



K22U 1545

Reg. No. : .....

Name : .....

IV Semester B.Sc. Degree CBCSS (OBE) Regular/Supplementary/  
Improvement Examination, April 2022  
(2019 Admission Onwards)  
COMPLEMENTARY ELECTIVE COURSE IN CHEMISTRY/  
POLYMER CHEMISTRY  
4C04CHE/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. How many number of atoms are present per unit cell in FCC lattice ?
2. The SI unit of surface tension is \_\_\_\_\_
3. What is the product of conductance of an electrolyte solution and cell constant ?
4. What is the value for compressibility factor (Z) of an ideal gas ?
5. What is EMF of a cell ? (5×1=5)

## SECTION - B

(Short answer type. Each carries 2 marks. Answer any 4 questions out of 6.)

6. What are colligative properties ? Give two examples.
  7. Define most probable velocity of a gas.
  8. Suggest any one preparative method for synthesizing nanoparticles.
  9. State the law of rationality of indices.
  10. What is meant by a reversible cell ? Give an example.
  11. Calculate the RMS velocity of  $N_2$  molecules at  $0^\circ C$ . (4×2=8)
- P.T.O.

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## SECTION - C

(Short essay type. Each carries 3 marks. Answer any 3 questions out of 5.)

12. Explain Bragg's law.
13. Draw the conductometric titration curve of a strong acid against a weak base. Explain.
14. Discuss Van der Waal's equation and explain the significance of a and b.
15. Discuss the optical properties of nanomaterials.
16. Calculate the EMF of the following cell at 298K  
 $Mg(s)/Mg^{2+}(0.001M) || Cu^{2+}(0.001M)/Cu(s)$ . Given  $E^\circ Mg^{2+}/mg = -2.37 V$ ,  
 $E^\circ Cu^{2+}/Cu = +0.34V$ . (3×3=9)

## SECTION - D

(Long essay type. Each carries 5 marks. Answer any 2 questions out of 4.)

17. Sketch and explain Maxwell's distribution curve and explain the effect of temperature on distribution of molecular velocities.
18. State and explain Henry's law. What are its limitations ? Discuss its applications.
19. Write a short note on potentiometric titration and its application.
20. Describe how conductivity measurements can be used to determine the solubility of a sparingly soluble salt in water. (2×5=10)