



22100551

QP CODE: 22100551

Reg No :

Name :

**B.Sc DEGREE (CBCS) REGULAR / REAPPEARANCE EXAMINATIONS,
APRIL 2022**

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

072A2770

Time: 3 Hours

Max. Marks : 60

Part A

*Answer any **ten** questions.*

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

1. Explain isotropy and anisotropy in crystals.
2. What are the two types of extrinsic semiconductors generally used? Give an example for each.
3. How many mirror planes does a water molecule have? What kind are they?
4. What are crystal planes?
5. What are van der Waal's forces?
6. What are cholesteric liquid crystals?
7. What is meant by reverse osmosis?
8. Calculate the average kinetic energy of a hydrogen molecule at 00C.
9. Oxygen at 1 atmosphere pressure and 0°C has a density of 1.4290 gL⁻¹. Find the RMS velocity of oxygen molecules.
10. What are emulsifying agents?
11. What is meant by delta formation?
12. State phase rule.

(10×1=10)





Part B

Answer any **six** questions.

Each question carries **5** marks.

13. Calculate the number of atoms associated with the three kinds of cubic unit cells, namely sc, fcc and bcc, for monoatomic elements.
14. Explain the term Bravais lattices mentioning the different types found among crystals.
15. Briefly explain the powder method for the X-ray diffraction studies of crystals.
16. Discuss the various types of intermolecular forces in liquid.
1.0 g of a non-volatile solute was dissolved in 100 g of acetone ($M = 58 \text{ g mol}^{-1}$) at 298 K.
17. The vapour pressure of the solution was found to be 192.5 mm of Hg. Calculate the molar mass of the solute. Given - P° of acetone at 298 K is 195 mm of Hg.
18. Calculate the root mean square velocity of nitrogen molecule at 27°C .
19. Discuss Maxwell distribution of molecular velocities.
20. Describe the classification of colloids.

- 0.83 g succinic acid was shaken up with 100 ml each of water and ether. The water layer was found to contain 0.70 g of succinic acid, the rest having passed into the other layer. Calculate the quantity of succinic acid which can be extracted from 1000 mL of ether solution containing 1 g of the acid, using 100 mL of water in one lot and in two equal fraction.
- 21.

(6×5=30)

Part C

Answer any **two** questions.

Each question carries **10** marks.

22. Discuss the magnetic properties of solids.
23. Write a note on liquid crystals
24. (a) Describe the phenomenon of the adsorption of solids from a solution.
(b) What is the effect of temperature on adsorption of gases on solids?
25. (a) What is a condensed system? Write the reduced phase rule equation.
(b) Discuss salient features of lead-silver system.

(2×10=20)

