(6 pages) **Reg. No. :**.....

Code No. : 20285 E **Sub. Code : JMCH 61/ SMCH 61**

B.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2021.

Sixth Semester

Chemistry — Core

INORGANIC CHEMISTRY — III

(For those who joined in July 2016 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer.

1. Tetraamine Platinum (II) tetrachloro platinate (II) is commonly known as

   (a) Edmann's salt

   (b) Magnus Green Salt

   (c) Vaska's complex

   (d) Wilkinson's catalyst

2. Which one of the following is an example for flexidentate ligand?

(a) Cl^- (b) CN^-

(c) EDTA (d) NO_2^-

3. Pick out the strong field ligand

(a) Ammonia (b) Water

(c) Fluoride ion (d) None of the above

4. Spectrophotometric method is based on the law of

(a) Charle's law (b) Adam's law

(c) Bohr's Postulates (d) Beer's law

5. Substitution by water is known as

(a) Hydrolysis (b) Anation

(c) Aquation (d) All the above

6. Complexes which undergo slow replacement reactions are named as

(a) Labile complexes

(b) Inert complexes

(c) Co-ordination complexes

(d) None of the above

7. Diethyl zinc was discovered by

(a) William Christopher

(b) Edward Frank land

(c) Paul Ehrlich

(d) Henry Gilman

8. The molecular formula of ferrocene is

(a) $(C_2H_5)_2Zn$ (b) $(C_2H_5)_2Mn$

(c) $(C_2H_5)_2Fe$ (d) $(C_2H_5)_2Cu$

9. Which one of the following transition is forbidden?

(a) $u \rightarrow u$

(b) $g \rightarrow u$

(c) $g \rightarrow g$

(d) both $g \rightarrow g$ and $u \rightarrow u$

10. Natural high harvesting complex is

(a) Iron complex

(b) Chlorophyll

(c) Hemoglobin

(d) Blue copper protein

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Write notes on :

(i) Co-ordination number

(ii) Flexidentate Ligand.

Or

(b) Explain (i) Ligand Isomerism (ii) Defects of VB theory.

12. (a) Discuss the shapes of 'd' orbitals in detail.

Or

(b) Explain the Effective Atomic Number Rule in detail with examples.

13. (a) Explain the inner sphere mechanism of Oxidation-Reduction reactions.

Or

(b) Write notes on :

(i) Labile Complexes

(ii) Inert Complexes.

14. (a) Write notes on :

(i) Ferrocene

(ii) Organo-Phosphorous Compounds.

Or

(b) Explain (i) Metal nitrosyls (ii) 18 electron rule.

15. (a) Explain the properties of the excited state of *a* molecule.

Or

(b) Discuss in detail about the photo substitution reactions with examples.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Explain the Geometrical Isomerism in square planar complexes with examples.

Or

(b) Explain the postulates of Valence Bond Theory.

17. (a) Explain it with examples (i) High spin complexes (ii) Low spin complexes.

Or

(b) Discuss the applications of Crystal Field theory in detail with examples.

18. (a) Define Trans Effect. Discuss its applications in detail with examples.

Or

(b) Discuss the different types of Ligand Substitution Reactions in Octahedral Complexes with examples.

19. (a) Discuss the history of Organo metallic compounds in detail.

Or

(b) Explain the formation of polymers using Ziegler-Natta Catalyst. Give the mechanism.

20. (a) Discuss in detail about Charge-Transfer Transitions.

Or

(b) Discuss the different types of photoelectron chemical devices in detail.

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