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B.Sc./5th Sem (H)/CEM/22(CBCS)

2022

**5th Semester Examination**  
**CHEMISTRY (Honours)**

**Paper : C 12-T**

**Organic Chemistry-V**

[CBCS]

Full Marks : 40

Time : Two Hours

*The figures in the margin indicate full marks.  
Candidates are required to give their answers  
in their own words as far as practicable.*

**Group - A**

Answer any *five* of the following questions :

2×5=10

1. *Cis*-1, 2-dimethyl cyclohexane exists as a non-volatile racemic mixture — Explain.
2. How can Indole be converted to Quinoline?
3. Amino acids are weaker than carboxylic acid. Explain.
4. Pyridine is used as a basic solvent in many organic reactions including oxidation reactions while pyrrole can not be used — Explain.
5. Write down the structures of the pyrimidine bases present in RNA.

P.T.O.

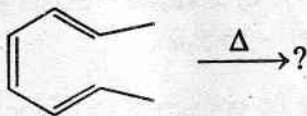
( 2 )

6. Write down the steps involved in the synthesis of phenyl alanine.
7. Explain why *cis*-1, 4 cyclohexane diol exists preferably in twist boat conformation?
8. Mutarotation for glucose is catalyzed by phenol-pyridine mixture and more effectively by 2-hydroxy pyridine. Explain.

### Group - B

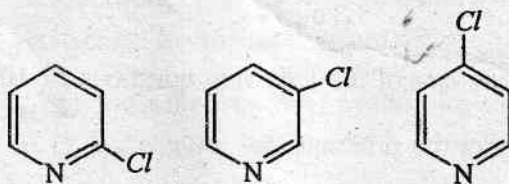
Answer any *four* of the following questions :  $5 \times 4 = 20$

1. (a) Explain why HOMO-LUMO are so important in Pericyclic reactions. Draw the picture of HOMO(S) of cyclopentadienyl anion.
- (b) Predict the products with proper stereochemistry and justification. 3+2



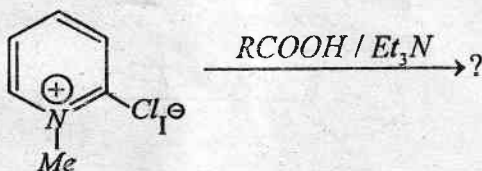
2. (a) Carry out the following transformations : 3+2
  - (i) Glucose  $\rightarrow$  3-Methoxy D-Glucose
  - (ii) D-Glucose  $\rightarrow$  D-Fructose.
- (b) Define anomer with suitable example. 2 $\times$ 2+1
3. (a) Arrange the following compounds according to substitution reaction rate with *MeONa*.

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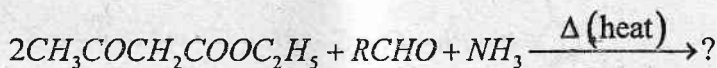


(b) Predict the product :

3+2



4. (a) Proline and hydroxy proline give yellow colour with ninhydrin. — Explain.
- (b) What is Dakin-West reaction? 3+2
5. (a) Which between *cis* and *trans* 4-tert butyl cyclohexanol will undergo oxidation with chromic acid at a faster rate and why?
- (b) Draw the most stable conformer of 1-methyl-1 phenyl cyclohexane. 3+2
6. (a) Give differences between nucleotide and nucleoside.
- (b) Complete the reaction with mechanism.



2+3

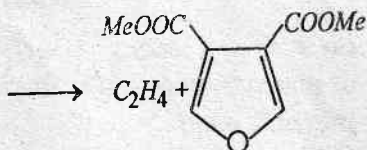
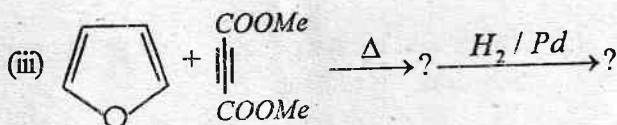
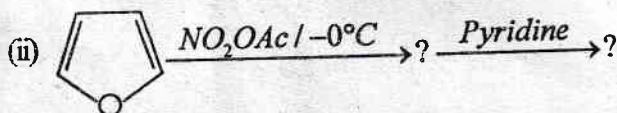
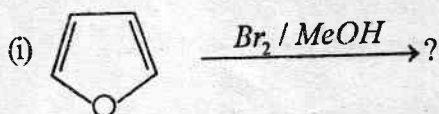
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Group - C

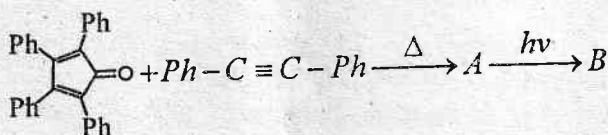
Answer any *one* of the following questions :  $10 \times 1 = 10$

1. (a) Predict the products.



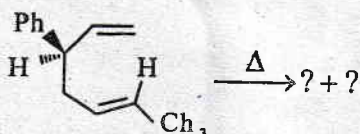
(b) Compare the aromatic character of furan, thiophene, pyrrole & pyridine.

(c) Predict the products with FMO approach.

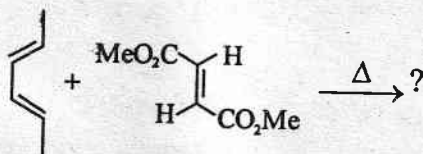


5+3+2=10

2. (a) Dextrorotatory sucrose gives the laevorotatory product on hydrolysis. Explain.
- (b) Write down the enzymatic method for the resolution of D, L-Amino acids.
- (c) Write down the Bardhan. Sengupta synthesis of phenanthrene.
- (d) Complete the following reaction.



- (e) Predict the products with proper stereochemistry.



$$1+2+3+2+2=10$$

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