

[A-5]

## SARDAR PATEL UNIVERSITY

B. Sc. (SEMESTER-VI) EXAMINATION

2010 Batch (CBCS)

Subject: Inorganic Chemistry (US06CCHE03)

Date: 03-10-2022

Time: 03:30 P.M. To 05:30 P.M.

Day: Monday

Total Marks: 70

**Q:1 Answer the following multiple-choice questions. [10]**

- Olefins are \_\_\_\_\_ electron ligands.  
(a) one (b) two (c) three (d) four
- Number of electrons in Ferrocene electronic configuration are \_\_\_\_\_.  
(a) 12 (b) 19 (c) 18 (d) 22
- Urease enzyme contains which metal ?  
(a) Fe (b) Cu (c) Co (d) Mn
- Oxyhemoglobin has ..... type of structure.  
(a) triangle (b) tetrahedral (c) octahedral (d) none of these
- Which metal is important for transfer of oxygen in blood ?  
(a) Fe (b) Cu (c) Co (d) Mn
- \_\_\_\_\_ is a Wilkinson's catalyst ?  
(a)  $[\text{RhW}(\text{PPh}_3)_3]$  (b)  $[\text{RhMo}(\text{PPh}_3)_6]$  (c)  $[\text{RhW}(\text{PPh}_3)_9]$  (d)  $[\text{RhCl}(\text{PPh}_3)_3]$
- Catalyst provides a different reaction pathway with lower \_\_\_\_\_.  
(a) Activation energy (b) Thermodynamic energy  
(c) Reaction energy (d) Potential energy
- In catalytic process the reaction to be catalysed must be \_\_\_\_\_.  
(a) homogeneous (b) organic  
(c) thermodynamically favourable (d) kinetically favourable
- Which of the following metals are available in free state ?  
(a) Ag, Au, Pt (b) Ca, Mg, Al (c) Cu, Ni, Fe (d) Pb, U, Be
- Wrought iron contains \_\_\_\_\_ % of carbon.  
(a) 0.25-2.0 (b) 2.5-3.5 (c) 0.12-0.25 (d) 3.5-4.50

**Q:2 Fill in the blanks selecting the appropriate option given in the bracket: [08]**

- Vanadocanium has \_\_\_\_\_ colour. (purple / red)
- The di-t-butyl beryllium is \_\_\_\_\_. (dimeric / monomeric)
- Cobalt in Vitamin B<sub>12</sub> is found in which oxidation state. (+3 / +2)
- \_\_\_\_\_ metal ion is found as central atom of Chlorophyll molecule. ( $\text{Fe}^{+2}$  /  $\text{Mg}^{+2}$ )
- The formula of turnover frequency is \_\_\_\_\_. ( $n = v/[Q]$  /  $N = v/[Q]$ )
- \_\_\_\_\_ catalyst are also called catalyst poisons. (negative / positive)
- \_\_\_\_\_ is purest form of iron. (Cast iron / Wrought iron)
- Pentlandite is an ore of \_\_\_\_\_. (Copper / Nickel)

**Q.3 Short Answer Questions (Attempt Any Ten):**

[20]

1. Explain organometallic compounds.
2. Give Friedel-Crafts acylation reaction with Ferrocene.
3. What is metallation reaction? Explain with suitable example.
4. Explain macronutrients and micronutrients.
5. Give the functions of hemoglobin.
6. Give the four components of Vitamin B<sub>12</sub>.
7. Explain insertion and elimination reactions involved in catalytic cycles.
8. Give the four requirements of a successful catalytic process.
9. Explain alkene metathesis.
10. Write the name and formulae of chief ores of Silver.
11. Define Metallurgy.
12. Explain flux and slag.

**Q:4 Long Answer Questions (Attempt Any Four):**

[32]

1. Give the preparation, properties, structure and bonding in metal-olefin.
2. Discuss types of substitution reactions by which organometallic compounds can be prepared.
3. Write notes on Ferredoxin and Rubredoxin.
4. Write notes on chlorophyll.
5. Give the brief account on interconversion of aromatics by zeolites.
6. Explain Wacker oxidation of alkenes and Monsanto acetic acid synthesis.
7. Describe the reactions involved during extraction of iron giving neat diagram of Blast furnace.
8. Describe the extraction of silver by cyanide process and also write note on silvering of mirrors.

\*\*\*\*\* X \*\*\*\*\*