SHRIMATHI DEVKUNVAR NANALAL BHATT VAISHNAV COLLEGE FOR WOMEN
(AUTONOMOUS)
(Affiliated to the University of Madras and Re-accredited with 'A+' Grade by NAAC)
Chromepet, Chennai - 600 044.
B.Sc.Chemistry - END SEMESTER EXAMINATIONS - NOV'2024
SEMESTER - II
22UCHCT2003 - Basics of Organic Chemistry

Total Duration : 2 Hrs.30 Mins. Total Marks : 60

Section B

Answer any **SIX** questions $(6 \times 5 = 30$ Marks)

1. a) Justify the following statements. (3 x 1)

   i) 2 - chloropropanoic acid ($CH_3CH(Cl)COOH$) is stronger acid than

   3 - chloropropanoic acid ($ClCH_2CH_2COOH$).

   ii) Toluene (methyl benzene) is more reactive than benzene towards aromatic electrophilic substitution reaction.

   iii) 1, 3 - pentadiene is more stable than 1, 4 - pentadiene.

   b) Which of the following carbocation is more stable? Give reason. (2)

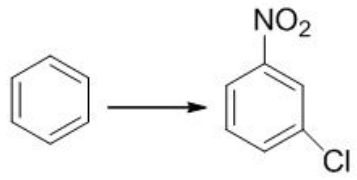
(A)

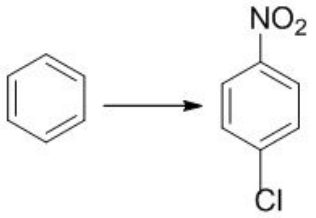
(B)

2. Compare the mechanisms of E1 and E2 pathway in the elimination reactions with suitable examples.
3. Illustrate the application of Wurtz reaction and Wurtz-fittig reaction in the preparation of alkanes.
4. Predict the product for the following reactions and propose the plausible mechanism for the product formation.

Contd...

5. How will you effect the following conversions?

i) 

ii) 

6. a) Differentiate Inductive effect and Resonance effect with relevant examples. (3)
   b) Pick out the electrophiles in the following: (2)
   $AlCl_3$, CN^-, H_2O, BF_3, OH^-, SO_3H^+
7. Illustrate the mechanism of Friedel Craft's alkylation and acylation reaction.
8. Compare and discuss the stability of conjucated, isolated and cumulative dienes.

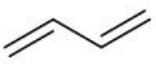
Section C

Answer any **THREE** questions $(3 \times 10 = 30$ Marks)

9. a) Compare and discuss the hybridisation and shape of ethylene and acetylene.(3)
   b) Distinguish Homolytic fission and heterolytic fission. (3)
   c) Provide two methods each for the generation of carbocation and carbanion.(4)
10. a) Compare the mechanism of SN^1 and SN^2 pathway and discuss the effect of substrate, nucleophile and leaving group. (7)
    b) Explain Hofmann elimination reaction with an example. (3)
11. a) Compare and discuss Baeyer's strain theory and theory of strainless rings. (6)
    b) How will you synthesize cycloalkanes using following methods? (2+2)
       i) Dieckmann's ring closure Reactions
       ii) Reduction of aromatic hydrocarbons
12. a) Predict the product in the following reactions. (3)

i) $CH_3\text{-}C{\equiv}C\text{-}CH_3 \xrightarrow{Na/liq.NH_3} ?$

ii) $CH_3\text{-}C{\equiv}C\text{-}CH_3 \xrightarrow[H_2]{Pd//C} ?$

iii)  + HBr $\xrightarrow{40\ ^\circ C} ?$

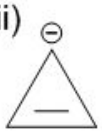
Contd...

b) Illustrate [4+2] cycloddition using Diels-Alder reaction. (4)

c) Justify why acetylene is more acidic than ethylene. (3)

13. a) Label the following compounds as aromatic / antiaromatic / nonaromatic compounds and provide reason. (3x2)

i) 

ii) 

iii) 

b) Illustrate the mechanism of halogenation in alkane. (4)

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