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**AI—81—2017**

**FACULTY OF SCIENCE**

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

**NOVEMBER/DECEMBER, 2017**

**(CBCS Pattern)**

**INORGANIC CHEMISTRY**

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

**(Bio-inorganic and Supramolecular Chemistry)**

**(Monday, 13-11-2017)**

**Time : 2.00 p.m. to 5.00 p.m.**

*Time—Three Hours*

*Maximum Marks—75*

*N.B. :— (i) Attempt all questions.*

*(ii) Figures to the right indicate full marks.*

1. Answer any *three* of the following : 15
  - (a) Differentiate between Haemoglobin and Myoglobin.
  - (b) Explain the use of copper and its complexes as drugs.
  - (c) What are Siderophores ? Explain in detail.
  - (d) Describe anion-receptor Supramolecular catalysis.
  - (e) Give the symptoms of cobalt deficiency.
  
2. Answer any *three* of the following : 15
  - (a) Draw the structure and explain the function of myoglobin.
  - (b) Explain the health disorders due to copper toxicity.
  - (c) Give the molecular receptor for Ammonia recognition.
  - (d) Explain the role of ferritin.
  - (e) Discuss in brief storage and transport of Zinc.

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3. (A) Answer the following :

7

Explain in detail the Na/K pump mechanism.

*Or*

Discuss the following :

Various factors that influence high recognition by Receptor and Substrate.

(B) Answer the following :

8

Explain tetrahedral recognition with suitable examples.

*Or*

Discuss the following :

What is Supramolecular co-catalysis ? Explain with example.

4. (A) Answer the following :

7

Explain the role of macrocyclic polyethers and spherands in spherical recognition.

*Or*

Discuss the following :

Chelation therapy in heavy metal poisoning.

(B) Answer the following :

8

Explain how Haemoglobin shows Bohr effect.

*Or*

Discuss the following :

Give the structure and working of chlorophyll.

5. (A) Choose the *correct* alternatives :

5

- (i) Minamata disease is caused due to the metal toxicity of .....
- (a) Fe (b) Cd  
(c) Hg (d) Zn
- (ii) The symptom of reduced thyroid function is due to the deficiency of.....
- (a) Ar (b) Bo  
(c) I (d) F
- (iii) Chronic exposure of plants to.....causes chlorosis.
- (a) CO<sub>2</sub> (b) SO<sub>2</sub>  
(c) NO<sub>2</sub> (d) H<sub>2</sub>O
- (iv) The symptom of Insulin resistance is due to the deficiency of .....
- (a) Co (b) Cr  
(c) Ni (d) V
- (v) British Anti Lewisite (BAL) was initially developed as an anti-dote for.....
- (a) Ar (b) Hg  
(c) Cd (d) Cu

(B) Write short notes on (any *two*) :

10

- (a) Transport of Mg<sup>+2</sup> in microbes  
(b) Vitamin-B<sub>12</sub>  
(c) Ionic devices.