

28/5/24



School of Biological Sciences
Doon University
Dehradun, Uttarakhand
Question Paper: End-Semester Examination
Academic Session: Jan 2024 – Jun 2024

B.Sc. Biological Sciences (2nd Semester)

Course: Chemistry-II

Course Code: BSC151

Total Marks: 30

Maximum Time: 2:00 Hrs

PART I Give answers to any six questions:

(Marks: 1 × 6 = 6)

1. Define heat of neutralization.
2. By convention the standard heat of formation of all elements is assumed to be a) zero, b) negative c) positive d) infinity
3. The absorbance of a medium is given by
4. What is Rate Law?
5. A catalyst will increase the rate of a chemical reaction by.....
6. Reaction rate can change with a) temperature b) the addition of a catalyst c) reactant concentration d) all of these
7. What is an Arrhenius equation?

PART II Give answers to any four questions:

(Marks: 3 × 4 = 12)

8. Describe chemical equilibrium and its characteristics.
9. State Kirchoff's law. Derive it with the help of first law of thermodynamics
10. Describe the collision theory of reaction rates?
11. Derive the first order reaction with examples
12. Difference between fluorescence and phosphorescence?

PART III Give answers to any two questions:

(Marks: 6 × 2 = 12)

13. Define Le Chatelier's principle? What are the factor effecting the chemical equilibrium.
14. a) The half- life of a substance in a first order reaction is 15 minutes. Calculate the rate constant
b) A solution of H₂O₂ when titrated against KMnO₄ solution at different time intervals gave the following results

| | | | |
|--------------------------------------|--------|---------|-------|
| t(minutes) | 0 | 10 | 20 |
| Vol KMnO ₄ used for 10 ml | 23.8ml | 14.7 ml | 9.1ml |

15. Discuss the laws of photochemistry.