

CS-2051

INORGANIC CHEMISTRY-I

(Semester-VI)

Time : Three Hours]

[Maximum Marks : 26

Note : Attempt *two* questions each from Section A and B.
Section C will be compulsory.

SECTION-A

- I. (a) Differentiate between Hard Acids and Soft Acids. 2
(b) Differentiate between Hard Bases and Soft Bases. 2
- II. Define HSAB principle. Discuss the applications of HSAB principle. 4
- III. What are metallic porphyrins ? Explain the roles played by Haemoglobin and myoglobin as oxygen carriers. 4
- IV. (a) What do you mean by nitrogen fixation ? Discuss in detail. 2
(b) Write a brief account of $N_a^+ - K^+$ pump. 2

SECTION-B

- V. (a) Discuss the Muller-Roschow process for the synthesis of silicones. 2
(b) Write down the uses of silicones. 2
- VI. What are Polyphosphazenes ? How are they prepared ? Discuss the nature of bonding in cyclic phosphazenes. 4
- VII. What are metal Carbonyls ? Discuss the nature of bonding in metal carbonyls. 4
- VIII. (a) Discuss the bonding in metal-olefin complexes. 2
(b) What do you mean by β -elimination in transition metal alkyls ? How can it be avoided ? 2

SECTION-C

- IX. Answer all the questions :
- (a) What is Symbiosis. Give examples. 2
- (b) Define :
- (i) Nitrogen assimilation.
- (ii) Photosynthesis. (1+1)
- (c) Define EAN rule. Give examples. 2
- (d) Write important applications of organo-lithium compounds. 2
- (e) What happens when hexachlorocyclo phosphazene is treated with excess ammonia. 2