GDF-2637 Seat No._____

M. Sc. (Sem. III) Examination

January-2016

CHN-604(A) : Organic Photochemistry

(Core Elective)

Time : 2 Hours] [Total Marks : 50

1 (a) Answer any two : 10

(i) Explain reasons for high quantum yield.

(ii) Which are different types of excitations ? Correlate them with different types of organic molecules. Discuss the effect of solvent properties upon excitations.

(iii) Write a note on photosensitization by giving suitable examples.

(b) Answer any two : 6

(i) Explain Ferrioxalate actinometer.

(ii) Give an account on Reinecke's salt actinometer.

(iii) Correlate quantum yield and rate constant of photo chemical reaction.

(c) Answer any one : 4

(i) Illustrate different types of photo chemical reactions.

(ii) Explain the cis-trans isomerization of alkenes.

2 (a) Answer any two : 10

(i) Discuss di-π methane rearrangement.

(ii) Describe Norrish type II reaction.

(iii) Explain photochemical conversion of benzophenone to benzpinacol.

(b) Answer any two : 6

(i) Explain photochemical oxetane formation.

(ii) Describe photo chemical formation of fulvene and benzvalene from benzene.

(iii) Write a note on photo degradation of polymers.

(c) Answer any one : 4

(i) Explain photochemical smog formation.

(ii) Discuss any one reaction induced by singlet molecular oxygen.

3 Answer any ten in brief : 10

(a) Explain Stern-Volmer plot.

(b) What is phantom triplet ?

(c) Give one example of photodissociation which is an adiabetic reaction.

(d) Give the range of Malachite Green Leucocyanide actinometer.

(e) Explain photo stationary state.

(f) Give any two reasons for low quantum yield.

(g) Draw structures of products of irradiation of butadiene in absence of photosensitizer.

(h) What is oxo-di-π methane rearrangement ?

(i) Describe one example of photochemically allowed [3,3] sigmatropic rearrangement.

(j) Explain the Ene reaction.

(k) Name the photosensitive compounds of human eyes.

(l) Distinguish between cone cells and rod cells.

(m) Give one example of 2+2 photocyclo addition.

(n) Draw Jablonskii diagram.