No. of Printed Pages : **2**

Sl. No.

76663

M.Sc. II Semester Degree Examination, September/October - 2022

INDUSTRIAL CHEMISTRY

DSC 7 : Electro, Quantum and Photochemistry

Time : 3 Hours Maximum Marks : 70

Note : *Answer **any five** of the following questions with Question No. **1 Compulsory**. Each question carries **equal** marks.*

1. (a) What is Polarization ? Explain. **5**

(b) Explain the Nernst's diffusion layer concept. **5**

(c) Explain the working principle of polarography. **4**

2. (a) What is photosensitization ? Discuss the photochemical decomposition of CH_3CHO. **5**

(b) What are actinometers ? Explain the working principle of Uranyl Oxalate actinometer. **5**

(c) Write a note on photo catalysts. **4**

3. (a) Derive the Schrodinger wave equation for a particle in one dimensional box. **5**

(b) Write a note on Hermitian operators and check momentum operator for Hermitian or not. **5**

(c) Explain the postulates of quantum mechanics. **4**

4. (a) Derive the equations for Maxwell-Boltzmann Distribution law. **5**

(b) Derive the relation between equilibrium constant and partition function. **5**

(c) Write a note on coupled and non-coupled reactions. **4**

5. (a) Derive and explain great orthogonality theorem. **5**

(b) Write the note on matrics representation of groups with example. **5**

(c) Explain the symmetry operation on a group. **4**

6. (a) What are the factors affecting the quantum yield ? **5**

(b) Write a note on Sackur-Tetrode equation. **5**

(c) Discuss one of the approximate methods in detail. **4**

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7. (a) Write brief note on partition function. **5**

(b) Derive Sackur-Tetrode equation for entropy of translation function. **5**

(c) Explain the Schoenflies notations. **4**

8. (a) What are the term symbols ? **5**

(b) Discuss about Hamiltonian operator. **5**

(c) Discuss Entropy production and Entropy flow. **4**

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