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**AG—81—2018**

**FACULTY OF SCIENCE**

**M.Sc. (Third Semester) EXAMINATION**

**OCTOBER/NOVEMBER, 2018**

**(CBCS Course)**

**INORGANIC CHEMISTRY**

**(Bioinorganic and supra-Molecular Chemistry)**

**Paper-XVI (CH-532/1)**

**(Wednesday, 28-11-2018)**

**Time : 2.00 p.m. to 4.00 p.m.**

*Time—2 Hours*

*Maximum Marks—75*

*N.B. :— (i) Attempt all questions.*

*(ii) All questions carry equal marks.*

1. Solve any *three* out of *five* : 15
  - (a) Explain the role of bob-metal in biological system.
  - (b) Discuss the working of Ca pump.
  - (c) Describe the functions of plastocyanin.
  - (d) Name and draw structure of any *two* Ruthenium anticancer drugs.
  - (e) Discuss the chemistry of Molecular recognition.
2. Solve any *three* out of *five* : 15
  - (a) Describe the storage machanism of transferrin.
  - (b) Discuss the signs and symptoms of copper deficiencies.
  - (c) Explain the chemistry of cationic receptors.
  - (d) Discuss the working of supra-molecular electronic devices.
  - (e) Name *two* gold based Anti-arthritis Drugs and draw their structure.

P.T.O.

3. Answer the following :

(a) Draw flow chart of the synthesis of molecular recognition. 8

*Or*

Explain the importance of zinc in biological system.

(b) Describe the functions of myoglobin. 7

*Or*

Describe the role of vitamin B<sub>12</sub> in human body.

3. Answer the following :

(a) Explain the mechanism of oxygen carrier in the human body. 8

*Or*

Discuss the functions of Hemerythrin.

(b) Discuss the functions of Siderophores. 7

*Or*

What are the symptoms of metal deficiency ?

5. (A) Choose the correct option from the given alternatives. 5

(1) Hemoglobin has an oxygen-binding capacity of.....

(a) 1.34 mL O<sub>2</sub> per gram

(b) 2.34 mL O<sub>2</sub> per gram

(c) 3.34 mL O<sub>2</sub> per gram

(d) 4.34 mL O<sub>2</sub> per gram

- (2) The human fetus accumulates copper rapidly in its.....  
during the third trimester of pregnancy.
- (a) Kidney
  - (b) Brain
  - (c) Liver
  - (d) Pancreas
- (3) Violation of memory is a.....deficiency symptom.
- (a) Copper
  - (b) Cobalt
  - (c) Zinc
  - (d) Selenium.
- (4) The term.....refers to the specific interaction between two or more molecules through non-covalent bonding such as hydrogen bonding, metal coordination, hydrophobic forces.
- (a) Molecular receptors
  - (b) Molecular recognition
  - (c) Molecular re-assembly
  - (d) Molecular reaction
- (5) A variant of the molecule, called..... is used to scavenge oxygen away from anaerobic systems, such as the nitrogen-fixing nodules of leguminous plants, before the oxygen can poison the system.
- (a) Hemoglobin

P.T.O.

(b) Myoglobin

(c) Plastocyanin

(d) Leghemoglobin

(B) Write brief notes on (any two) : 10

(a) Metal toxicity

(b) Molecular receptors

(c) Na/K pump.