M.Sc DEGREE EXAMINATION,APRIL 2019
I Year II Semester
Physical Chemistry - II

Time : 3 Hours **Max.marks :75**

Section A $(10 \times 2 = 20)$ Marks

Answer any **TEN** questions

1. Differentiate thermodynamic probability from mathematical probability.
2. Mention four phenomena that cannot be explained by Maxwell-Boltzmann statistics.
3. What is residual entropy? Give one example.
4. Write the Curies theorem.
5. Give the Plancks radiation law.
6. What are consecutive and parallel reactions?
7. Define fast reactions.
8. What is photo electric effect?
9. Define Compton Effect.
10. Write the significance of de Broglie equation.
11. Give the elementary applications of Schrodingers equation.
12. What is Eigen value?

Section B $(5 \times 5 = 25)$ Marks

Answer any **FIVE** questions

13. Derive the Sackur - Tetrode equation.
14. Discuss the application of irreversible thermodynamics to biological systems.
15. Compare any two statistical distributions.
16. Explain the Michaelis Menten equation effect of substrate, concentration, pH and temperature.
17. Discuss the Rice Herzfeld mechanism.
18. Write note on black body radiation.
19. Explain the cases of particle in one and two dimensional box.

Section C $(3 \times 10 = 30)$ Marks

Answer any **THREE** questions

20. Derive the Molecular translational, vibrational and rotational partition functions.
21. What is Onsager reciprocal relation? Prove the Onsager reciprocal relation by the principle of microscopic reversibility.
22. Describe the Langmuir and BET adsorption isotherms.
23. Explain the Heisenberg Uncertainty Principle and Bohrs Quantum theory.
24. Derive the Schrodinger wave equation.

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