QP CODE: 19102431

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Reg No : .....

Name : .....

BSc DEGREE (CBCS) EXAMINATION, OCTOBER 2019

Fifth Semester

Core Course - CH5CRT07 - PHYSICAL CHEMISTRY - I

B.Sc Chemistry Model I ,B.Sc Chemistry Model II Industrial Chemistry,B.Sc Chemistry Model III Petrochemicals

2017 Admission Onwards

99903D5F

Maximum Marks: 60

Time: 3 Hours

Part A

*Answer any **ten** questions.*

Each question carries 1 mark.

1. What is meant by compressibility factor?
2. For a given sample of gas what is the order of RMS velocity, average velocity and most probable velocity?
3. Define mean free path.
4. Write down Chapman equation.
5. Why H2O is liquid whereas H2S exists as gas at room temperature?
6. How many atoms per unit cell are present in fcc lattice?
7. Write two examples for ionic crystals having AX symmetry.
8. What is the main application of impurity defect?
9. Write two examples for cholesteric liquid crystals.
10. What is chemisorption?
11. What is the importance of BET equation?
12. What is meant by critical micelle concentration?

(10×1=10)

Part B

*Answer any **six** questions.*

Each question carries 5 marks.

13. Give the postulates of kinetic theory of gases.

14. Define critical temperature, critical pressure and critical volume. How are they related to Van der Waal's constant a and b?

15. Obtain the virial form of Van der Waal's equation.

16. What is surface tension? How is it determined?

17. Briefly explain the Debye Scherrer method for the analysis of crystal structures.

18. Compare the structure of NaCl and KCl by using Powder method.

19. Account for the yellow colour of NaCl when heated in sodium vapour.

20. How is the surface area of adsorbent determined from BET theory?

21. Write a note on Brownian movement and Tyndall effect.

(6×5=30)

Part C

*Answer any **two** questions.*

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

22. Derive Van der Waal's equation of real gases. How is it expressed in virial form?

23. What is meant by coefficient of viscosity? How is viscosity determined using Ostwald viscometer?

24. (a) Explain the Laws of Crystallography. (b) Write a short note on Weiss indices and Miller indices.

25. a) Discuss any two methods on how colloidal solutions are purified. b) Explain the terms micelles and critical micelle concentration.

(2×10=20)