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Reg. No. | | | | | | | | |

VI Semester B.Sc. Degree Examination, September - 2021

CHEMISTRY

Inorganic Chemistry

Paper : VII

(CBCS Scheme 2020-2021 Onwards)

Time : 3 Hours **Maximum Marks : 70**

Instructions to Candidates:

1. The question paper has two parts. Answer both the parts.
2. Write diagrams and equations wherever necessary.

PART - A

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

1. Write the IUPAC names of the following

i) $Na_3[Co(NO_2)_6]$

ii) $[Cr(en)_3]cl_3$.

2. What is bihapto ligand? Give an example.

3. Explain Ionisation isomerism with an example.

4. Write the chemical formula and use of Wilkinson's Catalyst.

5. Write a note on safety glass.

6. Mention the raw materials used in the manufacture of Portland cement.

7. Mention any two characteristics of a good fuel.

8. What are bipropellants? Give an example.

9. What is the role of (i) Ca^{2+} and (ii) Na^{+} in biological systems.

10. Mention any two applications of conducting polymers.

11. What are Fullerenes? How does C_{60} react with bromine?

12. What are nanomaterials? Give any one application of it.

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PART - B

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

13. a) Write the postulates of Werner's theory of coordination compounds.

b) The solution of $[Ti(H_2O)_6]^{3+}$ appears purple. Give reasons. **(4+2)**

14. a) Based on VBT, discuss the geometry and magnetic property of $[CoF_6]^{3-}$.

b) Give the synthesis and structure of Zeise's salt. **(4+2)**

15. a) Discuss the splitting of d - orbitals in an octahedral field.

b) Write the optical isomers of $[CoCl_2(en)_2]^+$. **(4+2)**

16. a) Explain the following :

i) $Na_2[Ca(EDTA)]$ in the treatment of heavy metal poisoning.

ii) Cis - Platin in Cancer therapy.

b) Illustrate eighteen electron rule taking the example of $Mn_2(CO)_{10}$. **(4+2)**

17. a) What are Refractories? How are they classified? Give an example for each class.

b) Explain Monsanto acetic acid process. **(4+2)**

18. a) Describe manufacture of soda glass.

b) How is Tungsten Carbide prepared? Give the chemical equation. **(4+2)**

19. a) Give the role of the following constituents in a paint :

i) Pigment.

ii) Binder

iii) Drier

iv) Anti skinning agent

b) What is the significance of various grades of cement? **(4+2)**

20. a) How is the calorific value of a fuel is determined?

b) Mention the raw materials used in the manufacture of ceramics. **(4+2)**

21. a) What are explosives? Discuss their classification.

b) Mention any two advantages of gaseous fuels. **(4+2)**

22. a) Discuss the structure and biological functions of Haemoglobin.

b) What are trace elements? Give an example. **(4+2)**

23. a) How is polyacetylene converted to a conducting polymer by doping?

b) How is $YBa_2Cu_3O_x$ prepared? Give the chemical equation. **(4+2)**

24. a) Explain briefly Type - I and Type - II super conductors.

b) How is C_{60} isolated? **(4+2)**

25. a) Explain the synthesis of nano materials by

i) Inert gas condensation.

ii) Electro deposition.

b) Mention two commercial uses of C_{60}. **(4+2)**