



ABT-2237 Seat No. _____

M. Sc. (Sem. III) Examination
November / December - 2016
CHN-604(A) : Organic Photochemistry
(Core Elective)

Time : 2 Hours]

[Marks : 50

- 1 (a) Answer any **two** of the following : 10
- (i) Give characteristics of ideal actinometer and explain monochloroacetic acid actinometer.
 - (ii) Draw Jablonski diagram. Explain the fate of excited molecules.
 - (iii) Write a short note on quantum yield in detail.
- (b) Answer any **two** of the following : 6
- (i) Discuss any one method of photosensitized isomerization of olefin with one double bond.
 - (ii) Explain (a) Purely dissociative and (b) Non dissociative type primary processes with diagrams.
 - (iii) Write a short note on intermolecular energy transfer.
- (c) Answer any **one** of the following : 4
- (i) Write a short note on different types of excitations.
 - (ii) Explain "Ferrioxolate actinometer".

- 2 (a) Answer any **two** of the followings : 10
- (i) Discuss Norrish Type I reaction mechanism with suitable example.
 - (ii) Write a note on Photodimerization of anthracene.
 - (iii) Discuss Photo Fries rearrangement with suitable example.
- (b) Answer any **two** of the following : 6
- (i) Write a short note on $Di-\pi$ -methane rearrangement.
 - (ii) Discuss any one mechanism of Oxetane formation with suitable example..
 - (iii) Explain photochemical formation of fulvene and benzvalene from benzene.
- (c) Answer any **one** of the following : 4
- (i) Write a short note on photo-rearrangement of 4,4-diphenyl cyclo-hexadienone.
 - (ii) Give mechanism of photoreduction of benzophenone in 2-propanol to form benzopinacol.
- 3 Answer any **ten** of the following in brief : 10
- (a) What is spin forbidden selection rule in photochemistry?
 - (b) Give importance of Stern-Volmer equation or relation.
 - (c) Why sunlight is not a good source for a photochemical reaction? Give one reason.
 - (d) Explain role of solvent in context of polymerization in organic photoreactions.

- (e) What is the use of Schenck mechanism in photochemistry of olefin?
 - (f) Write any one law of photochemical equivalence.
 - (g) What is prompt fluorescence?
 - (h) Give one example of Norrish Type II reaction.
 - (i) What is Paterno Buchi reaction in photochemistry?
 - (j) Draw [2+2] cycloaddition product of Norbornadiene in the presence of light.
 - (k) In absence of Photosensitizer, write the dimerization product of 1,3-butadiene by direct irradiation method.
 - (l) What is Barton reaction in photochemistry?
 - (m) Give name of photosensitive compound of human eyes.
 - (n) What is photochemical smog?
-