



K24U 0714

Reg. No. :

Name :

IV Semester B.Sc. Degree (CBCSS – OBE – Regular/Supplementary/
Improvement) Examination, April 2024
(2019 to 2022 Admissions)

COMPLEMENTARY ELECTIVE COURSE IN CHEMISTRY/POLYMER
CHEMISTRY

4C04 CHE/PCH (PS) : Chemistry (For Physical Science)

Time : 3 Hours

Max. Marks : 32

SECTION – A

Very short answer type. **Each** carries 1 mark. Answer **all 5** questions.

1. Define RMS velocity.
 2. How surface tension and viscosity are relate to intermolecular forces ?
 3. Define EMF.
 4. What is the size range of nanomaterials ?
 5. What is Top-Down approach in nanomaterial synthesis ?
- (5×1=5)

SECTION – B

Short answer type. **Each** carries 2 marks. Answer 4 questions out of 6.

6. A gas occupies 12.3 liters at a pressure of 40.0 mmHg. What is the volume when the pressure is increased to 60.0 mmHg ?
7. What is Bravais lattice ? Explain Bravais lattices of cubic crystals.
8. What are liquid crystals ?
9. State and explain the Faraday's laws of electrolysis.

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10. The standard electrode potential of zinc ions is 0.76V. What will be the potential of a 2M solution at 300 K ?

11. What is spectrophotometry ?
- (4×2=8)

SECTION – C

Short essay/problem type. **Each** carries 3 marks. Answer 3 questions out of 5.

12. Give the important postulates of Kinetic Molecular Theory of Gases.
 13. NaCl has a f.c.c. structure. How many Na^+ and Cl^- ions are there in the unit cell ?
 14. Addition of a non-volatile solute lowers the freezing point and elevates the boiling point of a solvent. Explain.
 15. Describe the synthesis of nanomaterials by co-precipitation method with suitable example.
 16. Explain the principle of TGA.
- (3×3=9)

SECTION – D

Long essay type. **Each** carries 5 marks. Answer 2 questions out of 4.

17. a) Write notes on liquefaction of gases.
b) What is Joule-Thomson Effect ?
 18. a) Define (i) Osmosis; (ii) Osmotic pressure; (iii) Semipermeable membrane.
b) Explain how the molecular mass of a solute is determined by osmotic pressure measurements.
 19. State and explain Kohlrausch's law with example. Give its application.
 20. a) What is electro chemical series ? Give the significances with suitable examples.
b) What is electrode potential ? Explain the measurement of single electrode potential.
- (2×5=10)