



VI Semester B.Sc. Examination, May 2016  
(NS) (Fresh)  
(2013-14 & Onwards)  
CHEMISTRY – VII  
Inorganic Chemistry

Time : 3 Hours

Max. Marks : 70

- Instructions :** i) The question paper has **two** Parts. Answer **both** the Parts.  
ii) Write diagram and equations **wherever** necessary.

## PART – A

Answer **any eight** of the following questions. **Each** question carries **two** marks. (8×2=16)

1. Give the IUPAC names of the following.
  - i)  $[\text{Cr}(\text{H}_2\text{O})_4]\text{Cl}_2$  and
  - ii)  $\text{Na}_3[\text{Co}(\text{NO}_2)_6]$ .
2. Calculate the EAN of platinum in  $[\text{PtCl}_6]^{2-}$  (Atomic number of Pt = 78).
3. Explain the role of Cobalamine in living systems.
4. Write the geometrical isomers of  $[\text{Pt}(\text{NH}_3)_2\text{Cl}_2]$ .
5. Mention any two applications of abrasives.
6. Write a note on laminated safety glass.
7. Write the different varieties of coal.
8. Give the constituents of varnishes.
9. Define Calorific value of a fuel. Give its SI units.
10. Briefly explain the role of iodine in biological system.
11. Write a note on carbon nanotubes.
12. Give any two applications of nanomaterials.

P.T.O.



## PART - B

Answer **any nine** of the following. **Each** question carries **six** marks.

(9×6=54)

13. a) Based on CFT, explain the geometry and magnetic property of  $[\text{Fe}(\text{CN})_6]^{3-}$ . (4+2)  
b)  $\text{K}_4[\text{Fe}(\text{CN})_6]$  is a low spin complex. Explain.
14. a) Discuss the splitting of d-orbitals in octahedral complex. (4+2)  
b) Give a chemical test to distinguish between  $[\text{Co}(\text{NH}_3)_5\text{Br}]\text{SO}_4$  and  $[\text{Co}(\text{NH}_3)_5\text{SO}_4]\text{Br}$ .
15. a) Explain the electronic spectrum of  $[\text{Ti}(\text{H}_2\text{O})_6]^{3+}$  and  $[\text{CoCl}_4]^{2-}$ . (4+2)  
b) What is meant by crystal field splitting energy ?
16. a) How is portland cement manufactured ? (4+2)  
b) Give any two advantages of glazing of ceramic wares.
17. a) Describe the manufacture of carborundum. (4+2)  
b) What are cullets ? Write its role in the manufacture of glass.
18. a) Explain the production of coal gas. (4+2)  
b) How is T.N.T. prepared ?
19. a) How are explosives classified ? Give an example for each type. (4+2)  
b) What are skinning agents ? Give an example.
20. a) Discuss the structure of haemoglobin and its biological function. (4+2)  
b) Mention the biological functions of phosphorus and magnesium.
21. a) How ligands are classified on the basis of hapticity ? (4+2)  
b) Why is  $\text{Na}_2[\text{Ca}(\text{EDTA})]$  used instead of  $\text{Na}_2\text{H}_2\text{EDTA}$  in the treatment of heavy metal poisoning ?
22. a) Mention the composition and applications of  
i) Borosilicate glass                      ii) Optical glass. (4+2)  
b) Write any two limitations of VBT.
23. a) What are refractories ? How are they classified ? Give one example for each. (4+2)  
b) Give any two examples of conducting polymers.
24. a) Explain the salient features of BCS theory of super conductors. (4+2)  
b) Give any two commercial uses of  $\text{C}_{60}$ .
25. a) Explain the solgel method of synthesis of nanomaterials. (4+2)  
b) Write any two applications of super conductors.