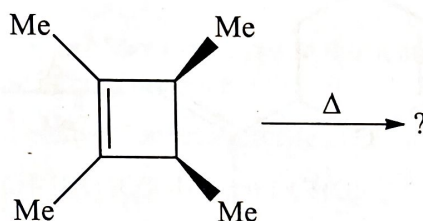


B.Sc. 5th Semester (Honours) Examination, 2024 (CBCS)**Subject : Chemistry****Course : CC-XII****(Organic Chemistry)****Time: 2 Hours****Full Marks: 40***The figures in the margin indicate full marks.**Candidates are required to give their answers in their own words as far as practicable.***1. Answer any five questions:****2×5=10**

(a) Give the product when furan reacts with diazomethane.

(b) Identify the expected product of the following reaction:

(c) Draw the most stable chair conformer of α -D-fructopyranose.

(d) What is a co-enzyme? Give an example.

(e) What happens when anthracene is heated with N-Methyl-N-Phenyl formamide in presence of POCl_3 ?

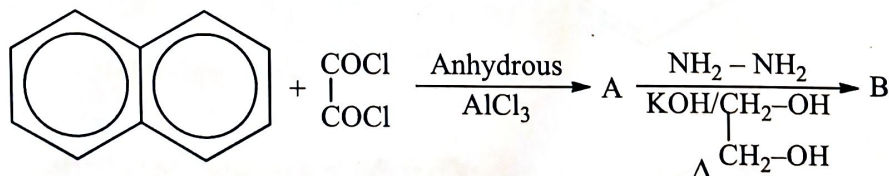
(f) State the product of hydramine fission on (–) ephedrine.

(g) Why is sucrose unable to show reducing property?

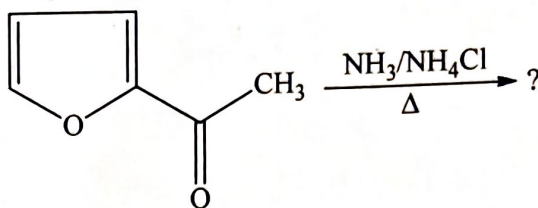
(h) Write down the most stable conformation of trans-1, 3-dimethyl cyclohexane. Is it optically active?

2. Answer any two questions from the following:**5×2=10**

(a) (i) Identify A & B in the following reaction sequence:

1+1(ii) In the acetolysis of cis- and trans- isomers of 2-acetoxycyclohexyl tosylate, the trans-isomer reacts about 700 times faster than the cis-isomer. —Explain. **3**

- (b) (i) Write down the product of the following reaction with mechanism: 1+2

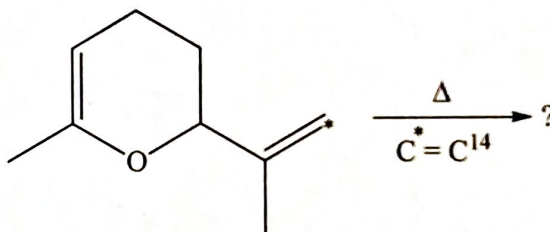


- (ii) How (\pm)- α -Terpineol be prepared from methyl vinyl ketone (MVK) using Diels-Alder reaction? 2

- (c) (i) Write the structure of "Sanger's reagent". Write a reaction showing how it could be used to identify the N-terminal amino acid of Val-Ala-Gly. 1+2

- (ii) Give the structure and colour of the compound formed in the reaction of isoleucine and ninhydrin. 2

- (d) (i) Predict the product with explanation: 3

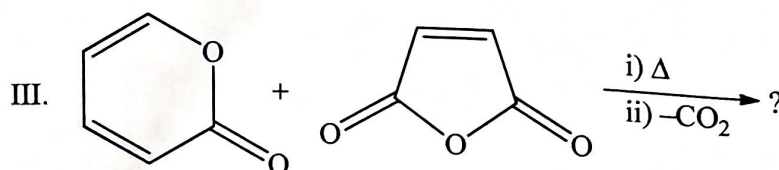
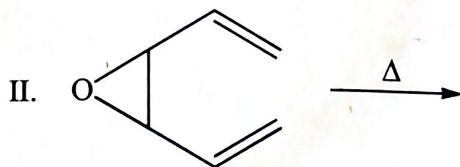
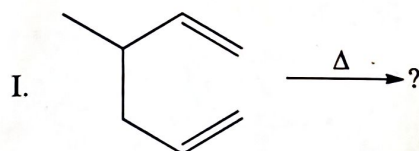


- (ii) How would you obtain D-arabinose from D-glucose? 2

3. Answer any two questions from the following:

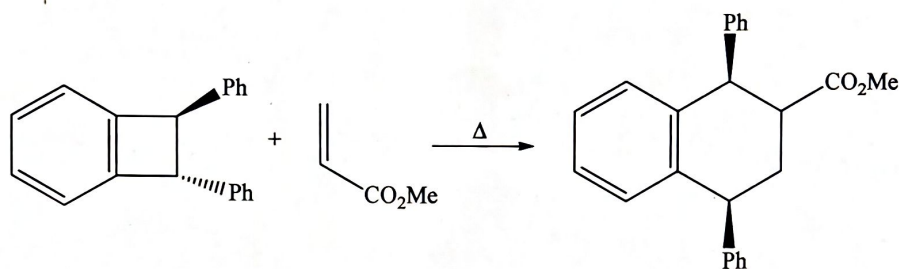
10×2=20

- (a) (i) Write down the products of the following reactions and predict the stereochemistry of the product wherever possible: 2×3



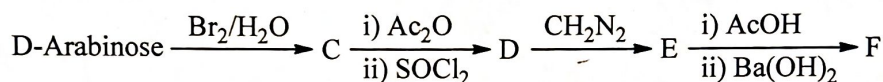
(ii) Rationalise the following thermal reaction by FMO:

4



(b) (i) Identify C to F in the following reaction sequence:

4



(ii) Mutarotation of D-glucose is facile in presence of 2-hydroxypyridine instead of mixture of pyridine and phenol. Explain.

3

(iii) Convert α -terpineol into terebic acid.

3

(c) (i) What is Merrifield resin? Show the steps in the synthesis of the dipeptide Gly-Ala in the solid phase with the help of the resin.

1+3

(ii) Outline a chemical method for determination of C-terminal amino acid of a protein.

3

(iii) Synthesize $\text{RCH}_2\text{CH}(\text{NH}_2)\text{COOH}$ from RCHO .

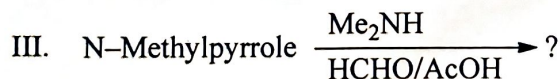
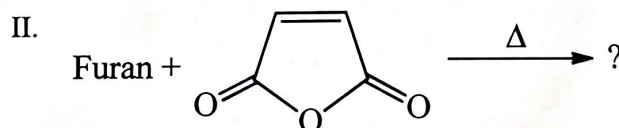
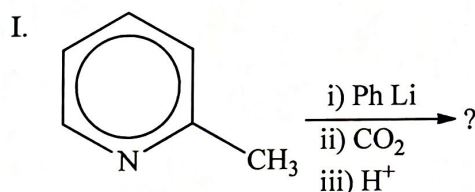
2

(iv) Name the amino acid which gives lactic acid when treated with HNO_2 .

1

(d) (i) Write down the structure of products formed in the following reactions:

2×3=6



(ii) Convert : Quinoline to 8-hydroxyquinoline.

2

(iii) What happens when piperidine is subjected to Hoffmann exhaustive methylation? Show the steps.

2