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Reg. No. :

Code No. : 10009 E Sub. Code : SMCH 61/
AMCH 61

B.Sc. (CBCS) DEGREE EXAMINATION,
APRIL 2023.

Sixth Semester

Chemistry — Core

INORGANIC CHEMISTRY — III

(For those who joined in July 2017 – 2020)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Common name for potassium trichloro ethylene platinate (II) is
- (a) Edmann's salt
(b) Wilkinson's catalyst
(c) Zeise's salt
(d) Maganese green salt

2. The valency of Iron in the complex $[\text{Fe}(\text{CN})_6]^{-3}$ is
- (a) 1 (b) 2
(c) 3 (d) 4
3. The type of hybridisation present in tetrahedral complex is
- (a) sp (b) sp^3
(c) sp^3d (d) sp^2
4. Which of the following complex is paramagnetic
- (a) $[\text{CO}(\text{NH}_3)_6]^{+3}$ (b) $\text{K}_4[\text{Fe}(\text{CN})_6]$
(c) $[\text{Co}(\text{CN})_6]^{-3}$ (d) $[\text{CoF}_6]^{-3}$
5. The half life period of Labile complexes are
- (a) Short (b) Very short
(c) High (d) Very high
6. Which one of the following is having higher trans effect
- (a) CN^- (b) NH_3
(c) Cl^- (d) NH_4^+

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7. Metal sandwich complex is
- (a) Grignard reagent
(b) Zeises salt
(c) Ferrocene
(d) Wilkinson's catalyst
8. Organometallic compound for the treatment of syphilis was discovered by
- (a) Paul Ehrlich (b) Henry Gilman
(c) Charles (d) Edward
9. Intense pink colour of permanganate ion is due to _____ transition
- (a) d – d (b) Charge transfer
(c) n – N (d) n – π
10. Staggered rules was formulated by the scientist
- (a) Wilfred (b) Werner
(c) Kirk (d) Adamson

PART B — (5 × 5 = 25 marks)

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

Each answer should not exceed 250 words.

11. (a) Discuss the geometrical isomerism found in square planar complexes.
- Or
- (b) Discuss the merits and defects of VB theory in detail.

12. (a) Explain the splitting of 'd' orbital in tetrahedral geometry complexes.

Or

- (b) Write short notes on the crystal field stabilisation energy.

13. (a) Explain in detail the term, 'Trans effect' with examples.

Or

- (b) Explain electron-transfer reactions with examples.

14. (a) Discuss the nature and structure of metal-ligand bond in metal carbonyls.

Or

- (b) Write notes on Wilkinson's catalyst.

15. (a) Write notes on photovoltaic cell.

Or

- (b) Explain the process of quenching in detail.

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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 postulates of valence bond theory.

Or

- (b) Discuss the rules to be followed for naming the co-ordination compounds.

17. (a) Discuss the applications of crystal field theory in detail.

Or

- (b) How will you determine the stability constant of a reaction by Bjerrum method?

18. (a) Write notes on :
- (i) Labile complexes
 - (ii) Inert complexes
 - (iii) Aquation.

Or

- (b) Explain oxidation-Reduction reactions in detail with examples.

19. (a) Explain metal nitrosyls in detail with suitable examples.

Or

- (b) Write short notes on
- (i) Ziegler-Natta catalyst
 - (ii) Ferrocene
 - (iii) Organoboron compounds.

20. (a) Discuss in detail about charge-transfer transitions.

Or

- (b) Write notes on
- (i) Adamson's rule
 - (ii) Selection rules.
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