VI Semester B.Sc. Examination, May/June 2018
(CBCS) (2016 – 17 and Onwards) (Fresh+Repeaters)
CHEMISTRY (Paper – VII)
Inorganic Chemistry

Time : 3 Hours

Max. Marks : 70

Instructions : i) The question paper has **two** Parts. Answer **both** the Parts.
ii) Write diagrams 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 complexes :

   i) $Li[AlH_4]$

   ii) $[Co(H_2O)_6]^{3+}$.

2. Calculate the EAN of copper in $[Cu(NH_3)_4]SO_4$ (atomic number of Cu = 29).

3. State eighteen electron rule.

4. Mention two limitations of valence bond theory.

5. Name the raw materials used in the manufacture of glass.

6. Give any two advantages of gaseous fuels.

7. Define spalling. How do you minimise it ?

8. Write a note on annealing of glass.

9. Write any two applications of super conductors.

10. Write a note on carbon nanotubes.

11. What is the role of cobalamine in living systems ?

12. Give any two examples for conducting polymers.

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PART – B

Answer **any nine** of the following questions. **Each** question carries **six** marks.   (9×6=54)

13. a) Explain the crystal field splitting pattern in octahedral complexes.

    b) What are metal carbonyls ? Give an example.   (4+2)

14. a) Give the postulates of Werner's theory of co-ordination compounds.

    b) What is spectrochemical series ?   (4+2)

15. a) Based on Valence Bond Theory explain the geometry and magnetic property of $[Co(NH_3)_6]^{3+}$.

    b) Define crystal field splitting energy.   (4+2)

16. a) Explain the following with a suitable example :
    i) Co-ordination isomerism
    ii) Hydrate isomerism.

    b) What are high spin complexes ? Give an example.   (4+2)

17. a) Explain the applications of :
    i) Cis platin in cancer therapy
    ii) Wilkinson's catalyst in hydrogenation of oils.

    b) Explain the application of co-ordination compounds in monsanto acetic acid process.
                    (4+2)

18. a) Describe the manufacture of carborandum.

    b) Define hardness of an abrasive. On what scale it is expressed ?   (4+2)

19. a) Mention the raw materials and their role in the production of ceramic wares.

    b) What is the role of gypsum in setting of cement ?
                    (4+2)

20. a) Describe the determination of calorific value of a fuel using Bomb calorimeter.

    b) How is dynamite manufactured ?
                    (4+2)

21. a) What are explosives ? How are they classified ? Give an example for each. (4+2)
    b) Give the characteristics of a good propellant.

22. a) Discuss the structure of Myoglobin and its biological function. (4+2)
    b) What is the role of sodium and calcium in biological systems ?

23. a) Discuss the biological and engineering applications of conducting polymers. (4+2)
    b) Give the preparation of $Y_1 Ba_2 Cu_3 O_x$.

24. a) Explain Solgel method of synthesis of nanomaterials. (4+2)
    b) What are superconductors ?

25. a) What are fullerenes ? Describe the preparation of fullerenes and isolation of C-60. (4+2)
    b) Explain the bromination of fullerenes.

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