

Post Graduate Teaching Department of Chemistry
Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur
Master of Science (M.Sc.) CHEMISTRY Examination (CBCS)
Third Semester-Inorganic Chemistry-Paper-I (3T1)

Time: 3 Hours

Max Marks: 60

Instructions:

- 1. All questions are compulsory and carry equal marks**
- 2. Draw neat diagram wherever is necessary**

Q.1 (A) What is meant by macro and micro nutrients? Explain the effect of toxicity and deficiency of zinc and copper metal ions in biological system. 4 M

(B) Explain active transport of cations across the membrane. 4 M

(C) Explain the role of metal complexes as antibacterial and antarthritic drugs. 4 M

OR

(D) Write on account on Ferritin and Transferrin with respect to metal storage and transport. 4 M

(E) What is the role of calcium in human body? How does calcium ion help to regulate essential metabolic activities in human body? 4 M

(F) Why trans-platin is not an anti-cancer drug? Explain with suitable diagram. 4 M

Q.2 (A) Describe the process of polymerization in DNA. 4 M

(B) Explain the structure of chlorophyll and its significance. 4 M

(C) What is meant by photophosphorylation? Discuss its types. 4 M

OR

(D) Illustrate photosystem-I and photosystem-II in chlorophyll. 4 M

(E) Describe in vivo biological nitrogen fixation. 4 M

(F) What are cytochromes? Describe its structure and functions. 4 M

Q.3 (A) Give structure, function, and mechanism of molecular oxygen binding in Hemoglobin. 4 M

(B) Explain the importance of presence of protein chain around oxygen carrying heme proteins. Give the reactions involved in it. 4 M

(C) How does cyanide poisoning occur? Give its treatment. 4 M

OR

(D) Discuss structure and functions of two non heme oxygen carriers. 4 M

(E) Explain Bohr's effect with suitable diagram. 4 M

(F) Write a note on Vanadium storage and transport. 4 M

Q.4 (A) Explain structure and functions of catalase and peroxidases. 4 M

(B) Discuss the structure and functions of Cu-Zn enzyme. 4 M

(C) Explain the structure and mechanism of action of carbonic anhydrase with neat diagram. 4 M

OR

(D) Discuss structure of cytochrome-P450 and its functions. 4 M

(E) Explain structure and functions of Molybdenum enzyme in biological system. 4 M

(F) Write the structure of Vit-B12 coenzyme and explain its function. 4 M

Q.5 (A) Explain metal storage and transport with respect to siderophores. 3 M

(B) Illustrated about Fe-S Proteins 3 M

(C) Sketch and explain nature and significance of Hill plot of myoglobin and hemoglobin 3 M

(D) What is meant by 'corrin ring'? How it is different from porphyrin ring? Explain with suitable examples and draw neat diagram of these rings. 3 M