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**CH/AC/OC/CA 402**

First Semester M.Sc. Degree Examination, December 2018
Chemistry/Applied Chemistry/Organic Chemistry/Analytical Chemistry
(CBCS Scheme) (2015 Batch) (Repeaters)
ORGANIC CHEMISTRY

Time : 3 Hours

Max. Marks : 70

- Note :** 1) Answer **any ten** sub-divisions from Part **A** and **any five** questions from Part **B**.
 2) Figures to the **right** indicate marks.

PART – A1. Answer **any ten** of the following : **(10×2=20)**

a) Predict the product for the following with justification.

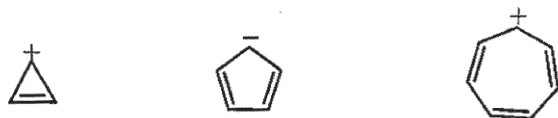


b) With suitable example differentiate localized and delocalized bonding.

c) Among the following which one is more basic and why ?

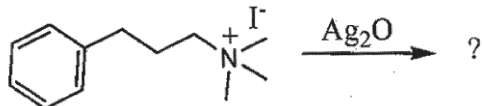
Aniline and methyl amine.

d) Among the following which one is aromatic and why ?



e) Write the conformational structure of cellulose.

f) Predict the products for the following reactions. Justify your answer.



g) Write the cis-and trans-forms of 1, 4 - cyclohexane dicarboxylic acid.

h) With suitable example differentiate stereoselective and stereospecific reactions.

i) Write the stable conformational structure for α -D-glucopyranose and α -L-gulopyranose.

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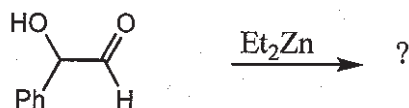


- j) Starch gives blue colouration with iodine but cellulose doesnot. Justify this statement.
- k) Name three rearrangements which involves nitrene as intermediates.
- l) Mention the non-kinetic methods available for investigating reaction mechanism.

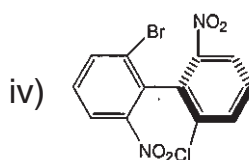
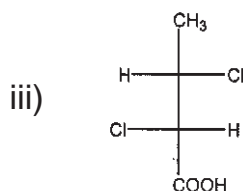
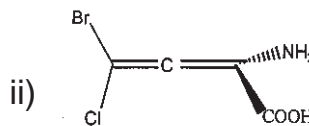
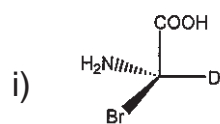
PART – B

Answer **any five** questions :**(5×10=50)**

2. a) With suitable example, distinguish between inductive effect and mesomeric effect.
- b) With suitable examples, explain the effect of solvent on base strength.
- c) Discuss the generation and reactions of carbene. **(4+3+3)**
3. a) With suitable example, distinguish between resonance and tautomerism.
- b) Write a note on (i) fluxanal molecules and (ii) catenanes.
- c) With examples, explain Bronsted-Lowry acid-base concept. **(4+3+3)**
4. a) How isotope labeling will help to reduce the possible mechanism for benzyne mechanism ? Explain with suitable example.
- b) Addition of bromine across the double bond always leads to trans-product. Justify this statement with suitable example. **(5+5)**
5. a) Write the most stable conformational structures for cis and trans 1, 2-dimethyl cyclohexane and decalin.
- b) With justification, predict the product for the following :



- c) Give the R or S notations for the following.

**(4+3+3)**



6. a) With suitable example, explain the effect of conformation on reactivity.
b) Draw the Fischer projection formula of each stereoisomer of 2, 3 dibromobutane. Indicate the isomeric relationship between each pair of stereoisomer.
c) With suitable examples explain any one method for the resolution of racemic mixture. **(4+3+3)**
7. a) What is mutarotation? Explain the mechanism with suitable example.
b) Cellobiose has $\beta(1 \rightarrow 4)$ linkage. Justify.
c) Explain the role of cuprammonium solution in establishing the conformation of monosaccharides. **(4+3+3)**
8. a) Using periodic oxidation method, how do you prove that cellulose has $1 \rightarrow 4$ linkage.
b) Explain the different methods used for linkage analysis of polysaccharides.
c) Write a note on chitin. **(4+3+3)**
9. Explain with suitable examples how the following techniques are useful in the determination of reaction mechanism.
i) Stereochemical evidences
ii) Trapping of reaction intermediates
iii) Limitation of a reaction. **(4+3+3)**
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