

## SIXTH SEMESTER B.Sc. DEGREE EXAMINATION, MARCH 2013

(CCSS)

Chemistry

## CH 6B 15—INORGANIC CHEMISTRY—II

Time : Three Hours

Maximum : 30 Weightage

I. Answer all the *twelve* questions. Each question carries a weightage of  $\frac{1}{4}$ . This section contains multiple choice, fill in the blanks and one word answer type questions :

1 Write an example for hexadentate ligand.

2 The oxidation number of Fe in  $K_4 [Fe(CN)_6]$  is \_\_\_\_\_

3  $K_3 [CoF_6]$  is high spin complex. The hybrid state of Co atom in the complex is :

- (a)  $sp_3d$ . (b)  $sp^2d^2$ .  
 (c)  $d^2sp^3$ . \_\_\_\_\_ (d)  $dsp^2$ .

4 In the complex  $Fe(CO)_x$ , the value of x is \_\_\_\_\_

5 Out of the following metals, which forms polynuclear carbonyl ?

- (a) Na. (b) Mg.  
 (c) Mn. \_\_\_\_\_ (d) Al.

6 The colour of  $[Ti(H_2O)_6]^{3+}$  is due to \_\_\_\_\_

7 The basic unit of porphyrine is \_\_\_\_\_

8 Carbon nanotubes were first found in the cathode deposits obtained in the arc evaporation of \_\_\_\_\_

9 Write the preparation of  $S_2N_2$ .

10 Complete the following equation :  $2CaO + 5iO_2 \rightarrow$  \_\_\_\_\_

11 What is the substance used to slowdown the setting of cement ?

12 Write the composition of soda glass.

(12 x  $\frac{1}{4}$  = 3 weightage)

II. Answer all the *nine* questions. Each question carries 1 weightage :

13 What is an ambidentate ligand ?

14 Write the IUPAC name of  $[CoCl(NH_3)_5]^{2+}$ .

Turn over

- 15 Write the molecular geometry and hybridized state of  $[\text{Ni}(\text{CN})_4]^-$ .
- 16 What is Zeigler-Natta catalyst?
- 17 Describe myoglobin.
- 18 What are cytochromes?
- 19 How will you prepare boron nitride nanotubes?
- 20 Illustrate the preparation of  $\text{Si}_3\text{N}_4$  nanowires.
- 21 What is annealing?

(9 x 1 = 9 weightage)

III. Answer any *five* questions. Each question carries 2 weightage :

- 22 Draw the structure of complex  $[\text{SbF}_6]^-$  and write the hybridization and geometry.
- 23 Draw and explain the crystal field splitting in an octahedral complex.
- 24 What are sandwich compounds? Explain.
- 25 Describe the applications of **organo** arsenic compounds in medicine.
- 26 Explain Sodium/Potassium pump.
- 27 Describe the applications of **nanotechnology** in catalysis.
- 28 Write a note on phosphate fertilizer.

(5 x 2 = 10 weightage)

W. Answer any *two* questions. Each question carries 4 weightage :

- 29 Explain the structural isomerism in co-ordination compounds.
- 30 Illustrate the preparation, properties and structure of  $\text{S}_4\text{N}_4$ .
- 31 Describe the manufacture of Portland cement.

(2 x 4 = 8 weightage)