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

CHEMISTRY

Inorganic Chemistry

Paper : VII

(CBCS Scheme 2020-2021 Onwards)



Time : 3 Hours

Maximum Marks : 70

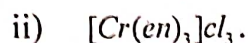
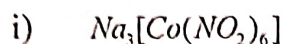
Instructions to Candidates:

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



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)

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

CHEMISTRY

Biochemistry

Paper : VIII

(CBCS Scheme (F+R) 2016-2017 and onwards)



Time : 3 Hours

Maximum Marks : 70

Instructions to Candidates:

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

PART - A

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

1. Mention the contributions of the following scientists to the development of Biochemistry.
 - a) Emil Fischer.
 - b) Hans Krebs.
2. Write the Haworth structure of β - galactosamine.
3. Give any two biological roles of Chitin.
4. Define Iodine number of lipids. Give its significance.
5. List the stabilising forces of the tertiary structure of proteins.
6. Write the structure of a nucleotide present only in RNA.
7. What is competitive inhibition? Give an example?
8. Explain group specificity of enzymes with an example.
9. What is energy coupling? Give an example.
10. Write the chemical reaction of urea cycle catalysed by arginase.
11. What is gluconeogenesis?
12. What is central dogma of molecular biology?

[P.T.O.]



PART - B

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

13. a) Discuss the role of water in biological systems due to its
i) high dielectric constant.
ii) high heat of vaporisation.
b) Name two high energy molecules other than ATP. (4+2)
14. a) What are sugar acids? Mention their types with an example.
b) Write the Haworth structure of fructose - 1,6 - diphosphate. (4+2)
15. a) What are phospholipids? Mention their biological importance.
b) Give the biological role of HDL and LDL cholesterol. (4+2)
16. a) How are amino acids classified based on polarity of the side chain? Give an example for each class.
b) What is denaturation of proteins? How is it prevented? (4+2)
17. a) Explain α - helix and β - pleated structure of proteins.
b) What is oxidative rancidity? How is it prevented? (4+2)
18. a) Discuss the salient features of Watson and Crick model of DNA.
b) State Chargaff's rule of base equivalence. (4+2)
19. a) Explain the effect of P^H and substrate concentration on enzyme activity with the help of a graph.
b) Write a note on Koshland's induced fit theory of enzyme catalysis. (4+2)
20. a) List out the structural features of ATP which makes it a high energy compound. Illustrate with structure.
b) What is substrate level phosphorylation? Give an example. (4+2)
21. a) Discuss the principle and applications of Thin layer chromatography.
b) Mention any two biological functions of proteins. (4+2)
22. a) Explain briefly the semi - conservative mechanism of replication of DNA.
b) Genetic code is universal and degenerate. Justify. (4+2)
23. a) Write the sequence of chemical reactions by which an activated fatty acid undergoes β - oxidation in mitochondria.
b) What is the fate of pyruvate in anaerobic conditions? Give chemical equation. (4+2)
24. a) Write the chemical equation for the two oxidative decarboxylation reactions in TCA cycle. Mention the enzymes involved.
b) Explain transamination with an example. (4+2)
25. a) What are hormones? How are they classified?
b) Write any two applications of DNA profiling. (4+2)
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