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

Code No. : 20629 E **Sub. Code : EFCH 11/ FFCH 11**

B.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2025.

First Semester

Chemistry

FOUNDATION COURSE

(For those who joined in July 2023 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Deuterium in a isotope of

(a) Nitrogen (b) Hydrogen

(c) Carbon (d) Oxygen

2. The quantity of matter contained in an atom of an element

(a) atomic number (b) atomic mass

(c) quantum number (d) isotopes

3. This is a measurement of the separation of two opposite electrical charges

(a) ion polarization

(b) covalent bond

(c) dipolemoment

(d) chemical bond

4. Iron and cobalt are the examples of

(a) para magnetic (b) diamagnetic

(c) ferromagnetic (d) none of the above

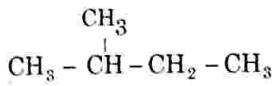
5. A mixture of equal quantities of two enantiomers is known as

(a) diasteromers (b) racemic mixture

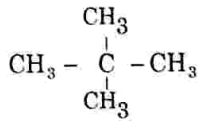
(c) enantiomers (d) isomers

6. Chain isomers of C_5H_{12} are

(a) $CH_3-CH_2-CH_2-CH_2-CH_3$ and



(b) $CH_3-CH_2-CH_2-CH_2-CH_3$ and



(c) both (a) and (b)

(d) none of the above

7. The ideal gas equation is

(a) PV=RT (b) PV=KT

(c) PV=nXT (d) PV=nRT

8. The SI unit of viscosity is

(a) $kg\ m^{-1}s^{-1}$ (b) $kg\ ms^{-1}$

(c) kg ms (d) $kg\ ms^{-2}$

9. The visible range is approximately

(a) from 400 nm to 800 nm

(b) from 500 nm to 800 nm

(c) from 100 nm to 300 nm

(d) from 200 nm to 300 nm

10. If the molecular dipolemoment changes during the vibration

(a) UV active (b) IR active

(c) Microwave active (d) NMR active

PART B — (5 × 5 = 25 marks)

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

Each answer should not exceed 250 words.

11. (a) Explain shapes of s, p and d orbitals.

Or

(b) List out the factors affecting various periodic properties.

12. (a) Explain : Types of chemical bond.

Or

(b) Write on the basic properties of co-ordination compounds.

13. (a) Write a note on functional isomerism.

Or

(b) Explain : Enantiomers and digstereomers.

14. (a) Explain : List out the factors affecting surface tension and viscosity.

Or

(b) How will you understand the deviation of ideal gases?

15. (a) Define two terms :

(i) Frequency

(ii) Amplitude

Or

(b) Explain : Quantization of energy level.

PART C — (5 × 8 = 40 marks)

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

Each answer should not exceed 600 words.

16. (a) Define the following :

(i) Atomic mass

(ii) Atomic number

(iii) Isotopes

(iv) Isobars

Or

(b) Explain : Quantum number and its significances.

17. (a) (i) What is meant by dipolemoment and how will you calculate the percentage of ionic character?

(ii) Define paramagnetic character.

Or

(b) Explain : Postulates of valence band theory.

18. (a) Elaborate the IUPAC nomenclature of organic compounds.

Or

(b) How will you establish the concept of stereo isomerism?

19. (a) (i) Demonstrate the kinetic theory of gases. (6)

(ii) State Vander Waal's equation. (2)

Or

(b) (i) Establish the concept of inter molecular forces. (6)

(ii) Define Solids. (2)

20. (a) (i) Elaborate the general characteristics of wave. (6)

(ii) Define wave length. (2)

Or

(b) Write a note on :

(i) Nuclear magnetic resonance spectroscopy. (4)

(ii) UV-visible spectroscopy. (4)