

- (b) (i) Write the mechanism of acid and base hydrolysis reaction (6)  
(ii) Explain with suitable example of DCB mechanism. (4)
10. (a) Write a notes on :  
(i) Styx number (3)  
(ii) Wade's rule (3)  
(iii) Hydroborate ion (4)

Or

- (b) Write a brief account on :  
(i) Metallo carboranes (5)  
(ii) Chemistry of low molecular weight metal clusters. (5)

S.No. 351

17PCH02

(For the candidates admitted from 2017-2018 onwards)

M.Sc. DEGREE EXAMINATION, APRIL/MAY 2018.

First Semester

Chemistry

INORGANIC CHEMISTRY — I

Time : Three hours

Maximum : 75 marks

PART A — (5 × 5 = 25 marks)

Answer ALL questions.

1. (a) Explain with suitable examples of hard and soft acids and bases and its classifications.

Or

- (b) What are silicates? Explain its structure.

2. (a) Derive Jorgensen relation.

Or

- (b) State and explain M.O theory and energy level diagram.

3. (a) Write the spectroscopic term symbol for  $d^n$  ions.

Or

(b) Discuss the applications of metal complexes in solar energy conversion.

4. (a) Write a notes on labile and inert complexes.

Or

(b) Discuss the applications of substitution reaction in the synthesis of cobalt complexes.

5. (a) Give the preparation, properties and structure of polyhedral boranes.

Or

(b) Write an explain the structure of  $Re_2Cl_8$  metal cluster.

PART B — (5 × 10 = 50 marks)

Answer ALL questions.

6. (a) (i) Write the structure and explain Craig and Peddock model. (6)

(ii) Explain with suitable example of poly sulphur compounds. (4)

Or

(b) Write a notes on :

(i) Molecular sieves (4)

(ii) Heteropoly acids of Mo and W. (6)

7. (a) Discuss the postulates of crystal field theory. Explain splitting of 'd' orbitals under various geometrics and factors affecting splitting.

Or

(b) Write a notes on :

(i) Dynamic and static Jahn teller effect

(ii) Nephelauxetic effect. (5 + 5)

8. (a) (i) Draw and explain Orgel and Tanabe-Sugano diagram. (6)

(ii) Write the spectral properties of Lanthanides and Actinides. (4)

Or

(b) Write a notes on photo substitution photo redox and isomerisation process.

9. (a) (i) Explain with suitable example of electron and atom transfer reaction. (4)

(ii) Give the substitution in square planar complexes. (4)

(iii) Define trans influence. (2)

Or