

UNIT 1

MCQ

- Vapour phase reaction between acetylene and acetic acid in the presence of a \_\_\_\_\_ catalyst yields vinyl acetate.  
 (a) Mercuric chloride (b) **Zinc acetate**  
 (c) Charcoal (d) Raney-nickel
- Vapour phase reaction between acetylene and HCl in the presence of a \_\_\_\_\_ catalyst yields vinyl acetate.  
 (a) **Mercuric chloride** (b) Zinc acetate  
 (c) Charcoal (d) Raney-nickel
- Propagyl alcohol reacts with aldehyde or vinyl ethers in the presence of acid catalyst to form \_\_\_\_\_.  
 (a) Ketones (b) Acid chlorides  
 (c) **Acetals** (d) Carboxylic acid
- The catalytic dehydrogenation of isopropyl alcohol gives \_\_\_\_\_.  
 (a) Vinyl acetate (b) Propagyl alcohol  
 (c) Acetaldehyde (d) **Acetone**
- Acetaldehyde and formaldehyde reacts with ammonia to give mainly \_\_\_\_\_.  
 (a) **Pyridine** (b) Picolines  
 (c) Acids (d) None of these
- Propionaldehyde and formaldehyde reacts with ammonia to give \_\_\_\_\_.  
 (a) 2,6-dimethyl pyridine (b) 3-methyl pyridine  
 (c) **3,5-dimethylpyridine** (d) 4-methyl pyridine
- Reaction of paraldehyde with aqueous ammonia in the liquid phase gives \_\_\_\_\_.  
 (a) 3,5-dimethyl pyridine (b) 6-ethyl-2-methyl pyridine  
 (c) 3-methylpyridine (d) **5-ethyl-2-methyl pyridine**
- Partial oxidation of natural gas produces \_\_\_\_\_.  
 (a) Acetone (b) **Acetylene**  
 (c) Methane (d) None of these
- In manufacturing of acetylene from natural gas, the residence time is \_\_\_\_\_ seconds.  
 (a) 0.01 to 0.1 seconds (b) **0.001 to 0.01 seconds**  
 (c) 0.0001 to 0.001 seconds (d) None of these
- In manufacture of acetylene from calcium carbide, the temperature of electric arc furnace kept at \_\_\_\_\_.  
 (a) **2000°C** (b) 1500°C  
 (c) 2200°C (d) 1800°C
- In fischer-tropsch synthesis, raw synthesis gas is purified by \_\_\_\_\_.  
 (a) **Water washing** (b) Soda washing  
 (c) By air (d) None of these
- In commercial production of resorcinol \_\_\_\_\_ use as the main feed stock.  
 (a) Phenol (b) **Benzene**  
 (c) Cumene (d) None of these
- In manufacture of phthalic anhydride from naphthalene, the contact time in reactor is \_\_\_\_\_ seconds.  
 (a) 15-25 seconds (b) 5-15 seconds  
 (c) **10-20 seconds** (d) None of these
- Acrylonitrile and acetylene reacts in the presence of \_\_\_\_\_ catalyst to give 2-vinyl pyridine.  
 (a) Vanadium pentoxide (b) Mercuric chloride  
 (c) **Cyclopentadienyl cobalt-cycloocta-1,5 diene** (d) Zinc acetate

SHORT QUESTIONS

- Write the uses of following.  
 (a) Vinyl acetate (b) Acrylates (c) Propagyl alcohol  
 (d) Acetone (e) Phenol (f) 2-methyl pyridine  
 (g) 4-methyl pyridine (h) phthalic anhydride
- Draw the flow sheet for following process.  
 (a) Vinyl chloride from acetylene and HCl  
 (b) Acetone from isopropyl alcohol

3. Write the mechanism for synthesis of 5-ethyl-2-methyl pyridine from paraldehyde and ammonia.
4. Write the properties of acetylene.

**Long question**

1. With the help of flow diagram explain manufacture of
  - a. Vinyl chloride from acetylene and hydrogen chloride
  - b. Vinyl chloride by pyrolysis of ethylene dichloride
  - c. Vinyl acetate
  - d. Acrylates
  - e. Acetone
  - f. Phenol by cumene process
  - g. Phenol from benzene sulfonate process
  - h. Phthalic anhydride from naphthalene
  - i. Phthalic anhydride from o-xylene
  - j. Resorcinol
  - k. Fischer tropisch synthesis
  - l. Acetylene
2. Write short note on
  - a. Pyridine and picoline
  - b. Propagyl alcohol
  - c. 1,4 butane diol

## UNIT 2

## MCQ

- The catalytic hydrogenation of dextrose yields \_\_\_\_\_.  
 (a) Acetone (b) Glucose  
 (c) **Sorbitol** (d) Ethanol
- The sorbitol-spent catalyst slurry is filtered in a \_\_\_\_\_.  
 (a) Vacuum filter (b) **Pressure leaf filter**  
 (c) Rotary drum filter (d) None of these
- Catalytic vapour-phase oxidation of methanol produces \_\_\_\_\_.  
 (a) **Formaldehyde** (b) Acetaldehyde  
 (c) Ethanol (d) None of these
- Acid hydrolysis of methyl formate produces \_\_\_\_\_.  
 (a) Formaldehyde (b) **Formic acid**  
 (c) Ethanol (d) None of these
- The high pressure continuous chlorination of propylene yields \_\_\_\_\_.  
 (a) **Allyl chlorides** (b) Acid chlorides  
 (c) Ketones (d) None of these
- In the production of acetic anhydride by the ketene process \_\_\_\_\_ is used as catalyst.  
 (a) Tri methyl phosphate (b) Hydrogen peroxide  
 (c) **Triethyl phosphate** (d) None of these
- Phosphorous oxychloride reacts with phenols to form \_\_\_\_\_.  
 (a) Tri methyl phosphate (b) **Tri aryl phosphate**  
 (c) phosphoric acid (d) None of these
- The water containing about 1 to 2% glycerine is called as \_\_\_\_\_.  
 (a) **Sweet water** (b) Harsh water  
 (c) Absolute alcohol (d) None of these
- Melamine can be synthesized from urea at \_\_\_\_\_ °C  
 (a) **390 to 410°C** (b) 410 to 430 °C  
 (c) 370 to 390°C (d) None of these
- When alcohols or phenols are reacted with phosphorous pentoxide the mixture of \_\_\_\_\_ is formed  
 (a) Di and tri esters (b) Diesters  
 (c) **Mono and di esters** (d) None of these

## SHORT QUESTIONS

- Write the uses of following.  
 (a) Sorbitol (b) Formaldehyde (c) Formic acid  
 (d) Glycerine (e) Melamine (f) Allyl phosphates  
 (g) Tri phenyl phosphate
- Draw the flow sheet for following process.  
 (a) Manufacture of formaldehyde from methanol  
 (b) Manufacture of formic acid by pyrolysis of ethylene dichloride
- Write the raw materials required for following process.  
 (a) Manufacture of glycerine from propylene via acrolein  
 (b) Manufacture of formic acid from sodium formate  
 (c) Manufacture of sorbitol from dextrose by catalytic hydrogenation

## Long question

- With the help of flow diagram explain manufacture of  
 a. Sorbitol  
 b. Formaldehyde  
 c. Formic acid  
 d. Glycerin from byproduct of soap manufacture  
 e. Glycerin from propylene via allyl chloride  
 f. Glycerin from propylene via acrolein

2. Write note on
  - a. Melamine
  - b. Triphenyl phosphine
  - c. Alkyl phosphates

UNIT 3

MCQ

- In manufacture of methyl chloride, reaction gases pass through a water scrubber to remove \_\_\_\_\_.  
 (a) H<sub>2</sub>S (b) CO  
 (c) **HCl** (d) NO<sub>2</sub>
- In manufacture of methyl chloride, gases are mixed and passed through a chlorination furnace operated at \_\_\_\_\_.  
 (a) 425°C (b) **450°C**  
 (c) 475°C (d) None of these
- The action of bleaching powder on acetone yields \_\_\_\_\_.  
 (a) **Chloroform** (b) Carbon tetrachloride  
 (c) Methyl chloride (d) None of these
- Which catalyst is used in manufacture of carbon tetrachloride?  
 (a) Copper (b) **iron borings**  
 (c) Platinum (d) Aluminium
- In manufacture of carbon tetrachloride, reaction temperature maintained at \_\_\_\_\_ °C  
 (a) 20°C (b) 40°C  
 (c) **30°C** (d) 50°C
- The carbon tetrachloride is removed from the sulfur by \_\_\_\_\_.  
 (a) **Distillation** (b) Evaporation  
 (c) Extraction (d) None of these
- In manufacture of N-alkylated ethanolamines, reaction temperature varies from \_\_\_\_\_ to \_\_\_\_\_ °C  
 (a) **50 to 170°C** (b) 80 to 200°C  
 (c) 30 to 150°C (d) None of these
- In manufacture of N-alkylated ethanolamines pressure varies from \_\_\_\_\_ to \_\_\_\_\_ MPa.  
 (a) **0.2 to 4** (b) 0.1 to 3  
 (c) 1 to 4 (d) 0.2 to 3
- The reaction of ethylene oxide with ammonia is accelerated by \_\_\_\_\_.  
 (a) HCl (b) NaOH  
 (c) **H<sub>2</sub>O** (d) HCOOH
- The methyl chloride, methylene dichloride and heavy ends are separated by \_\_\_\_\_.  
 (a) Vacuum distillation (b) Extraction  
 (c) Evaporation (d) **Fractional distillation**

SHORT QUESTIONS

- Write the uses of following.  
 (a) Methyl chloride (b) Methylene di chloride (c) Chloroform  
 (d) Carbon tetrachloride (e) Ethanolamines (f) N-alkylated ethanolamines
- Write the reaction for following process.  
 (a) Manufacture of methyl chloride and dichloromethane.  
 (b) Manufacture of carbon tetrachloride.
- Draw the flow sheet for manufacture of chloroform from acetone and bleaching powder.

Long question

- With the help of flow diagram explain manufacture of  
 a. Methyl chloride  
 b. Dichloromethane  
 c. Chloroform  
 d. Carbon tetrachloride  
 e. Tri ethanol amine  
 f. dialkylaminoethanol

## UNIT 4

## MCQ

- The reaction between methanol and ammonia in a continuous flow system produces \_\_\_\_\_.  
 (a) Ethanol (b) **Methylamines**  
 (c) **Formaldehyde** (d) None of these
- In manufacture of methylamines, vapours pass through reaction chamber containing \_\_\_\_\_ as catalyst.  
 (a) Silica-gel (b) Iron borings  
 (c) **Alumina-gel** (d) None of these
- In manufacture of amylamine, reaction mixture is maintained at \_\_\_\_\_ to \_\_\_\_\_ °C  
 (a) **160-165°C** (b) 165-170°C  
 (c) 155-160°C (d) None of these
- The carbonylation of methanol is performed in the presence of \_\_\_\_\_ catalyst.  
 (a) Sodium hydroxide (b) Sodium carbonate  
 (c) **Sodium methoxide** (d) Aluminium
- An oxidation of dimethyl sulfide produces \_\_\_\_\_.  
 (a) DMF (b) THF  
 (c) Dioxane (d) **DMSO**
- In manufacture of DMSO, oxidation of dimethyl sulfide with oxygen carried out at \_\_\_\_\_ °C  
 (a) 110°C (b) 115°C  
 (c) 100°C (d) **105°C**
- Propylene oxide is isomerized to allyl alcohol in the presence of \_\_\_\_\_ catalyst.  
 (a) **Trilithium orthophosphate** (b) Trilithium phosphate  
 (c) Palladium orthophosphate (d) Tellurium orthophosphate
- 1,4-dioxane is manufactured by dehydration and ring closure of \_\_\_\_\_.  
 (a) Propylene glycol (b) **Diethylene glycol**  
 (c) Glycerine (d) None of these
- Boiling point of n-butyl ether is \_\_\_\_\_.  
 (a) **142°C** (b) 144°C  
 (c) 140°C (d) 138°C
- Which of the following is not miscible with aliphatic/cyclicaliphatic hydrocarbons?  
 (a) DMF (b) n-butyl ether  
 (c) **2-pyrrolidone** (d) THF
- Molecular formula of 1-methyl-2-pyrrolidone is \_\_\_\_\_.  
 (a) **C<sub>5</sub>H<sub>9</sub>NO** (b) C<sub>5</sub>H<sub>9</sub>NO<sub>2</sub>  
 (c) C<sub>5</sub>H<sub>10</sub>NO (d) C<sub>6</sub>H<sub>9</sub>NO
- Reaction of t-butyl ether with silver carbonate in dry ether yields \_\_\_\_\_.  
 (a) sec-butyl ether (b) iso butyl ether  
 (c) n-butyl ether (d) **t-butyl ether**

## SHORT QUESTIONS

- Write the physical properties of following.  
 (a) DMF (b) Di-oxane (c) DMSO (d) Di-butyl ether  
 (e) THF
- Write the reaction for following process.  
 (a) Manufacture of alkylamines from alcohol and ammonia.  
 (b) Manufacture of amylamines from alkylchloride and ammonia.
- Write the chemical properties of following.  
 (a) DMF (b) Di-oxane (c) DMSO (d) Di-butyl ether  
 (e) THF
- Write the uses of following.  
 (a) DMF (b) Di-oxane (c) DMSO (d) Di-ethyl ether  
 (e) THF (f) n-butyl ether (g) sulfolane  
 (h) N-methyl-2-pyrrolidone (i) Alkyl pyrrolidone

**Long question**

1. With the help of flow diagram explain manufacture of
  - a. Alkyl amine e.g. methyl amine, ethyl amine, butyl amine, propyl amine
2. Write note on
  - a. DMF
  - b. DMSO
  - c. THF
  - d. Sulfolane
  - e. Dibutyl ether
  - f. Dioxane
  - g. Diethyl ether
  - h. Alkyl pyrrolidone