

VI Semester B.Sc. Examination, September 2020  
(CBCS) (F+R) (2016 – 17 and Onwards)  
**CHEMISTRY**

**Paper – VII : Inorganic Chemistry**

Time : 3 Hours

Max. Marks : 70

- Instructions :** 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. Mention primary and secondary valency of platinum in  $[Pt + (NH_3)_2Cl_2]$  complex.
2. Write the IUPAC name and geometrical isomers of  $[Co(NH_3)_4Cl_2]^+$  complex.
3. What is ambidentate ligand ? Give an example.
4. Explain linkage isomerism with an example.
5. What is dynamite ? Write its composition.
6. Write an example each for synthetic and natural abrasive.
7. Name the raw materials used in the manufacture of soda glass.
8. Write any two characteristics of a good fuel.
9. Name a metalloporphyrin and mention the metal ion in it.
10. What are conducting polymers ? Give an example.
11. Write any two uses of high temperature super conductors.
12. How is nano materials produced by electrodeposition method ?

P.T.O.



## PART – B

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

(9×6=54)

13. a) Explain crystal field splitting in tetrahedral complex.  
b) Write any two limitations of Werner's theory of coordination compounds. (4+2)
14. a) What is optical isomerism ? Explain the optical isomerism in coordination compounds with a suitable example.  
b) Write the name and the formula of coordination compound used in treatment of cancer. (4+2)
15. a) Based on crystal field theory, explain magnetic property of  $[\text{Co}(\text{NH}_3)_6]^{+3}$  complex.  
b) Write the isomers of  $[\text{Co}(\text{en})_2\text{Cl}_2]^+$  complex which isomer is optically active and why ? (4+2)
16. a) What are inner and outer orbital complexes ? Give an example for each.  
b) State EAN rule. (4+2)
17. a) Based on Valence bond theory, explain geometry and magnetic property of  $[\text{Fe}(\text{CN})_6]^{-3}$  complex.  
b) Calculate the EAN of Cobalt in  $[\text{Co}_2(\text{CO})_{10}]$  on the basis of 18 electron rule. (4+2)
18. a) Write any four characteristic properties of a good fuel.  
b) What is the role of Silica in the manufacture of Ceramics ? (4+2)
19. a) What are propellants ? How they are classified ? Give an example for each.  
b) Write one use each of  
i) Borosilicate glass and  
ii) Polycarbonate glass. (4+2)



20. a) What are Varnishes ? Explain the role of
- i) Resin
  - ii) Drying oils
  - iii) Solvents in varnishes
- b) Write the composition and one use of biogas. (4+2)
21. a) Write a note on :
- i) Devitrification and
  - ii) Annealing of glass
- b) Why dynamite is absorbed in clay or saw dust ? (4+2)
22. a) What are essential and trace elements ? Give an example for each.
- b) Mention the role of (i)  $K^+$  and (ii)  $Ca^{+2}$  in biological system. (4+2)
23. a) What are refractories ? How they are classified ? Give an example for each.
- b) Write a note on laminated safety glass. (4+2)
24. a) How is polyacetylene converted to conducting polymer by doping method ?
- b) Explain bromination of fullerenes. (4+2)
25. a) What are fullerenes ? Explain the preparation and isolation of C-60.
- b) Write any two biological applications of conducting polymers. (4+2)
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VI Semester B.Sc. Examination, September 2020  
(CBCS (F + R) (2016-17 and Onwards))  
CHEMISTRY (Paper – VIII)  
Biochemistry

Time : 3 Hours

Max. Marks : 70

**Instructions :** 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. Mention the contributions of following scientists to the development of Biochemistry.
  - a) H. G. Khorana
  - b) Knoop.
2. Write the Haworth structure of cellobiose.
3. What are essential fatty acids ? Give an example.
4. Write the Zwitter ionic structure of glycine.
5. Differentiate between endergonic and exergonic reactions.
6. What is gluconeogenesis ?
7. What is the role of carnitine during  $\beta$ -oxidation of fatty acids ?
8. State Chargaff's rule of base equivalence.
9. Name i) a peptide hormone  
ii) an amino acid derivative hormone.
10. Explain competitive inhibition with an example.
11. What are "leading" and "lagging" strands ?
12. Mention any two uses of paper chromatography.

P.T.O.



## PART – B

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

13. a) Give the elemental and biological composition of living cell. (4+2)  
b) What is the biological role of Inulin ?
14. a) What are sugar acids ? Mention their types with examples.  
b) Give any two differences between starch and cellulose with respect to structure and biological function. (4+2)
15. a) What are Triglycerides ? Give their biological functions.  
b) Define oxidative rancidity. How can it be prevented ? (4+2)
16. a) Write the structure of Lecithin and mention its biological importance.  
b) Explain Anfinsen's experiment on the renaturation of ribonuclease. (3+3)
17. a) With suitable examples, explain the role of proteins as  
i) Antibodies ii) Hormones  
iii) Transport agents and iv) Structural materials.  
b) How do amino acids react with ninhydrin ? Give equation. (4+2)
18. a) Mention the types of RNA and their role in protein synthesis.  
b) Write a note on chromatin. (4+2)
19. a) Explain i) Lock and key theory of enzyme catalysis  
ii) Effect of temperature on enzyme catalysis.  
b) Write a note on "active centres". (4+2)
20. a) Write the structure of ATP and explain its features which makes it an energy rich compound.  
b) What is substrate level phosphorylation ? Give an example. (4+2)
21. Write the reactions along with enzymes for  
a) The conversion of oxaloacetate to citrate.  
b) The conversion of fumarate to Malate.  
c) The formation of carbamyl phosphate during urea cycle. (2+2+2)

22. a) Explain and write the reaction sequences of glycolysis catalysed by  
i) Triose phosphate isomerase  
ii) Enolase.  
b) What is Deamination ? Give an example. (4+2)
23. a) Calculate the number of ATP molecules produced during complete oxidation of one molecule of glucose.  
b) What is the principle of column chromatography ? (4+2)
24. a) Write any four characteristic features of Genetic code.  
b) What is the base sequence of mRNA if the following DNA template is used for transcription TCAGACATG. (4+2)
25. a) What is  
i) Translation ?  
ii) Primary level of structural organisation of proteins ?  
b) Explain the role of c-AMP as second messenger. (4+2)
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