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M.Sc. (Final) Examination, 2022**CHEMISTRY****Paper-I****(Inorganic Spectroscopy and Bioinorganic)***Time : Three Hours] [Maximum Marks : 100***Note :** Attempt **all** sections as per instructions.**Section-A****(Very Short Answer Type Questions)****Note :** Attempt **all** questions. Give answer of each question in about 50 words. Each question carries 2 marks. $2 \times 10 = 20$

1. (a) What do you mean by Paramagnetic substances?
- (b) What do you mean by ambidentate ligands?
- (c) What is Psuedo contact shift?
- (d) What is chemical shift?

P.T.O.**(2)**

- (e) What is hyperfine splitting?
- (f) What is anisotropic effect?
- (g) What is isomer shift?
- (h) What is spectrum display?
- (i) What are carcinogenic metals?
- (j) What is chemo therapy?

Section-B**(Short Answer Type Questions)****Note :** Attempt **all** questions. Give answer of each question in about 200 words. Each question carries 10 marks. $5 \times 10 = 50$

2. Discuss application of Vibrational spectroscopy.

OR

- Discuss in short resonance Raman spectroscopy in study of active sites of metallo proteins.
3. Discuss in short application of chemical shift and coupling constant in structural determination of inorganic molecules.

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(3)

OR

Discuss use of ESR spectroscopy in structural application of transition metal complexes.

4. Write short notes on:

(i) Nitrogen fixation

(ii) Carbon dioxide reduction.

OR

Discuss change of Chemical energy into light.

5. Discuss role of alkaline earth metal ions in biological system.

OR

Discuss role of Ca^{2+} in muscle contraction.

6. Discuss oxidation of glucose and role of phosphate.

OR

Discuss role of metal complexes in transmission of energy.

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P.T.O.

(4)

Section-C

(Long Answer Type Question)

Note : Answer any **two** questions. Give answer of each question in about 500 words. Each question carries 15 marks.

15×2=30

7. Discuss citric acid cycle.
8. Discuss stereochemistry of the active sites of metalloenzymes in short.
9. Discuss metals used for diagnosis and chemotherapy.
10. Write short notes on:
 - (i) Kramer's degeneracy.
 - (ii) Write down structure of haemoglobin and myoglobin.
11. (a) Write brief note on toxic effect of metals.
(b) Explain Mc connell equation with suitable examples.

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