Roll No. | | | | | | | | | | | | | **Total No. of Pages : 02**

Total No. of Questions : 09

B.Sc. (Non Medical) (Sem.–4)

INORGANIC CHEMISTRY-III

Subject Code : BSNM401-18

M.Code : 77679

Date of Examination : 01-07-22

Time : 3 Hrs. **Max. Marks : 50**

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying ONE marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

SECTION-A

1. Write briefly :

a) Name the chief ore of lanthanides.

b) What happens when Ce(III) nitrate is treated with $KMnO_4$?

c) Write down the IUPAC name of $K_3[Fe(CN)_6]$.

d) Name the isomerism exhibited by $[Pt(NH_3)_2Cl_2]$

e) Which is more basic $Lu(OH)_3$ or $La(OH)_3$?

f) Mention any two uses of Thorium?

g) Discuss the electronic configuration of Actinides.

h) Identify the co-ordination number of iron in $[Fe(en)_3]^{3+}$.

i) What is porphyrin?

j) Draw the structure of heme.

SECTION-B

2. a) Calculate EAN of central atom in the following :

   i) $[Fe(H_2O)_6]^2$

   ii) $[Mn(CN)_6]^{4-}$

   b) Explain by giving one example of each kind of the following isomerism :

   i) Co-ordinate isomerism

   ii) Linkage isomerism

   iii) Optical isomerism

3. a) What is Latimer diagram? How can you use Latimer diagram to predict the disproportionate of a metal ion?

   b) Discuss redox stability of water with example.

4. a) Explain the role played by Haemoglobin and Myoglobin as oxygen carriers.

   b) What do you mean by Essential and Trace Elements? Explain their roles in biological systems.

5. Discuss the physical properties of lanthanides with special reference to

   a) Melting point and Boiling point

   b) Electronegative and electropositive characteristics

6. a) Compare lanthanides with actinides and write a note on trans-actinide element.

   b) Discuss different types of rum-aqueous solvent.

SECTION-C

7. Explain briefly :

   a) Frost diagram

   b) Valance bond theory of transition metal complex

   c) Lanthanides contraction

   d) Biological role of alkaline earth metal

8. a) Explain the formation of following on the basis of VBT

      i) $Ni(CO)_4$

      ii) $[Fe(CN)_6]_3$

   b) Write basic postulates of Werner's Coordination theory.

9. a) What is Metalloporphyrins? Discuss the role of metalloporphyrins in biological process.

   b) Compare roles of Ca^{2+} and Zn^{2+} at the active sites of enzymes. In what ways Ca^{2+} is advantageous over alkali metal ions?

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.