Roll No. .....

(07/22-II)

5252

B.Sc. EXAMINATION

(Sixth Semester)

CHEMISTRY

Paper XVIII, CH-304

Inorganic Chemistry

Time : Three Hours *Maximum Marks : 27*

Note : Attempt *Five* questions in all, selecting *two* questions from each Section. Q. No. 1 is compulsory.

1. (a) What are organometallic compounds ? Give one example. 1

(b) In which of the following compounds EAN is rule followed ? 1

(i) $Mo(CO)_6$

(ii) $[Ni(NH_3)_6]^{+2}$

(c) Which is the stronger base between 2-methylpyridine and 4-picolene ? 1

(d) Which one is stronger acid, BF_3 or BCl_3 and why ? 1

(e) How many iron atoms are present in a molecule of haemoglobin ? 1

(f) What are essential elements ? 1

(g) What are the oxidation states of N and P in phosphazenes ? 1

Section A

2. (a) Discuss the factors responsible for kinetic instability of transition metal sigma bonded organometallic compounds. 3

(b) Give a brief account of bonding in metal ethylene complex with suitable example. 2

3. (a) Arrange the following acids in order of increasing acidic strength :
H_3PO_4, H_2SO_4 and $HClO_4$. Also given reason. 3

(b) Describe Bronsted-Lowry concept of acids and bases with examples. 2

4. (a) Discuss the applications of HSAB principle with suitable examples. 3

(b) Write a short note on symbiosis. 2

Section B

5. (a) What do you mean by nitrogen fixation ? What are fundamental requirements for nitrogen fixation ? Discuss the role of nitrogenase enzyme in fixing nitrogen. 3

(b) What is the role of myoglobin and haemoglobin in biological system ? Explain it. 2

6. (a) Write a short note on Na^+-K^+ pump. 3

(b) What is cooperative phenomenon in Hb ? Explain. 2

7. (a) What are Silicones ? How are these prepared ? Give any *two* applications of silicones. 3

(b) Discuss the nature of bonding in triphosphazenes. 2