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**(FOR THE CANDIDATES ADMITTED DURING THE ACADEMIC YEAR 2020-21 ONLY)**

**SUB CODE** 20 UCY613

**REG.NO.**

**N.G.M.COLLEGE (AUTONOMOUS) : POLLACHI**

**END-OF-SEMESTER EXAMINATIONS : MAY – 2023**

**B.Sc. – CHEMISTRY** **MAXIMUM MARKS: 70**

**VI SEMESTER** **TIME : 3 HOURS**

## PART – III
## CHEMICAL KINETICS AND QUANTUM MECHANICS

**SECTION – A (10 X 1 = 10 MARKS)**

**ANSWER THE FOLLOWING QUESTIONS.** (K1)

**MULTIPLE CHOICE QUESTIONS.**

1. The order of reaction is _____.
   a) Physical property b) Theoretical property
   c) Experimental property d) Extensive property
2. Rate of chemical reaction is rate of change of _____.
   a) Concentration with pressure b) Concentration with time
   c) Concentration with temperature d) Temperature with time
3. The role of a catalyst is used to change _____
   a) Gibbs free energy b) Enthalpy of reaction
   c) Activation energy of reaction d) Equilibrium constant
4. Photochemical reactions takes place by absorption of _____.
   a) IR radiation b) UV-V is radiation c) Heat energy d) EMR
5. The concept of matter wave was suggested by _____.
   a) Heisenberg b) de Broglie c) Schrodinger d) Laplace

**ANSWER THE FOLLOWING IN ONE (OR) TWO SENTENCES.** **(K2)**

6. What is chemical kinetics?
7. Define: Order of a reaction
8. Write a note on Positive catalysts.
9. What is photochemistry?
10. Write short notes on quantum mechanics

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**SECTION – B (5 X 4 = 20 MARKS)**

**ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS. (K3)**

11. a) Write a note on rate law and rate equation.

(OR)

b) Give an account of half life period of a reaction.

12. a) How will you determine order of a reaction.

(OR)

b) Discuss the effect of temperature on the reaction rates.

13. a) Write a note on general characteristics of catalytic reactions.

(OR)

b) Give an account of chemisorption and physisorption.

14. a) Draw and explain the Jablonski diagram.

(OR)

b) Write a note on Lasers and their uses.

15. a) Write a note on Eigen functions and eigen values.

(OR)

b) Explain the Hermitian and Hamiltonian operators.

**SECTION – C (4 X 10 = 40 MARKS)**

**ANSWER ANY FOUR OUT OF SIX QUESTIONS**

**(16th QUESTION IS COMPULSORY AND ANSWER ANY THREE QUESTIONS**

**(FROM Qn. No : 17 to 21) (K4 (Or) K5)**

16. What are the factors influencing rates of chemical reactions?
17. Write a note on expressions for half life time for first and second order reactions
18. Give an account of collision theory and Absolute reaction rate theory
19. Explain Freundlich adsorption isotherm and Langmuir adsorption isotherms
20. Write a note on laws of photochemistry
21. Explain the following
    (i) The need for quantum mechanics
    (ii) Postulates of quantum mechanics (5+5)

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