

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.

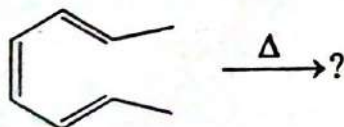
(2)

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

Group - B

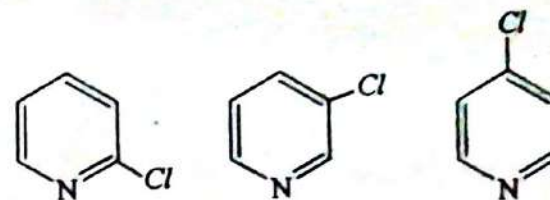
Answer any *four* of the following questions : 5×4=20

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



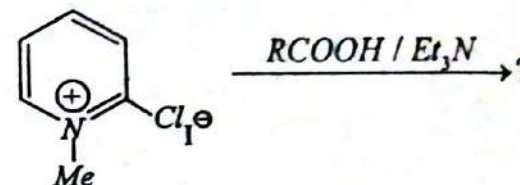
- Carry out the following transformations : 3+2
 - Glucose \rightarrow 3-Methoxy D-Glucose
 - D-Glucose \rightarrow D-Fructose.
 - Define anomer with suitable example. 2×2+1
- Arrange the following compounds according to substitution reaction rate with *MeONa*.

(3)

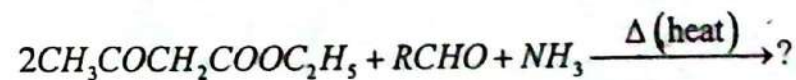


(b) Predict the product :

3+2



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



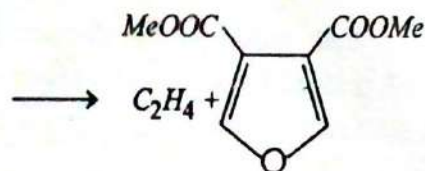
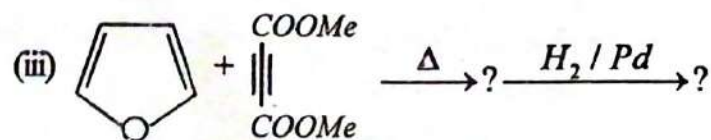
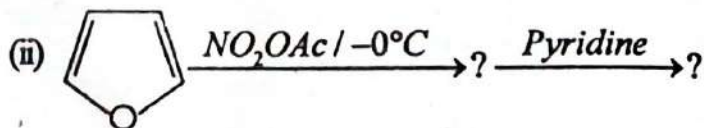
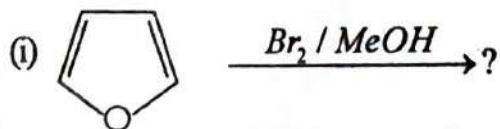
2+3

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Group - C

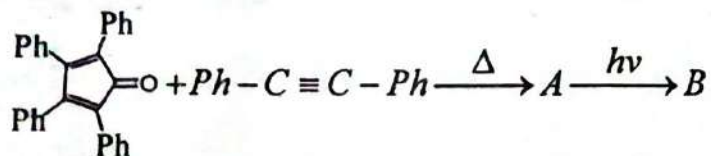
Answer any *one* of the following questions : $10 \times 1 = 10$

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.

