QP CODE: 22100032

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Reg No : .....

Name : .....

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

Fifth Semester

CORE COURSE - CH5CRT07 - PHYSICAL CHEMISTRY - I

Common for B.Sc Chemistry Model I, B.Sc Chemistry Model II Industrial Chemistry & B.Sc Chemistry Model III Petrochemicals

2017 Admission Onwards

70D82F8F

Time: 3 Hours Max. Marks : 60

Part A

*Answer any **ten** questions.*

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

1. Give the kinetic gas equation and explain the terms.
2. Give the units of Vander Waal's constants a and b in SI system.
3. What is most probable velocity?
4. What is collision cross section?
5. What is the effect of temperature on surface tension?
6. Determine the interplanar spacing between the (123) planes of a cubic system with unit cell a=b=c = 50 pm.
7. Write the Bragg Equation? Explain the terms.
8. How will you rationalize the AX structure composition in Wurtzite?
9. Explain Frenkel defect.
10. What is Freundlich adsorption isotherm?
11. What is the importance of BET equation?
12. What is meant by zeta potential?

(10×1=10)

Part B

*Answer any **six** questions.*

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

13. Discuss the compressibility factor of real gases. What is the significance?

14. Explain the term continuity of state.

15. Derive the relation between mean free path and coefficient of viscosity.

16. Discuss the different types of hydrogen bonding. What are its importance?

17. Draw and explain the Law of Rational indices. Draw the intercepts at 2a,2b,c and a,3b,2c.

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

19. Write a short note on superconductivity.

20. What are sols and emulsions? Give an example for each.

21. What is meant by coagulation of sols? Describe how it can be done.

(6×5=30)

Part C

*Answer any **two** questions.*

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

22. What is virial equation of state? Express van der Waal's equation in virial form.

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

24. What are liquid crystals? Write a short note on Smectic, Nematic and Cholesteric liquid crystals.

25. a) What is adsorption? What are the factors affecting adsorption? B) Distinguish between physisorption and chemisorption.

(2×10=20)