Reg. No. : ....

Code No. : 30768 E   Sub. Code : EFCH 11/
                                        FFCH 11

B.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2024

First Semester

Chemistry

Skill Based — 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. Which one of the following orbitals are spherical?

    (a) f   (b) s

    (c) d   (d) none of the above

2. Which is the most covalent among the following?

    (a) NaCl   (b) LiCl

    (c) KCl   (d) RbCl

3. Which one of the following element is most electronegative?

   (a) Br   (b) S

   (c) P   (d) F

4. The geometry of IF_7 is

   (a) Square planar

   (b) Square pyramidal

   (c) Pentagonal bipyramidal

   (d) Trigonal bipyramidal

5. Which of the following show optical isomerism?

   (a) CH_3CH_2COOH (b) $(CH_3)_2-CH-CHO$

   (c) $H_2NCH(CH_3)_2$ (d) $CH_3CH(OH)COOH$

6. The racemic mixture is

   (a) optically inactive   (b) optically active

   (c) chiral   (d) asymmetric

7. Amorphous solids do not have

   (a) sharp melting point

   (b) geometrical shapes

   (c) regular structure

   (d) all of these

8. The unit of viscosity is

    (a)   centri poise   (b)   debye

    (c)   calories   (d)   joule

9. Absorption spectrum in UV region results from

    (a)   Electronic excitation

    (b)   Change in nuclear spin

    (c)   Increase in potential energy

    (d)   Decrease in rotational energy

10. The symmetric vibration of CO_2 is IR inactive. This is because there is

    (a)   No change in polarizability

    (b)   No change in its DPM

    (c)   Change in polarizability

    (d)   Change in its DPM

PART B — (5 × 5 = 25 marks)

Answer ALL questions choosing either (a) or (b).
Each answer should not exceed 250 words.

11. (a)   Explain spin quantum number.

Or

    (b)   Define electronegativity. How it varies along the group and period.

12. (a) Define the following with examples :

      (i) Paramagnetism

      (ii) Diamagnetism.

Or

(b) Explain the following with example : $(2 \times 2\frac{1}{2})$

      (i) Co-ordination Number

      (ii) Ligand.

13. (a) Give the classification of Hydrocarbons.

Or

(b) Give the conditions for a molecule to be optically active.

14. (a) Give the postulates of kinetic theory of gases.

Or

(b) Define Surface Tension and factors affecting surface tension.

15. (a) Describe the different types of electronic transition occur in UV-visible spectroscopy.

Or

(b) Write any five applications of IR spectroscopy.

PART C — (5 × 8 = 40 marks)

Answer ALL questions choosing either (a) or (b).
Each answer should not exceed 600 words.

16. (a) Write a note on classification of elements in the periodic table.

Or

(b) Define the following with examples :

(i) Isotopes

(ii) Isobars

(iii) Isotones.

17. (a) Explain Percentage of Ionic Characters.

Or

(b) Explain Fajan rule with example.

18. (a) Explain the following with examples :

(i) Enantiomer

(ii) Diastereoisomers.

Or

(b) Define viscosity and the factors affecting viscosity.

19. (a) Explain geometrical isomerism with example.

Or

(b) Write a note on Liquifaction of gases.

20. (a) Give selection rule for the following :

(i) Microwave spectroscopy

(ii) Infrared spectroscopy.

Or

(b) Write a note on Nuclear Magnetic resonance spectroscopy.

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