

**SIXTH SEMESTER B.Sc. DEGREE EXAMINATION, MARCH/APRIL 2015**

(U.G.-CCSS)

Core Course—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  $\frac{1}{4}$  :

- 1  $[\text{CO}(\text{NH}_3)_5\text{SO}_4]\text{Cl}$  and  $[\text{CO}(\text{NH}_3)_5\text{Cl}]\text{SO}_4$  are isomers.
- 2 The co-ordination number and oxidation state respectively of metal M in the complex  $[\text{M}(\text{NH}_3)_6\text{SO}_4]\text{Cl}$  are :
  - (a) 7 and 3. (b) 6 and 2.
  - (c) 6 and 3. (d) 6 and 4.
- 3 Hexa fluoro ferrate (III) ion is outer orbital complex. The number of unpaired electrons present in it is \_\_\_\_\_
- 4 Which among the following is an inner orbital complex ?
  - (a)  $\text{K}_3[\text{CoF}_6]$  . (b)  $[\text{Fe}(\text{H}_2\text{O})_6]^{3+}$ .
  - (c)  $[\text{Ni}(\text{NH}_3)_6]^{2+}$ . (d)  $[\text{K}_4(\text{Fe}(\text{CN}))_6]$ .
- 5 Give one example for a  $\pi$ -bonded organometallic compound.
- 6 What are Trihapto ligands ?
- 7 Wilkinson's catalyst is \_\_\_\_\_
- 8 Heme contains \_\_\_\_\_ metal.
- 9 STM is \_\_\_\_\_
- 10 Complete the following equation :
 
$$\text{S}_4\text{N}_4 \xrightarrow{220^\circ\text{C}} \text{_____}$$
- 11 Flint glass is also known as \_\_\_\_\_
- 12 Write the formula for hard glass.

(12 x  $\frac{1}{4}$  = 3 weightage)II. Answer all the *nine* questions. Each question carries a weightage of 1 :

- 13 Draw the structure of Zeise's salt.

**Turn over**

What is Ziegler-Natta catalyst ?

15 What are polynuclear carbonyls ?

16 What is the significance of Sodium/Potassium pump ?

17 Give *one* example of an organometallic compound used as anticancer drug.

18 How will you prepare SiC nanowires ?

19 Write *two* uses of nanowires and nanotubes.

20 What are Silicons ?

21 Draw the structure of  $P_4S_3$ .

(9 x 1 = 9 weightage)

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

22 Discuss the geometrical isomerism exhibited by Co-ordination compounds.

23 Predict the geometry and magnetic behaviour of  $[CuCl_4]^-$  and explain.

24 Write briefly on the bonding in metal carbonyls.

25 Explain the oxygen binding mechanism in Myoglobin and Haemoglobin.

26 Write a note on image application.

27 Discuss the synthesis and applications of Phosphazenes.

28 Explain the manufacture of cement.

(5 x 2 = 10 weightage)

IV. Answer any *two* questions. Each question carries a weightage of 4 :

29 Write briefly on the application of co-ordination compounds in qualitative and quantitative analysis.

30 (i) Explain CFSE of octahedral and tetrahedral complexes with example.

(ii) How will you explain the colour of co-ordination compounds ?

31 Write notes on (i) Manufacturing of glass (ii) Refractory materials.

(2 x 4 = 8 weightage)