QP CODE: 21100032

Reg No : .....

Name : .....

B.Sc DEGREE (CBCS) EXAMINATION, FEBRUARY 2021

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

4536746A

Time: 3 Hours Max. Marks : 60

Part A

*Answer any **ten** questions.*

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

1. What is the SI unit of pressure?
2. Calculate the value of "a" of Van der Waal's gas for which Pc is 100 atm and b is 50 cm^3mol^{-1}
3. What is critical volume of a gas?
4. What is the relationship between mean free path and coefficient of viscosity?
5. What is the reason for the unusual boiling point of water molecule?
6. What are Miller indices?
7. Fluorite has an 8:4 coordination structure. Explain.
8. Who discovered superconductivity?
9. Define transition point in mesomorphism.
10. What is the effect of temperature on chemisorption?
11. What is the importance of BET equation?
12. State Hardy-Schulz rule.

(10×1=10)

Part B

*Answer any **six** questions.*

*Each question carries **5** marks.*

13. How is kinetic theory modified to explain the deviations of real gases from ideal behaviour?

14. Discuss the virial equation of state.

15. Discuss the effect of temperature on distribution of molecular velocities.

16. Discuss the experimental method for the determination of viscosity of a liquid.

17. What is Packing fraction? Calculate and compare the packing fraction of SC, FCC, BCC lattices.

18. Derive Bragg Equation. Explain the terms.

19. How will you analyze the structure of NaCl by Powder Diffraction method?

20. What are the factors influencing adsorption?

21. What are colloids? How are they classified?

(6×5=30)

Part C

*Answer any **two** questions.*

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

22. Explain the terms collision diameter, collision cross section, collision number, collision freequency and mean free path.

23. a) What is meant by surface tension? What are the factors affecting surface tension?
b) How is surface tension determined using stalagmometer method?

24. What are non stoichiometric defects? Explain with example the different types of non-stoichiometric defects.

25. What is meant by zeta potential? Explain how an electrical double layer is formed in colloids.

(2×10=20)