QP Code: RM20MSC093 Reg. No | | | | | | | | | | | AR 20

# GIET UNIVERSITY, GUNUPUR – 765022

M. Sc (First Semester) Examinations, May – 2021

## 20CHPC101 – ORGANIC CHEMISTRY - I

(Chemistry)

Time: 2 hrs Maximum: 50 Marks

**PART – A** **(2 x 10 = 20 Marks)**

Q.1. Answer ***ALL*** the questions

a. Tropylium bromide gives a yellow precipitate with $AgNO_3$ solution, while bromobenzene does not. Reason out.

b. State Huckel's rule with two examples.

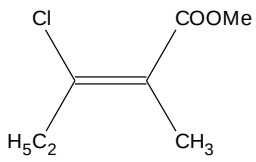
c. Arrange the following compounds according to increasing $pK_a$ values and give reason:
Dichloro acetic acid, acetic acid, propionic acid, trichloro acetic acid

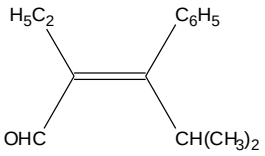
d. Classify as hard or soft acids or bases: $H_2O$, $CN^-$, $Pt^{+2}$, $BH_3$

e. Write Hammett's equation and explain the terms involved.

f. Distinguish configuration from conformation.

g. Assign E/Z notation:

i) 


ii) 


h. How does a racemic mixture differ from a meso compound?

i. What are ambident nucleophiles? Give two examples.

j. Explain Walden inversion.

**PART – B** **(6 x 5 = 30 Marks)**

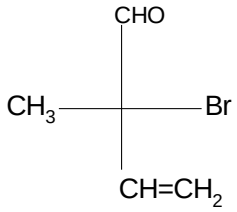
Answer ***ANY FIVE*** questions Marks

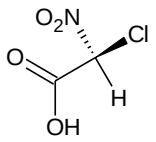
2. Explain any three methods to generate carbenes. 6

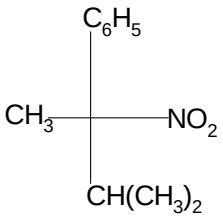
3. Discuss kinetically and thermodynamically controlled product with an example. 4+2

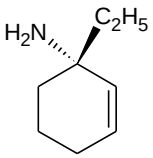
4. Discuss the stereochemistry of cis and trans decalin 6

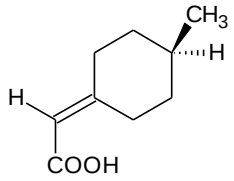
5. Assign R/S configuration: 6

i) 


ii) 


iii) 


iv) 


v) 


6. Explain the following observations. 6

   i) Allyl chloride undergoes substitution reaction through $S_N1$ mechanism while n-propyl chloride undergoes through $S_N2$ pathway.

   ii) Vinyl chloride and chloro benzene do not favour nucleophilic substitution reaction.

7. Discuss the effect of structure of the substrate and the nucleophile on $S_N1$ and $S_N2$ mechanisms. 6

8. Write a brief note on Pearson's HSAB theory. 6

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