

SECTION - B (3 X 15 = 45 Marks)

Answer ANY THREE Questions.

6. a) Explain in detail about Feldspar.
b) Write a short note on isopolyacids of chromium and vanadium.
7. a) What are carboranes? Describe the preparation, structure and relative stabilities of isomeric dicarbaclosododeca boranes.
b) How is diborane prepared? Give two properties. Explain the structure of diborane.
8. a) Describe the procedure adopted for the determination of stability constant by the potentiometric method.
b) Explain HSAB theory with illustrations.
9. a) Determine the absolute configuration of complexes using optical rotatory dispersion.
b) Explain in detail about the synthesis of Schiff bases using template effect.
10. a) Discuss in detail about the Orgel and Tannabe sugano diagram for d^2 system.
b) Derive the term symbol for d^7 and d^9 weak field octahedral complexes.
