

Reg.No.

S.No. 203

BATCH: 87-2011, 2013, 2014

END OF SEMESTER EXAMINATIONS, APRIL / MAY - 2017
PHYSICAL CHEMISTRY - I
SUBJECT CODE: 13UACH07

MAJOR: B.Sc. CHEMISTRY
TIME : 3 HOURS

SEMESTER : V
MAX.MARKS: 75

SECTION - A (10 X 1 = 10)

Answer ALL Questions;

1. What is rate constant?
2. Define order of a reaction.
3. What is meant by activation energy?
4. Write the relationship between free energy of activation and entropy of activation.
5. Define quantum yield.
6. State Grotthus law of photo Chemistry.
7. Write any two differences between Chemisorption and physisorption.
8. What is point group?
9. Give the significance of ψ and ψ^2 .
10. What are Eigen values and Eigen functions?

SECTION - B (5 X 4 = 20)

Answer ALL questions:

11. a) What is meant by rate of reaction? How is it expressed? Explain.
(or)
b) Derive an expression for zero order reaction.
12. a) Explain Lindemann theory of unimolecular reactions.
(or)
b) Compare collision theory with absolute reaction rate theory.
13. a) Write the Comparison between thermal and photochemical reaction.
(or)
b) Discuss any four applications of photochemistry.
14. a) Explain diagrammatically that H_2O molecule is Abelian where as NH_3 molecule is non abelian.
(or)
b) Give the symmetry operation for NH_3 molecule.
15. a) What is meant by black body and black body radiation?
(or)
b) Explain Compton effect.

SECTION - C (5 X 9 = 45)

Answer ALL questions:

16. a) What is a first order reaction? Derive its expression for rate constant.
(or)
b) A first order reaction is 40 % complete in 50 minutes. Calculate rate constant. In what time will the reaction be 80 % complete.
17. a) Describe the collision theory of unimolecular reactions.
(or)
b) Discuss the theory of absolute reaction rate.
18. a) Derive the rate expression for the photochemical reaction between H_2 and Br_2 .
(or)
b) Explain the terms
i) Fluorescence ii) Phosphorescence.
19. a) Explain Freundlich adsorption isotherm.
(or)
b) Explain the following with example
i) Axis of Symmetry
ii) Plane of Symmetry.
20. a) Derive and Discuss E and ψ of a particle in one dimensional box.
(or)
b) Derive Planck's radiation law.