

Roll No. ....

**78053**

**M. Sc. Chemistry 4th Sem.**

**Examination – May, 2014**

**ORGANIC SPECIAL - IV**

**Paper : CH-504 XIV**

*Time : Three hours ]*

*[ Maximum Marks : 80*

*Before answering the question, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.*

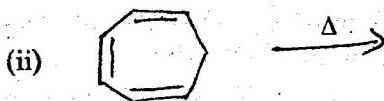
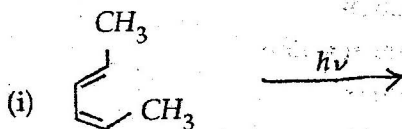
*Note: Attempt five questions in all, selecting one question from each Section. Question No. 1 is compulsory.*

1. (a) Explain the difference between fluorescence and Phosphorescence.
- (b) What are photosensitisers ? Give their role in photoinduced reactions.
- (c) Discuss the role of free-radical initiators in free radical reactions. Give suitable examples.
- (d) Why the properties of polymers change on long standing in sunlight.
- (e) What do you understand by conservation of molecular orbital symmetry ?

78053-350-(P-4)(Q-9)(14)

P. T. O.

- (b) Give the products and explain their formation in the following reactions : 8, 4, 4



### SECTION - D

8. Discuss the following :

- Conformation and reactivity of cyclohexanones
- Transannular reactions
- conformations of six membered ring compounds containing one and two nitrogen atoms. 6, 5, 5

9. (a) What are stereospecific reactions ? Discuss in detail.

(b) Out of cyclohexane-1,2- diols (cis and trans isomers), which is easily oxidized with Lead tetraacetate and why ?

(c) What happens when cis and trans-4 tert-butyl cyclohexylamines are reacted with nitrous acid. 8, 4, 4

- (f) What are conrotatory and disrotatory motions ?  
 (g) Why is it difficult to resolve the tertiary amines with three different Substituents.

(h) Out of cis and trans 4-tert-butyl cyclohexane carboxylic acids, which is a stronger acid and why ?

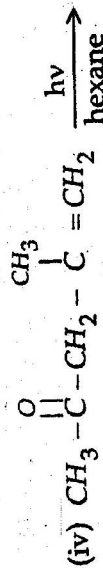
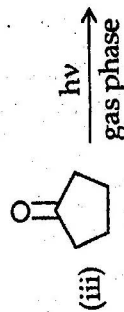
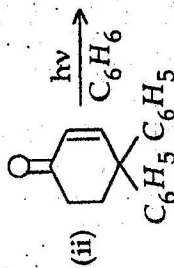
2 × 8

### SECTION - A

2. Discuss the following with suitable examples : 8, 8

- (a) Photochemistry of Cyclohexadienones,  
 (b) Paterno-Buchi reactions.

3. Give the products in following reactions and explain their formation : 4 × 4



### SECTION - B

4. Discuss the following : 4 × 4

- (a) Auto-oxidation  
 (b) Hunsdiecker-reaction  
 (c) Barton reaction  
 (d) Singlet molecular oxygen

5. (a) Discuss Photo-fries reactions of esters and anilides with their mechanism.

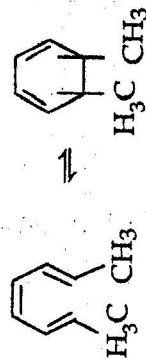
(b) Explain the mechanism of aromatic substitution reactions via free radicals.

(c) Discuss the factors on which stability of free radicals depend. 6, 5, 5

### SECTION - C

6. (a) Predict whether [1, 3] sigmatropic shift of hydrogen is thermally or Photochemically allowed process. 6, 6, 4

(b) Using FMO method, explain whether following reaction is a thermally or photochemically allowed process :



(c) Why 1, 3-dienes with S-cis conformation undergoes Diels-Alder reaction easily than S-trans conformation.

7. (a) How will you convert trans-5, 6-dimethyl 1, 3-cyclohexadiene into cis-isomer.