

**U.G. 6th Semester Examination - 2021****CHEMISTRY****Course Code : BCEMCCHC601****Course Title : Inorganic Chemistry-V**

Full Marks : 30

Time : 2 Hours

*The figures in the right-hand margin indicate marks.**Candidates are required to give their answers in their own words as far as practicable.*

1. Answer any **ten** questions: 1×10=10
- a) What is CFAE?
  - b) Name a Zn- containing enzyme.
  - c) Name the diseases that originated due to the toxicity of Hg.
  - d) Which one  $d^5$  or  $d^6$  ions is more inert in the low spin octahedral complex?
  - e) Define the term 'spectator ligand' with example.
  - f) Write the preparation method of ferrocene.

- g) What is the role of  $Al(C_2H_5)_3$  in Ziegler – Natta catalyst?
  - h) Indicate the role of Mg(II) in chlorophyll.
  - i) What is the hybridization of nitrogen atom in bent nitrosyl group?
  - j) Which metal is responsible for Willson's disease?
  - k) According to the neutral atom electron count method what is the electron count of 'bridging Cl' ligand?
  - l) What do you mean by prosthetic group?
  - m) What is the role of globin chain in haemoglobin oxygenation?
  - n) Draw the structure of Vaska compound.
  - o) What is trace element? Give example.
2. Answer any **five** questions: 2×5=10
- a) Among the ferrocene and cobaltocene which one is better reducing agent and why?
  - b) What is the role of tetranuclear Mn(II) complex in photosynthesis?
  - c) Explain the function of Ca(II) as biological important element.

- d) “In the ligand substitution reaction early 3d metals prefer an associative mechanism whereas late member prefer a dissociative mechanism”– Why?
- e) Explain with examples ‘Essential and Beneficial’ metals in living system.
- f) To remove  $\text{Pb}^{2+}$  from human body it is better to use  $\text{Na}_2\text{CaEDTA}$  than  $\text{Na}_2\text{H}_2\text{EDTA}$ – Explain.
- g) What do you mean by cooperative interaction in  $\text{O}_2$  affinity of hemoglobin?
- h) State and explain EAN rule.

3. Answer any **two** questions:  $5 \times 2 = 10$

- a) i) What is chelation therapy? Give some characteristic for ideal chelating drugs with example.
- ii) Write down the toxic effect of As in our body and how it will be removed.
- $3 + 2 = 5$
- b) i) What product do you expect if  $\text{CH}_2=\text{CH}_2$  and  $(\text{CH}_3)\text{HC}=\text{CH}_2$  are separately reacted with Ziegler natta catalyst?
- ii) Indicate the metal centers are usually present in nitrogen fixing enzymes.

- c) What do you mean by  $\Delta H^\ddagger$ ,  $\Delta V^\ddagger$  and  $\Delta S^\ddagger$ ? How the values help in assigning a reaction mechanism?  $2 + 3 = 5$
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