**Roll No. _____** **Code No. Q-4389**

# FOURTH SEMESTER EXAMINATION 2021-22

## M.Sc. CHEMISTRY

## Paper - I

## Photochemistry & Solid State Chemistry

**Time : 3.00 Hrs.** **Max. Marks : 80**

**Total No. of Printed Page : 03** **Mini. Marks : 29**

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**Note:- Question paper is divided into three sections. Attempt question of all three section as per direction Distribution of marks is given in each section.**

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### Section 'A'

**Very short answer question (in few words)**

Q.1 Attempt any six questions from the following : 6x2=12

(i) Define singlet and triplet states.

(ii) How does the light intensity affect the rate of reaction ?

(iii) Define quantum yield.

(iv) What are perfect and imperfect crystals ?

(v) What do you understand by intrinsic and extrinsic semi conductors ?

(vi) What do you mean by doping semiconductors ?

(vii) Name a compound in which Schottky and Frenkel defects are found.

(viii) Who discovered super conductivity ?

## Section 'B'

**Short answer type question (in 200 words)**

Q.1 Attempt any four questions from the following : 4x5=20

(i) Explain rearrangements of 1, 4, & 1, 5 dienes.

(ii) Give examples of intramolecular cyclodition reactions of Carbonyl compounds.

(iii) Write a brief note on Photofries rearrangements.

(iv) What are coulour centres ?

(v) Explain photoaddition reactions of aromatic compounds.

(vi) Explain briefly kinetics of solid state reactions.

## Section 'C'

**Long answer/Essay type question.**

Q.3 Attempt any four questions from the following questions : 4x12=48

(i) (a) Draw the Jablonski diagram and explain the radiative and non-radiative processes.

(b) Explain the types of excitation.

(ii) Write notes on :

(a) Types of photochemical reactions.

(b) Intermolecular reactions of olefinic bond.

(c) Norrish type I & II reaction.

(iii) Explain the following reactions with mechanism :

(a) Photoisomerisation of aromatic compounds.

(b) Barton reaction

(c) Photochemical formation of smog

(iv) (a) What are point defects ? Describe.

(b) Explain the thermodynamics of Schottky and Frankel defects.

(v) (a) What is the difference between metals, insulators and semi conductors ?

(b) Explain p-n junction.

(vi) (a) Explain briefly optical properties of solids.

(b) What is super conductivity ? Write a brief note on new super conductors.

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