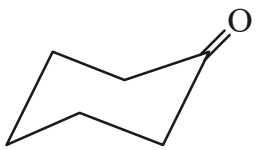
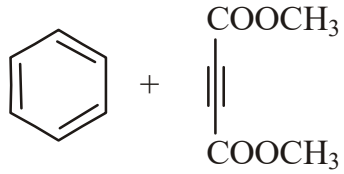
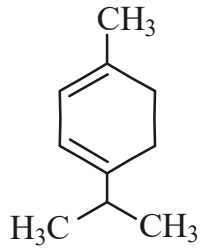
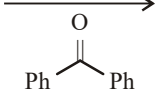
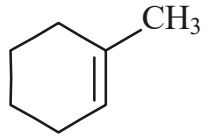
(b)  $\xrightarrow{LiAlH_4}$?

(c)  $\xrightarrow{h\nu}$?

(d)  $\xrightarrow[\text{O}]{O_2,\ h\nu}$  ?

(e)  + CH_3OH $\xrightarrow{\text{O-Xylene}}$?

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Examination Session June-2022

(Fourth Semester)

MCH-606

M.Sc. CHEMISTRY (MSCCH)

[Photochemistry & Stereochemistry]

Time : 2 Hours] **[Max. Marks : 40**

Note : This paper is of Forty (40) marks divided into two (02) Section A and B. Attempt the questions contained in these sections according to the detailed instructions given therein.

SECTION—A

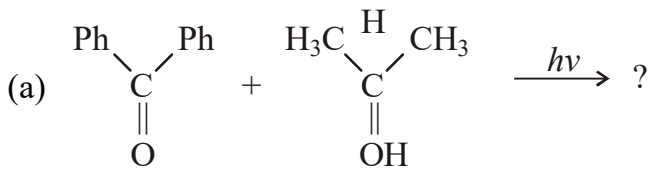
(Long-Answer-Type Questions)

Note : Section 'A' contains five (05) long-answer-type questions of Ten (10) marks each. Learners are required to answer any two (02) questions only. 2×10=20

1. Explain the Norrish type-I and Norrish type-II cleavage in the photochemical reaction of carbonyl compounds.

2. What is Paterno-Buchi reaction ? Explain the stereochemistry of this reaction.

3. Give the product of any three reactions and give the reaction mechanism :

(a) 

4. Write a note on any two from the following :

   (a) Cycloaddition and cyclodimerisation reaction

   (b) *cis-trans* isomerization in alkene

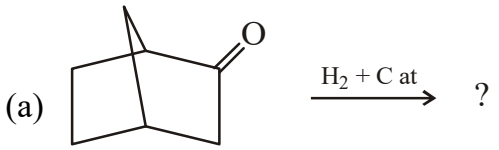
   (c) Photo induced electrophilic substitution reaction of benzene

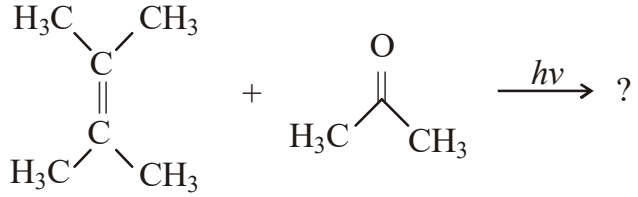
5. Discuss the confirmational stability of 1, 2-Dimethyl-cyclohexane.

6. Explain the confirmations of *cis*-Decalin.

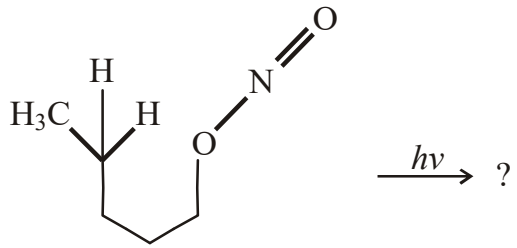
7. Base catalysed dehydrobromination of 1-bromo-1, 2-diphenyl propane.

8. Write the product of the following reaction :

(a) 

(b)  $\xrightarrow{h\nu}$?

(c)  $\xrightarrow[\text{Direct}]{h\nu}$?

(d)  $\xrightarrow{h\nu}$?

4. Explain any two from the following :

   (a) Di-π Methane rearrangement

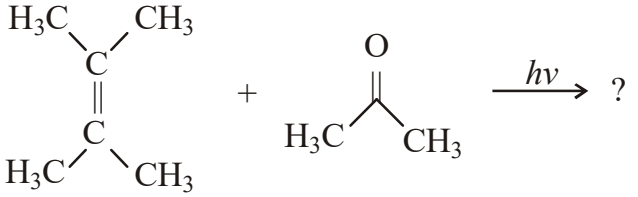
   (b) Photo-Smiles rearrangement

   (c) Barton reaction

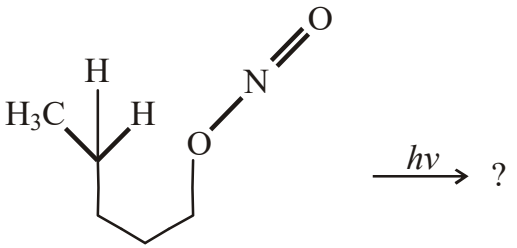
5. Discuss the relative stability of the confirmations of :

   (a) n-Butane

   (b) Ethylene glycol

(b)  $\xrightarrow{h\nu}$?

(c)  $\xrightarrow[\text{Direct}]{h\nu}$?

(d)  $\xrightarrow{h\nu}$?

4. Explain any two from the following :

   (a) Di-π Methane rearrangement

   (b) Photo-Smiles rearrangement

   (c) Barton reaction

5. Discuss the relative stability of the confirmations of :

   (a) n-Butane

   (b) Ethylene glycol

MCH-606/6 (3) [P.T.O.]

SECTION—B

(Short-Answer-Type Questions)

Note : Section 'B' contains eight (08) short-answer-type questions of Five (05) marks each. Learners are required to answer any four (04) questions only. 4×5 = 20

1. Write note on the any two from the following :
   (a) Electronic transitions
   (b) Photosensitization
   (c) Phosphorescence
2. Describe the chair conformation of cyclohexane. Explain chair inversion.
3. What are the products obtained in irradiation of Benezene ? Formulate the mechanism of their formation.

SECTION—B

(Short-Answer-Type Questions)

Note : Section 'B' contains eight (08) short-answer-type questions of Five (05) marks each. Learners are required to answer any four (04) questions only. 4×5 = 20

1. Write note on the any two from the following :
   (a) Electronic transitions
   (b) Photosensitization
   (c) Phosphorescence
2. Describe the chair conformation of cyclohexane. Explain chair inversion.
3. What are the products obtained in irradiation of Benezene ? Formulate the mechanism of their formation.

MCH-606/6 (4)