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Reg. No. :

Code No. : 30075 E Sub. Code : GMCH 61

B.Sc. (CBCS) DEGREE EXAMINATION,
APRIL 2020.

Sixth Semester

Chemistry – Main

INORGANIC CHEMISTRY – III

(For those who joined in July 2012 – 2015)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL the questions.

Choose the correct answer :

1. Inert gases are separated by
 - (a) Ramsay method
 - (b) Ramsay and Rayleigh method
 - (c) Dewar's method
 - (d) Corendish method

2. The noble gas used for Magnetic Resonance Imaging (MRI) is
- (a) Helium (b) Krypton
(c) Argon (d) Xenon
3. Which 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) $[\text{CoF}_6]^{3-}$
4. How many axial orbitals are available in 'd' orbital?
- (a) 1 (b) 2
(c) 3 (d) 4
5. Which one of the following is having a higher trans effect?
- (a) CN^- (b) NH_3
(c) Cl^- (d) None of the above
6. The Half-Life period of Labile complexes are
- (a) short (b) very short
(c) high (d) medium
7. Which of the complex is used for cancer therapy?
- (a) Cis-platin (b) Trans-platin
(c) Platocyanin (d) None of the above

8. Lack of Zinc deficiency may lead to _____ disease.
- (a) Dwarfism (b) Dermatitis
(c) Loss of appetite (d) All the above
9. Which transition is a forbidden one?
- (a) $g \rightarrow g$ (b) $U \rightarrow u$
(c) $g \rightarrow u$ (d) $g \rightarrow g$ and $U \rightarrow u$
10. Staggered rules was formulated by
- (a) Adamson (b) Kirk
(c) Wilfred (d) Werner

PART B — ($5 \times 5 = 25$ marks)

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

Each answer should not exceed 250 words.

11. (a) Explain the clathrate compounds of noble gases with examples.

Or

- (b) Discuss the importance of Inert gases in theoretical chemistry.

12. (a) How will you determine the stability constant of a complex by Bjerrum method?

Or

- (b) Explain the splitting of 'd' orbital in octahedral geometry complex.

13. (a) Write notes on :

- (i) Labile complexes
- (ii) Inert complexes

Or

- (b) Explain in detail about metal nitrosyls.

14. (a) Explain the differences between Haemoglobin and myoglobin.

Or

- (b) Discuss the effect of excess and deficiency of essential trace elements.

15. (a) State and explain the Quenching Process.

Or

- (b) Write notes on Photovoltaic Cell.

PART C — ($5 \times 8 = 40$ marks)

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

Each answer should not exceed 600 words.

16. (a) Explain the separation of noble gases from one another using Dewar's method.

Or

- (b) Discuss the structure of the following compounds.

(i) Xenon tetra fluoride

(ii) Xenon trioxide

(iii) Xenon tetroxide.

17. (a) Explain the applications of crystal field theory with suitable examples.

Or

- (b) Write notes :

(i) Effective Atomic Number

(ii) Factors affecting the stability of complexes.

18. (a) What is meant by Trans effect? Explain the applications of trans effect in detail with suitable examples.

Or

(b) Write notes on the following :

(i) 18 Electron Rule

(ii) Nature of M–L bonding in metal carbonyls.

19. (a) Explain the structure and mechanism of action of hemoglobin.

Or

(b) Explain the role of the complexes of Copper, Gold and Platinum in therapeutic treatment.

20. (a) Explain the different types of photo chemical reactions in detail.

Or

(b) Write notes on :

(i) Adamson's rule

(ii) Charge transfer and its types.
