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Reg. No. : .....

Name : .....

Third Semester B.Sc. Degree Examination, February 2024

First Degree Programme under CBCSS

Chemistry

Complementary Course for Physics

CH 1331.1 : PHYSICAL CHEMISTRY – II

(2017 – 2019 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A

Answer **all** questions.

1. What is collision number?
2. In van der Waal equation of state of gas laws, the constant 'a' is a measure of – _____.
3. Write the relation connecting Cv and van der Waal constant.
4. Write an example for HCP type crystal.
5. Increasing the temperature of an exothermic reaction results in _____.
6. What is meant by quantum yield?
7. Write one example for homogeneous catalyst.

8. The most probable velocity of a gas varies inversely as square root of _____.

9. Define compressibility factor.

10. Write equation for transport number connecting anion and cation?

(10 × 1 = 10 Marks)

SECTION – B

Answer any **eight** questions. **Each** question carries **2** marks.

11. Explain the term symmetry elements with suitable example.

12. What is a point group and the conditions for a point group.

13. What are the causes for the deviation real gas from ideal behaviour?

14. Discuss the Virial equation of state.

15. Explain Einstein's law.

16. What is meant by Phosphorescence?

17. Distinguish between order and molecularity of a reaction.

18. Explain Bragg equation and the terms.

19. Explain a conductivity cell.

20. What is meant by Bravais lattice?

21. What is meant by standard electrode potential?

22. Calculate the RMS velocity of O_2 molecule at 27°C.

(8 × 2 = 16 Marks)

SECTION – C

Answer any **six** questions. **Each** question carries **4** marks.

23. Derive the gas equation and explain the terms.

24. Derive the relation between vander Waals' constant and critical constants.

25. Explain different types of catalysis.

26. Explain moving boundary method for determination of transport number.

27. Describe the structure of KCI using neat diagram.

28. Explain the Claud's process for the liquefaction of gases.

29. Explain the various theories of catalysis.

30. Calculate the Arrhenius parameters.

31. Explain various factors influencing rate of reaction.

(6 × 4 = 24 Marks)

SECTION – D

Answer any **two** questions. **Each** question carries **15** marks.

32. (a) Derive integrated rate equation for first order reaction.

    (b) Explain collision theory of reaction rate.

33. (a) Determine the point group of water and ammonia.

    (b) Explain reaction taking place Fuel-cells and its type.

34. (a) Explain powder diffraction method.

    (b) Explain why real gases deviate from ideal behaviour.

35. Illustrate on various types condcutometric titration using suitable example.

(2 × 15 = 30 Marks)
