বিদ্যাসাগর বিশ্ববিদ্যালয়
VIDYASAGAR UNIVERSITY

Question Paper

B.Sc. Honours Examinations 2020
(Under CBCS Pattern)
Semester - V
Subject: CHEMISTRY
Paper: C12T & C12P
(ORGANIC CHEMISTRY - V)

Full Marks : 60
Time : 3 Hours

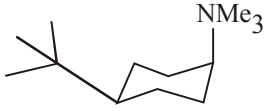
Candiates are required to give their answer in their own words as far as practicable.
The figures in the margin indicate full marks.

Group - A

THEORY (Marks : 40)

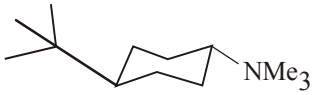
Answer any ***two*** from the following questions : 2×20

1. (a) Which isomer A or B will converted to a quaternary salt more rapidly ? 2



A

or



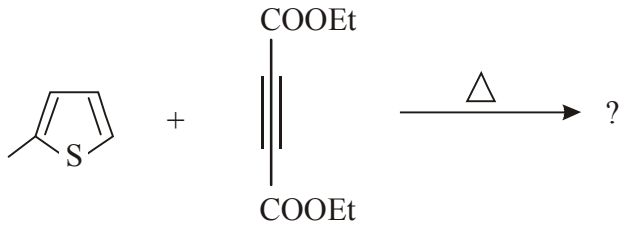
B

(b) Discuss the relative stability of cyclopropane and cyclohexane in the light of Baeyer Strain Theory. 2

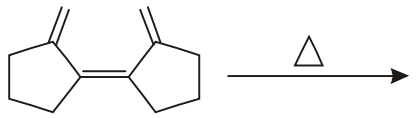
(c) What are chemical compositions of DNA ? 2

(d) Why D-Glucose is called dextrose but D-Fructose is levulose ? 2

(e) Predict the product of the following reactions

(i) 

1

(ii) 

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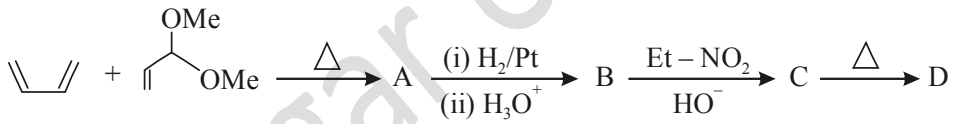
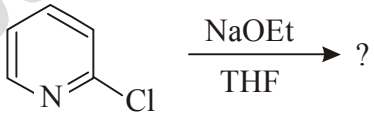
(iii) 

2

(f) Predict the product with possible mechanism : 2

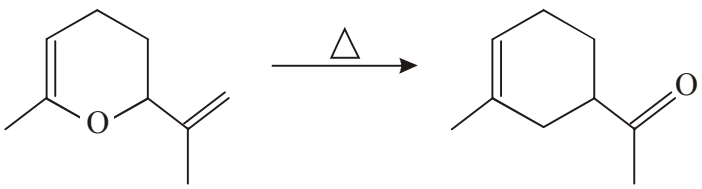


(g) Why amino acids have higher dipole moment and melting point ? 2

(h) Why does β -methyl glycoside hydrolyse faster than the α -isomer. 2

(i) Give an example of reducing and non-reducing sugar. 2

2. (a) Suggest a mechanism for the following transformation : 4



(b) Why N-acetyl pyrrole can not be prepared by reracting with acetic anhydride and pyrrole ? How this problem could be solved ? 4

(c) Write down a scheme for the synthesis of Gly-Ala using DCC promoted peptide bond formation. Give mechanism for the DCC coupling reaction. 5

(d) How would you convert the following :

(i) Glucose $\rightarrow$ Fructose 2

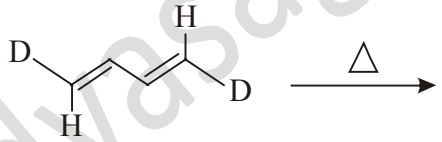
(ii) 2-Chloroaniline $\rightarrow$ Chloroquinine 2

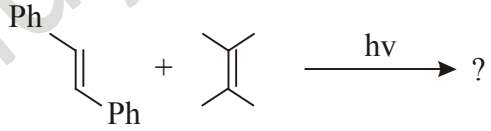
(iii) Phthalimide $\rightarrow$ L-Phenyl alanine 3

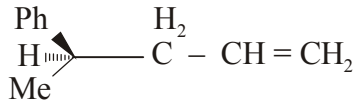
3. (a) Partial hydrolysis of peptide with acids is generally unsatisfactory but enzymatic hydrolysis is extremely useful-explain. 4

(b) Treatment with sodium borohydride converts aldose A into an optically inactive alditol. Ruff degradation of A forms B, whose alditol is optically inactive. Ruff degradation of B forms D-glyceraldehyde. Identify A and B with explanation. 4

(c) Identify the Product(s) of the following reaction showing frontier orbital interaction.

(i)  2

(ii)  2

(iii)  2

(d) Write the name and structure, in Fischer projection formula, of the enantiomer of α-D-(+) glucose correlate with Howerth projection formula-Explain. 3

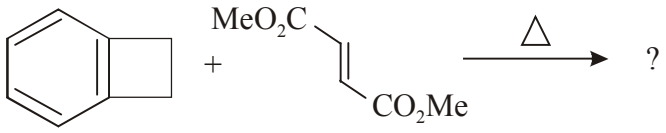
(e) What do you mean by "Reverse electron demand" in Diels-Alder reaction ? 3

4. (a) How does epimer differ with anomer ? Explain with an example. 2

(b) Show how Skaraup synthesis can be used to prepare 4-methylquinoline. 4

(c) Out line chemical method for determination of C-terminal and N-terminal amino acids. 4

(d) Predict the formation of the product with stereochemistry for the following reaction. 3



(e) Sucrose cannot reduce Tollen's reagent but maltose can-explain. 2

(f) Mention the name of different type of RNA's and discuss their functions. 5

Group - B

PRACTICAL (Marks : 20)

Answer any ***one*** from the following questions : 1×20

1. Describe the procedure to separate the dyes from a mixture of dyes by TLC method.
2. Describe the method to separate two amino acids from a mixture.
3. State the principle and method for the separation on of a mixture of dyes using Column chromatography.

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