



‘সমানো মন্ত্র: সমিতি: সমানী’

UNIVERSITY OF NORTH BENGAL

B.Sc. Honours 5th Semester Examination, 2022

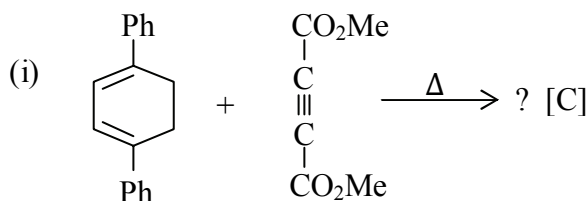
CC11-CHEMISTRY

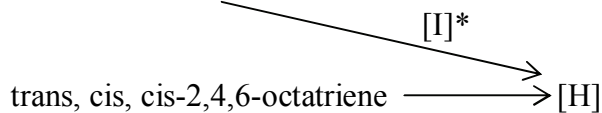
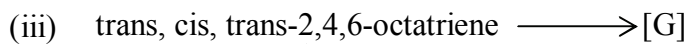
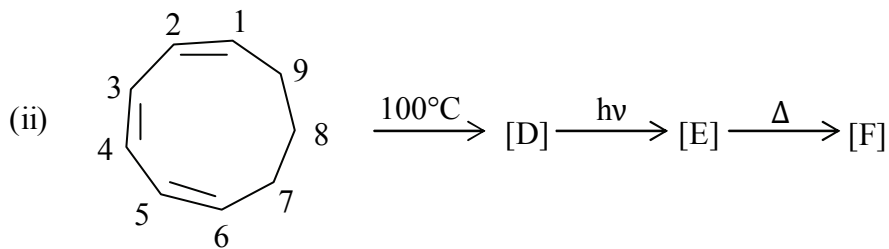
Time Allotted: 2 Hours

Full Marks: 40

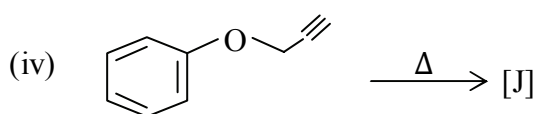
The figures in the margin indicate full marks.

1. Answer any **five** questions from the following: 1×5 = 5
- Differentiate between coenzyme and prosthetic group.
 - “ATP acts as an energy currency of the cell” — Explain.
 - Why the iodine number of a saturated fat is ‘zero’?
 - What is competitive enzyme inhibition?
 - Write the structure and name of an acidic and a basic amino acid.
 - How do you convert urea into uracil?
 - Differentiate between nucleoside and nucleotide.
2. Answer any **three** questions from the following: 5×3 = 15
- Explain why [1,3]-H shift is thermally forbidden but photochemically allowed? 2
 - Cycloaddition Reaction of two ethylene molecules is forbidden under thermal condition but allowed in photochemical condition. —Explain why? 3
 - Describe the α -helical structure of peptide with diagram. 5
 - Write the major differences between DNA and RNA. 3
 - Explain the terms edible and non-edible oils with examples. 2
 - Draw the different ionic forms of aspartic acid at $\text{pH} < 2$, $\text{pH} = 2.9$; $\text{pH} = 7$ and $\text{pH} > 10$. Give reasons. 4
 - Outline the synthesis of (\pm) Alanine from acetaldehyde. 1
 - Explain the solid phase synthesis of peptide. Highlight the advantages of this process. 5
3. Answer any **two** questions from the following: 10×2 = 20
- Predict the product(s) with suitable mechanism and stereochemistry (if any) 10





[I]* \longrightarrow Identify the reaction condition.



- (b) (i) Maleic anhydride reacts with cyclopentadiene to give endo-Diels-Alder adduct which upon heating at 190°C , adopts the exo-adduct conformation. — Explain why? 3
- (ii) How does substrate binds at the active site of an enzyme? 3
- (iii) What is meant by a base-pair in double helix DNA molecules? Why are they so specific? 1+2
- (iv) What is “Sanger reagent”? 1
- (c) (i) What is enzyme catalysis? How would you differentiate between chemical and biological catalysis? 3
- (ii) Describe the function of “chymo-trypsin” with suitable examples. 2
- (iii) Describe the significance of saponification value of lipids. How will you determine saponification value? 2+3

—x—