22241

22223

3 Hours / 70 Marks Seat No. | | | | | | | | |

Instructions – (1) All Questions are *Compulsory.*

(2) Answer each next main Question on a new page.

(3) Illustrate your answers with neat sketches wherever necessary.

(4) Figures to the right indicate full marks.

(5) Assume suitable data, if necessary.

(6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. Attempt any FIVE of the following: **10**

a) Define organic compounds and state any two characteristics of them.

b) State the types of organic compounds by their functional groups.

c) State any two physical and chemical properties of alkanes and alkenes.

d) Define absolute alcohol and power alcohol.

e) Write the chemical reaction of aldehydes with Fehling's solution.

f) Write any two chemical properties of carboxylic acids.

g) Write preparation of acetic acid by using Grignard's reagent.

Marks

2. Attempt any THREE of the following: **12**

a) Differentiate between Homolytic and Heteralytic fission. Give an example of each.

b) Describe the method of preparing alkynes by using hydrohalogenation.

c) Describe the preparation method of acetone from calcium acetate and acetylene.

d) Describe the preparation of glycerol and glycol.

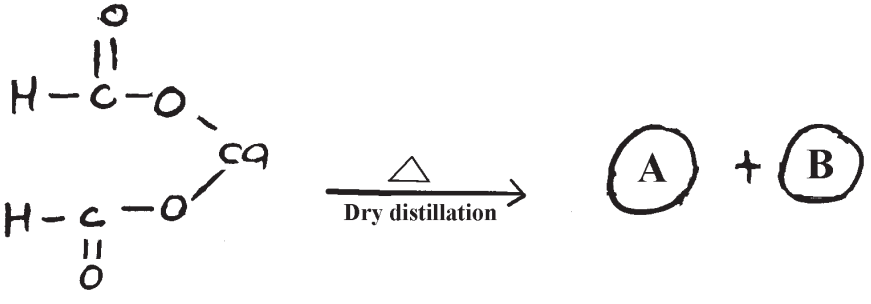
3. Attempt any THREE of the following: **12**

a) Describe the method of preparing Ethane by using Wurtz synthesis.

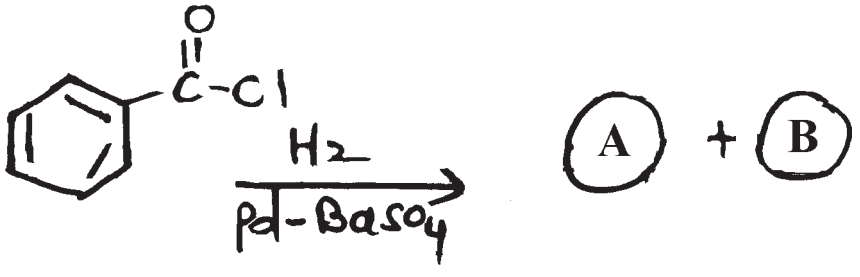
b) Describe the preparation of ethanol from ethylene by hydration method.

c) Predict the products of following conversions.

i)



ii)



Marks

d) Write the nomenclature of following structures.

i) $CH_3- CH_2- COOH$

ii) HOOC-COOH

iii) $CH_3–\underset{\displaystyle CH_3}{\underset{|}{CH}} –COOH$

iv) $HOOC–CH_2–COOH$

4. Attempt any THREE of the following: **12**

a) Describe the preparation of ethanol by reduction of acetaldehyde.

b) Predict the products of following conversions.

i) $CH_3- CH_2- \underset{\displaystyle CH_3}{\underset{|}{CH}} –CH_2- OH + 2(O) \xrightarrow{K_2Cr_2O_7/di\,|.H_2SO_4}$ (A) + (B)

ii) $CH_3- C \equiv N + 2H_2O + HCl \xrightarrow{\triangle}$ (A) + (B)

c) How will you convert Bromoethane into

i) ethanoic acid

ii) propanoic acid

d) Write the products of following reaction.

i) $CH_2 = CH - CH_2- COOH \xrightarrow[Ni]{H_2} ?$

ii) $CH_3 - CH_2- CH_2- COOH \xrightarrow[aq.NH_3]{Br_2.P} ?$

e) Explain the reaction of acetaldehyde with Tollen's Reagent.

Marks

5. Attempt any TWO of the following: **12**

a) Explain the mechanism of SN^2 reaction by using energy profile diagram.

b) Identify the compounds 'A', 'B' and 'C' in the following sequence of reactions and rewrite the complete equations.

$$\text{'A'} \xrightarrow[\triangle]{NaOH/CaO} \text{'B'} \xrightarrow[\triangle]{Br_2/Al\ Br_3} \text{'C'} \xrightarrow[\triangle]{Na/dry\ eather} \text{n - Butane}$$

c) Identify the compound 'D' in the following series of reactions

$$CH_3 - CH_2 - Br \xrightarrow{ak.koH} \text{'A'} \xrightarrow{Cl_2/CCl_4} \text{'B'}$$

$$\xrightarrow{NaNH_2} \text{'C'} \xrightarrow[1\%H_9SO_4]{40\%H_2SO_4} \text{'D'}$$

6. Attempt any TWO of the following: **12**

a) Define 'homologs' and 'homologous' series. Write names and structural formula of first four homologs of alcohol. How do MW differ from one homolog to other ?

b) Explain with a reaction each.

i) Eliminiation reaction.

ii) Rearrangement reaction

c) i) Describe 'Kolbe's synthesis. State its use.

ii) Name and write structural formula of.

1) Simplest alkyne.

2) Write commercial uses of the simplest alkyne.

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