QP CODE: 18103351

18103351

Reg No : .....

Name : .....

B.Sc. DEGREE (CBCS) EXAMINATION, NOVEMBER 2018

Third Semester

COMPLEMENTARY COURSE - CH3CMT03 - CHEMISTRY- PHYSICAL CHEMISTRY-I

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

2017 Admission Onwards

E6C40693

Maximum Marks: 60 **Time: 3 Hours**

Part A

Answer any **ten** questions.

Each question carries **1** mark.

1. Define coordination number. What is the coordination number of Cs+ ion in CsCI structure?
2. What does the term proper rotation mean? Give an example.
3. Define an axis of symmetry with regard to crystals.
4. What is meant by the term Bravais lattices? How many Bravias lattices are possible in crystal systems?
5. How does viscosity of a liquid vary with temperature?
6. What are the applications of Henry's Law?
7. Name four important colligative properties.
8. Calculate the temperature at which H2 molecules will have an average speed of 1.7825 × 103 m s–1.
9. Calculate the average velocity of CO molecules at STP.
10. What is meant by electrical double layer?
11. Write a short note on pharmaceutical applications of colloids.
12. Explain the term 'eutectic point'.

(10×1=10)

Part B

Answer any **six** questions.

Each question carries **5** marks.

13. Differentiate between covalent crystals and metallic crystals.
14. Discuss about classification of magnetic materials.
15. X-rays of wavelength 1.54 A° are diffracted at an angle of 20° for the second order in Bragg's spectrometer. Find the distance between the planes.

16. Briefly discuss different kinds of liquid crystals.

17. A solution prepared from 0.3 g of an unknown non-volatice solute in 30 g of CCl4 boils at 350.392 K. Calculate the molecular mass of the solute. The boiling point of CCl4 and its Kb values are 350.0 K and 5.03 K Kg mol–1 respectively.

18. One mole of water vapour is confined to a 20 litre flask at 270C. Calculate its pressure using van der Waals equation and ideal gas equation.

19. Give Maxwell distribution of molecular velocities and explain the terms involed in it. Explain the features of Maxwell's plot.

20. What are colloids? How they are classified?

21. Calculate the maximum number of phases that can co-exist in equilibrium in (i) a one-component system and (ii) a two-component system.

(6×5=30)

Part C

Answer any **two** questions.

Each question carries **10** marks.

22. Discuss the features of cubic crystals with examples.

23. What is meant by radial distribution function of liquids ? How the structure of liquids can be explained using radial distribution function?

24. Write a short notes on :
(a) Electrophoresis and its applications.
(b) Tyndall effect and Brownian movement.

25. Give an example for a simple eutectic system and briefly discuss its salient features with the help of its phase diagram.

(2×10=20)