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

2022

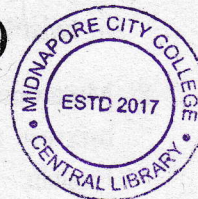
5th Semester Examination

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.

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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 : 5×4=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

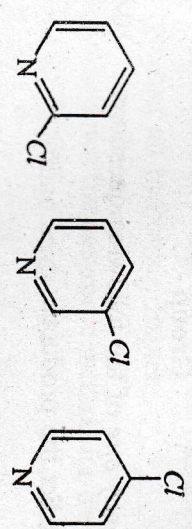


2. (a) Carry out the following transformations : 3+2

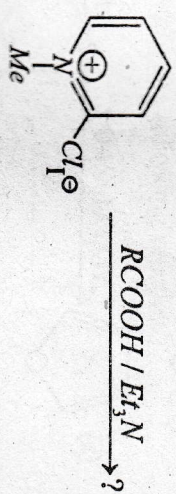
- (i) Glucose → 3-Methoxy D-Glucose
- (ii) D-Glucose → D-Fructose.

(b) Define anomer with suitable example. 2×2+1

3. (a) Arrange the following compounds according to substitution reaction rate with *MeONa*. 2+3



(b) Predict the product : 3+2



4. (a) Proline and hydroxy proline give yellow colour with ninhydrin. — Explain.

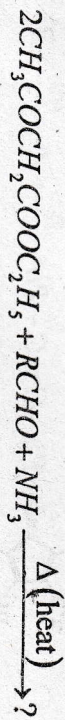
(b) What is Dakin-West reaction? 3+2

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.



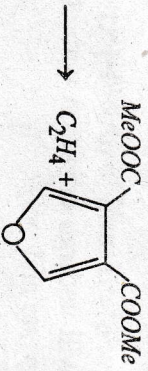
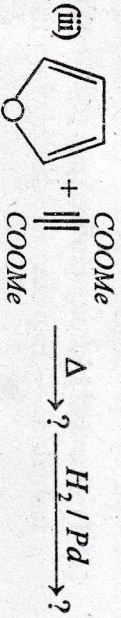
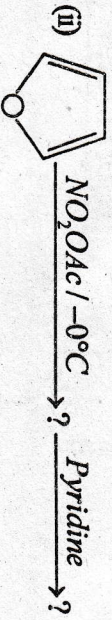
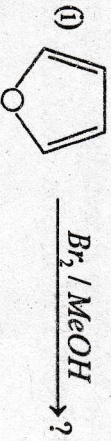
2+3

(4)

Group - C

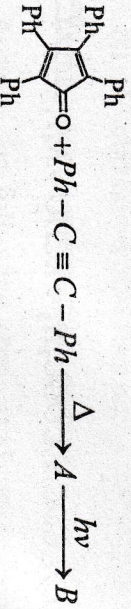
Answer any *one* of the following questions : 10×1=10

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

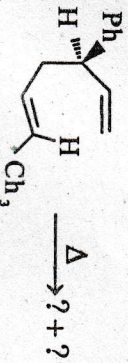
(5)

2. (a) Dextrorotatory sucrose gives the laevorotatory product on hydrolysis. Explain.

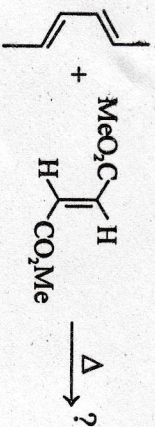
(b) Write down the enzymatic method for the resolution of D, L-Amino acids.

(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