

This question paper contains 3 printed pages]

**BR—122—2016**

**FACULTY OF SCIENCE**

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

**NOVEMBER/DECEMBER, 2016**

**(CBCS Course)**

**INORGANIC CHEMISTRY**

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

**(Bioinorganic and Supramolecular Chemistry)**

**(Friday, 18-11-2016)**

**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) Give the uptake of  $\text{Ca}^{+2}$  by a mitochondria.
- (b) Enlist the characteristics of an efficient supramolecule.
- (c) Discuss the health disorder due to copper toxicity.
- (d) Explain anion-receptor supramolecular catalysis.
- (e) State the oxygen transport in marine vertebrates.

2. Answer any *three* of the following : 15

- (a) Discuss macrocyclic polyethers and spherands and its role in spherical recognition.
- (b) Explain the storage and transport of zinc.
- (c) Differentiate between Haemoglobin and Myoglobin.
- (d) Explain the use of copper and its complexes as drugs.
- (e) Sketch and explain the role of Ferittin.

P.T.O.

3. (A) Answer the following : 7
- (i) What are the various factors that influence high recognition by  $\rho$  and  $\sigma$  ?
- Or*
- (ii) Discuss the following : Structure and function of Myoglobin.
- (B) Answer the following : 8
- (i) Explain in detail the Na/K pump mechanism.
- Or*
- (ii) Discuss the following : Chelation therapy in heavy metal poisoning.
4. (A) Answer the following : 7
- (i) What is supramolecular co-catalysis ? Explain with example.
- Or*
- (ii) Discuss the following : Ca-pump.
- (B) Answer the following : 8
- (i) Explain how Haemoglobin shows Bohr effect.
- Or*
- (ii) Discuss the following : Tetrahedral recognition with suitable examples.
5. (A) Select the correct alternatives : 5
- (i) British Anti Levisite (BAL) was initially developed as an antidote for .....
- (a) Ar (b) Hg
- (c) Cu (d) Cd

- (ii) Minamata disease is caused due to the metal toxicity of ..... .
- (a) Fe (b) Cd  
(c) Hg (d) Zn
- (iii) The symptom of Insulin resistance is due to the deficiency of ..... metal.
- (a) Co (b) Ni  
(c) V (d) Cr
- (iv) 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
- (v) The symptom of reduced thyroid function is due to the deficiency of .....
- (a) Ar (b) Be  
(c) F (d) I

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

10

- (a) Vitamin B<sub>12</sub>  
(b) Ionic devices  
(c) Mercury toxicity.