Bachelor of Science (B.Sc.) (Part-I) (CBCS Pattern) Second Semester CBCS

USCChT03 - Chemistry : Paper-I (Organic Chemistry)

P. Pages : 2 **GUG/W/18/11574**

Time : Three Hours * 3 6 4 9 * Max. Marks : 80

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1. a) Explain the mechanism with energy profile diagram of SN^1 reaction. **5**

b) Explain the following Reaction **5**
1) Benzyne reaction 2) Gattermann reaction.

OR

c) Differentiate between Elimination and substitution reactions. **2½**

d) Explain Sandmeyer reaction with suitable example. **2½**

e) What is Williamson's ether synthesis? **2½**

f) What is aromatic nucleophilic substitution reaction? Explain with example. **2½**

2. a) What is pinacol-pinacolone rearrangement? Give the mechanism. **5**

b) How will you prepare primary, secondary and tertiary alcohols by using Grignard reagent? **5**

OR

c) Complete the reaction. **2½**

$$CH_3 - CH_2 - OH \xrightarrow{PCC} ?$$

$$CH_3 - CH_2 - OH \xrightarrow[H_2SO_4]{KMNO_4} ?$$

d) Give the proper product. **2½**

$$CH_3 - O - CH_2 - CH_3 \xrightarrow{HI} ? + ?$$

e) How will you prepare phenol by cumene hydroxide method? **2½**

f) Write a note on Reimer-Tiemann Reaction. **2½**

3. a) Explain the structure and reactivity of the carbonyl group. **5**

b) Explain the following reactions **5**
i) Reimer - Tiemann reaction
ii) Rosenmund Reduction

OR

c) Give the product of following reaction **2½**

i) $CH_3 - \overset{\overset{O}{\|}}{C} - CH_3 \xrightarrow[H_2O]{R-MgX} ?$

d) Write a note on Cannizzaro's reaction. **2½**

e) Write a note on Wittig reaction. **2½**

f) Write a note on dehydrogenation of alcohol. **2½**

4. a) Explain the following terms with regard to carboxylic acid. **5**
i) Structure and bonding
ii) Acidity of carboxylic acid due to substituent's.

b) Discuss relative stability of acyl derivative. What is the effect of ammonia on acetyl chloride? **5**

OR

c) Write a note on Hell-Volhard-Zelinsky reaction. **2½**

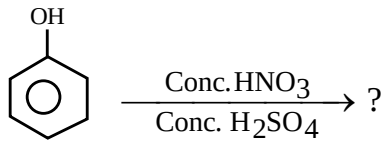
d) Draw the structure of succinic acid, Phthalic acid, succinic & Phthalic anhydrides. **2½**

e) Just write a mechanism esterification by basic medium. **2½**

f) Write a short physical properties of carboxylic acids. **2½**

5. Attempt **any ten.** **1x10=10**

i) Name the nucleophilic substitution Reaction in which methyl bromide undergoes hydrolysis.
ii) Write the structure of vinyl chloride.
iii) How will you prepare chlorobenzene from benzene?
iv) Write the reaction of ethyl alcohol with sodium metal.
v) Complete the following reaction:-



vi) Write IUPAC name of $CH_3\ CH_2O\ CH_2\ CH_2\ CH_3$
vii) Write Clemmensen reduction in acetaldehyde.
viii) Write Wolff Kishner Reduction.
ix) What is the action of NH_3 on formaldehyde?
x) What is the effect of heat on Phthalic acid?
xi) Define esterification
xii) How will you prepare acetic acid from acetaldehyde?

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