AS-2051
ORGANIC CHESMISTRY-II
SEMESTER -II

TIME :3 HOURS **M:M: 26**

NOTE : The candidates are required to attempt two questions each from Section A and B carrying 4 marks each and section C will be compulsory carrying 2 marks each .

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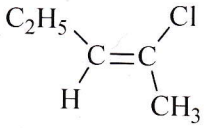
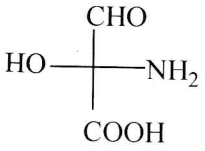
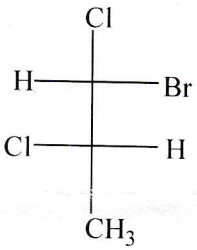
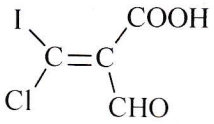
SECTION-A

1. Explain the following terms:
   a) Diastereomers b) Enantiomers c) Meso compounds d) Racemic mixture
2. Assign R/S or E/Z configurations:

a) 

b) 

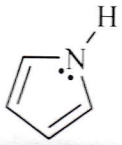
c) 

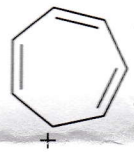
d) 

3. What is conformational isomerism? Explain the different conformations of n-butane and discuss their stabilities.
4. a) What is resolution? Discuss chemical separation method for resolution.
   b) What is asymmetric synthesis? Give the synthetic pathway for formation of (-) lactic acid.

SECTION-B

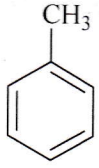
5. a) Which of the following compounds/ionic compounds are aromatic and non-aromatic and why? Explain.

a) 

b) 

b) Discuss in detail the molecular orbital structure of benzene marking all the atoms, bond lengths and bond angles.

6. Complete the reactions and give mechanisms:

a)  $\xrightarrow{HNO_3/H_2SO_4}$?

b)  + $CH_3\text{-}CH{=}CH_2$ $\xrightarrow{H_2SO_4}$?

contd—2

7. a) 3-methylbutane-2-ol when treated with hydrogen chloride, gives very small amount of 2-chloro-3-methylbutane but forms an isomeric chloro compound as the major product. What is the structure of the compound and how is it formed?

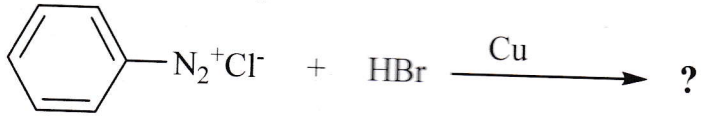
b) Which amongst the following can readily undergoes halogenations via S_N^2 mechanism.

i) 1-bromopentane ii) 2-bromopentane

8. What are aryl halides? Discuss any three methods for the preparation of these compounds.

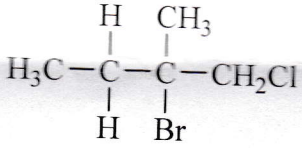
SECTION-C

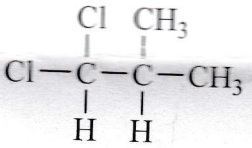
9. a) Complete the following reactions:

i) 

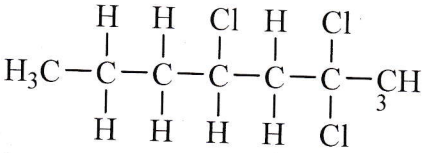
ii) Chloromethane to 2-butyne

b) Give the IUPAC names of:

i) 

ii) 

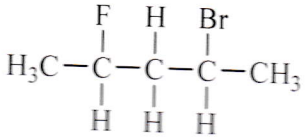
iii) Isobutyl bromide

iv) 

c) What is Williamson's synthesis? Give example.

d) Write the mechanism for nitration of benzene.

e) How many stereoisomers are possible for:



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