



23104226

QP CODE: 23104226

Reg No :

Name :

**B.Sc DEGREE (CBCS) REGULAR / IMPROVEMENT / REAPPEARANCE
EXAMINATIONS, JANUARY 2023**

Third Semester

COMPLEMENTARY COURSE - CH3CMT03 - CHEMISTRY- PHYSICAL CHEMISTRY-I

Common to B.Sc Geology Model I, B.Sc Physics Model I & B.Sc Geology and Water Management
Model III

2017 Admission Onwards

574CC160

Time: 3 Hours

Max. Marks : 60

Part A

*Answer any **ten** questions.*

*Each question carries **1** mark.*

1. Define unit cell.
2. Name two intrinsic semiconductors.
3. What is the maximum number of this symmetry element that a crystal can possess?
4. What are Weiss indices?
5. Define surface tension of a liquid.
6. What are the applications of Henry's Law?
7. What are semipermeable membranes?
8. Explain the term average velocity of a gas.
9. Define Charle's law.
10. What is absorption?
11. What are emulsifying agents?
12. What is meant by a simple eutectic system?

(10×1=10)

Part B

*Answer any **six** questions.*





Each question carries 5 marks.

13. Explain simple cubic lattice with suitable example.
14. Explain the terms proper rotation and improper rotation axis with suitable examples.
15. Derive the Bragg's equation.
16. 1 g of NaCl when dissolved in 100 g of water lowers the freezing point by 0.615°C . Calculate molal depression constant K_f .
17. The vapour pressure of a 5% aqueous solution of non-volatile organic substance at 373 K is 745 mm. Calculate the molecular mass of the solute.
18. At what temperature would ethane molecules have the same RMS velocity as methane molecules at 27°C .
19. One mole of water vapour is confined to a 20 litre flask at 270°C . Calculate its pressure using van der Waals equation and ideal gas equation.
20. What are colloids? How they are classified?
21. What are the phases that coexist in equilibrium at the triple point of water?

(6×5=30)

Part C

*Answer any **two** questions.*

*Each question carries **10** marks.*

22. Calculate the number of atoms in unit cell of (a) simple cubic, (b) face centred cubic and (c) body centred cubic.
23. The liquid state of matter is an intermediate phase between solid and gas. Justify this statement.
Write a short notes on :
 24. (a) Electrophoresis and its applications.
 - (b) Tyndall effect and Brownian movement.
25. Give the thermodynamic derivation of Nernst distribution law.

(2×10=20)

