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Section-D

8. (a) Explain the stereochemistry of cyclohexanone. 8
- (b) Discuss the stereochemistry of Nitrogen containing four and five membered ring compounds. 8
9. (a) Explain transannular reaction with suitable examples. 8
- (b) How the presence of halogen at axial and equatorial position of cyclohexanone can be differentiated? 8

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M.Sc. 4th Semester Examination,
May-2016

CHEMISTRY

Paper-CH-504-XIV

Organic Special-IV

Time allowed : 3 hours] [Maximum marks : 80

Note : Attempt five questions in all, selecting one question from each section. Question No. 1 is compulsory.

Compulsory Question

1. (a) Explain the role of inhibitors in photochemical reactions.
- (b) How many lines are expected in ESR spectrum of CH_3 radical?
- (c) On the basis of probability factor explain the ratio of formation of n-propyl and isopropyl chloride on chlorination of propane.
- (d) Why it is difficult to resolve the compound containing nitrogen as chiral centre?
- (e) Comment on the stability of triphenyl methyl radical.
- (f) Explain quantum efficiency in a photo-chemical reaction.
- (g) Explain $4n+2$ cycloaddition reaction.

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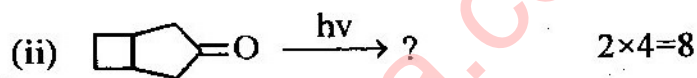
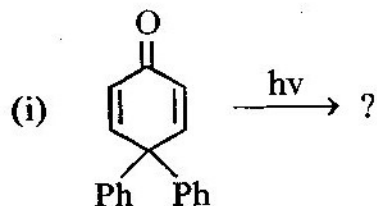
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- (h) Explain suprafacial and antarafacial shift of hydrogen. $2 \times 8 = 16$

Section-A

2. (a) Predict the products of following photochemical transformation :



- (b) Explain the photoreduction reaction of benzophenone. 8
3. (a) Explain α -cleavage and γ -hydrogen abstraction reactions in photochemistry. 8
- (b) Discuss the rearrangement in 1,4 and 1,5 dienes. 8

Section-B

4. (a) Discuss the mechanism of Paterno-Buchi reaction for oxetane formation. 8

- (b) Explain isomerisation and addition reaction in aromatic compounds. 8

5. Write briefly about :

- (a) Free radical substitution at an aromatic substrate
 (b) Hunsdiecker reaction
 (c) Generation of free radicals
 (d) Auto oxidation. $4 \times 4 = 16$

Section-C

6. (a) Explain exo and endo addition in Diel's-Alder reaction. 8
- (b) With the help of correlation diagram derive selection rules for (i) $4\pi + 2\pi$ (ii) $2\pi + 2\pi$ cycloaddition reactions. 8
7. (a) Discuss Cope and Claisen rearrangement as examples of sigmatropic shift. 8
- (b) Using FMO method, explain whether following reaction is a thermally or photochemically allowed process 8

