Name: **Enrolment No:**	

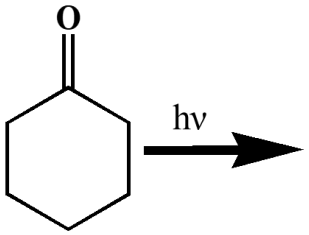
UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, May 2022

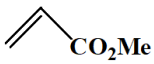
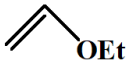
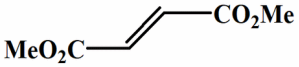
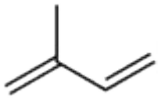
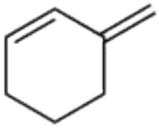
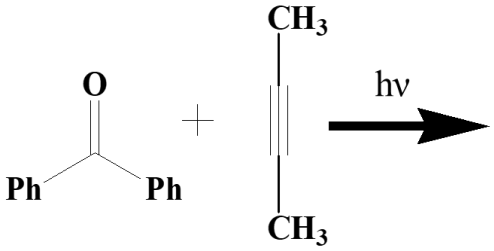
Course: Photochemistry and Pericyclic reactions
Semester: II
Program: M. Sc. Chemistry **Time: 03 hrs.**
Course Code: CHEM7021P **Max. Marks: 100**

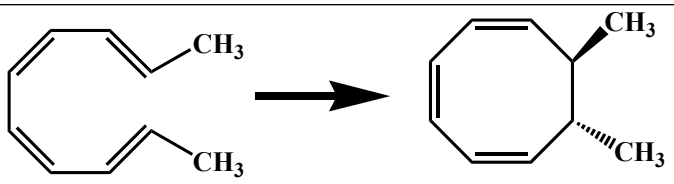
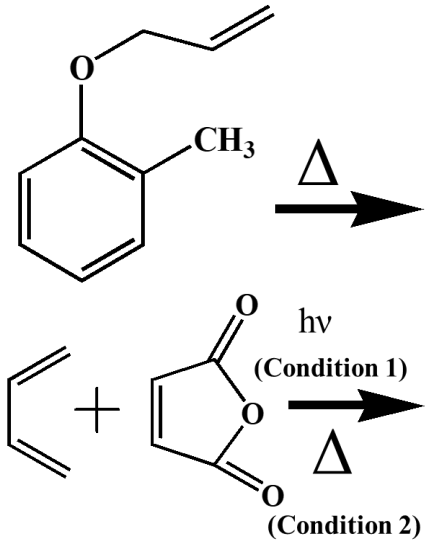
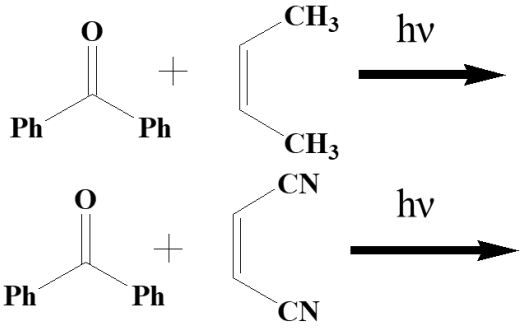
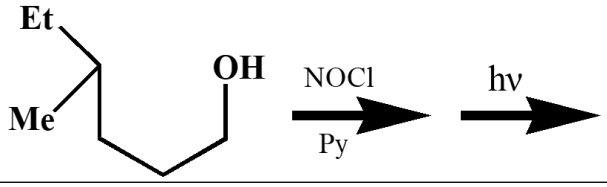
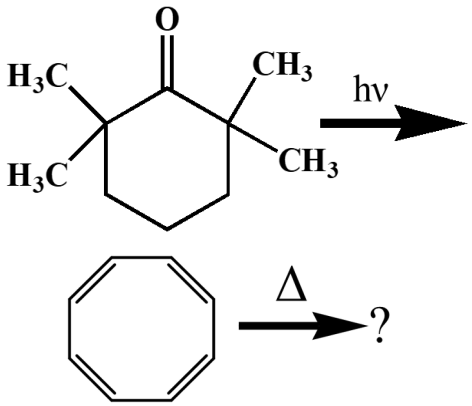
Instructions:

1) Mention Roll No. at the top of the question paper.
2) Attempt all the questions of Section A and B, and keep the answers in right places.

SECTION A
(5Qx4M=20Marks)

S. No.		Marks	CO
Q.1	(a) Calculate the spin multiplicity of triplet and singlet state. (b) What is one Einstein energy?	**2 + 2**	**CO1**
Q 2	(a) Discuss the role of quencher in a photophysical reaction. (b) What is delayed fluorescence?	**2 + 2**	**CO1**
Q 3	Predict the product/s 	**4**	**CO3**
Q 4	Write a short note on photochemical cis-trans isomerization.	**4**	**CO2**
Q 5	Write short notes on Aza-Cope rearrangement.	**4**	**CO 3**

	SECTION B **(4Qx10M= 40 Marks)**		
Q 1	Explain the plausible consequences when light of suitable wavelength is irradiated on a photoactive molecule.	**10**	**CO1**
Q 2	(a) What is meant by photoreduction? Give a suitable example. (b) Write short notes on Hofmann–Löffler–Freytag reaction.	**5 + 5**	**CO2**
Q3	(a). Which of the following dienophiles is the most reactive with buta-1,3-diene? (Give proper justification for your answer) i)  ii)  iii) iv)  (b). Which of the following dienes cannot undergo Diels-Alder reactions? (Give proper justification for your answer) i)  **ii)** **iii)** **iv)** 	**5 + 5**	**CO3**
Q 4	Predict the product/s. 	**10**	**CO2**
	SECTION-C **(2Qx20M=40 Marks)**		
Q 1	(a) Write short notes on i) Conrotatory and disrotatory pericyclic reactions ii) [2 +2] cycloaddition reaction (b) Predict the reaction pathway	**10 + 10**	**CO3**

	 or (a) Predict the product/s and the possible reaction pathway 		
Q 2	(a) Predict the product/s  (b) Give an example of photochemical isomerization via formation of Prismane. or Predict the product/s (a) 	**10 + 10**	**CO2**

	(b)