

PE – 492
(534) M.SC. CHEMISTRY (FOURTH SEMESTER)
Examination JUNE- 2022
Compulsory/Optional
Group -
Paper -I

Name/Title of Paper – PHOTOCHEMISTRY & SOLID STATE CHEMISTRY
Time : Three Hours]

[Maximum Marks : 080
[Minimum Pass Marks : 29

नोट : दोनों खण्डों से निर्देशानुसार उत्तर दीजिए। प्रश्नों के अंक उनके दाहिनी ओर अंकित हैं।

Note Answer from both the Sections as directed. The figures in the right-hand margin indicate marks.

Section-A

Q.1 Answer the following question :- 2x10=20

- (a) What do you mean by singlet and triplet excited state ?
- (b) Line are example of Photo dissociation ?
- (c) Which type of electronic transition needs highest energy?
- (d) What do you understand by quantum efficiency ?
- (e) Write name and structure of two Photo isomers of benzene ?
- (f) What is super conductivity ?
- (g) What is doping ?
- (h) What are colour centers
- (i) Write one difference between metal, semiconductor and insulator.
- (j) Name a compound in which both SCHOTCKY & FRENKLE are founds.

Section-B

Q.2 Attempt all questions :- 12x5=60

- (a) Explain the types of excitation.
- (b) Draw the Jablonski diagram and explain the modes of dissipation of energy by created molecule .

OR

- (a) Explain different types of photochemical reactions with example.
- (b) Derive equation for rate constant of any one photochemical reaction.

Q.3 Explain rearrangement of 1, 4 & 1, 5 dienes.

OR

Explain the mechanism of following reactions of carbonyl compounds with example –

- (i) Paterno Bachil Reaction
- (ii) Cleavage of Acyclic compound.

Q.4 Explain the following photochemical reaction of aromatic compound with example :-

- (i) Photomerisation
- (ii) Photo addition

OR

Explain following reactions: –

- (i) Photo fries rearrangement
- (ii) Barton reaction
- (iii) Photochemical formation of smog .

Q.5 What are perfect and imperfect crystals ? explain crystal defects in detail .

OR

Comment an experimental procedure , general principle and kinetics of solid state reactions.

Q.6 Discuss the following in brief :-

- (a) Classification of magnetic materials.
- (b) Optical properties of solid .

OR

What are semiconductors? Explain p-n junctions in detail.