

19U206

(Pages: 2)

Name :

Reg.No :

SECOND SEMESTER B.Sc. DEGREE EXAMINATION, APRIL 2020

(CBCSS - UG)

CC19U CHE2 C02 : PHYSICAL CHEMISTRY

(Chemistry - Core Course)

(2019 Admission Regular)

Time: 2.00 Hrs

Max. Marks: 60

Credit: 2

(Draw diagram wherever necessary. The students can answer all questions in sections A & B)

A. Short answer questions. Each question carries 2 marks.

1. What is the internal energy change produced in joules when a system absorbs 3000J of heat and perform 2000J of work?
2. Define enthalpy.
3. State the Gibbs energy criterion for an equilibrium state.
4. Calculate the total kinetic energy in joules of the molecules in 22 g of CO₂ at 27° C.
5. What are crystal planes?
6. What is meant by the term Bravais lattice? How many Bravais lattices are possible in crystal systems?
7. Why is it said that crystalline solids are anisotropic?
8. What are F centres?
9. Mention two factors that affect viscosity.
10. What are colligative properties? Give two examples.
11. Define the term osmotic pressure.
12. Calculate the degree of ionization of NH₄OH in 0.02 M solution. Given: the ionization constant of NH₄OH is $1.8 \times 10^{-5} \text{ mol L}^{-1}$ at 25°C.

(Ceiling: 20 Marks)

B. Short essay questions (Paragraph). Each question carries 5 marks.

13. Calculate the entropy fusion of ice if its enthalpy of fusion at 273 K is 335 J/g.
14. Discuss the effect of temperature on the distribution of molecular velocities.
15. Distinguish between real gas and ideal gas.
16. Calculate the enthalpy of vaporization per mole of water given that its vapour pressure at 80°C is 0.4672 atm. The normal boiling point of water is 100°C.
17. State Henry's law and explain two of its applications.
18. What is calomel electrode? Describe the construction of a calomel electrode.
19. How will you prepare a buffer solution ? Explain its functions.

(Ceiling: 30 Marks)

C. Essay questions. Answer any one question.

20. State first law of thermodynamics and give mathematical expression of the law. Discuss the limitations of the first law.
21. Define Kohlrausch's law. Discuss the different applications of it.

(1 × 10 = 10 Marks)
