AYO-OKOTADE BLESSING OLUWAFUNMILAYO
19/MHS06/006

b Chemical properties:

⇒ Doesn't react with bases, active metals, oxidizing agents and reducing agents.

⇒ Strong acids will cleave esters at elevated temperatures.

⇒ When stored in presence of oxygen, esters will form explosive peroxides such as diethyl ether peroxide.

3a Making esters from carboxylic acids: This method can be used for converting alcohols into esters, but it doesn't work with phenols compounds where the -OH group is attached directly to a benzene ring. Phenols react with carboxylic purpose. Esters are produced when carboxylic acids are heated with alcohols in the presence of an acid catalyst. The catalyst is usually concentrated sulphuric acid. Dry hydrogen chloride gas is used in some cases, but these tend to involve aromatic esters (ones where the carboxylic acid contains benzene ring). The esterification reaction is both slow and reversible.

AYO-OMOTADE BLESSING OLUWAFUNMILAYO
19/MHS06/006

b Partial Dehydration of Alcohols: Simple ether are manufactured from alcohols by catalytic dehydration. The alcohol in excess and concentrated tetraoxosulphate (VI) acid is heated at a carefully maintained temperature of 140°C. This process is known as CONTINUOUS ESTERIFICATION. If excess alcohol is not used, the temperature is as high as 170°-180°C, further dehydration to yield alkene occurs

Example

$2CH_3CH_2OH \xrightarrow{\text{conc-}H_2SO_4,\ 140°C} CH_3CH_2-O-CH_2CH_3 + H_2O$

c Ethylene oxide is used in the sterilization of medical equipment, including the sterilization of personal protective equipment used by doctors and hospitals across the country.

b Ethylene oxide is used as an intermediate in the hydrolytic manufacture of ethylene glycol.

d Most ethylene oxide is used as an intermediate in the production of other chemicals used to manufacture products such as fabrics, pillows,

Name: ATO-OMOTADE BLESSING OLUWAFUNMILAYO
Department: MEDICAL LABORATORY SCIENCE
MATRIC NO: 19/MHS06/006. CHEM 102 ETHERS

1 Give the IUPAC names of the following organic compounds:

a CH_3OCH_3 :— Methoxymethane
b $CH_3CH_2OCH_2CH_3$:— Ethoxyethane
c $(CH_3CH_2CH_2CH_2)_2O$:— Pentanamide.
d $CH_3CH_2OCH_3$:— Methoxyethane
e $CH_3CH_2CH_2OCH_2CH_3$:— Ethoxypropane.

2a Physical properties:

⇒ An ether molecule has a net dipole moment due to the polarity of C-O bonds.

⇒ The boiling point of ethers is comparable to the alkanes but much lower than that of alcohols of comparable molecular mass despite the polarity of the C-O bond.

⇒ The miscibility of ethers with water resembles those of alcohols.

⇒ Ether molecules are miscible in water. This is attributed to the fact that like alcohol, the oxygen atom of ether can also form hydrogen bonds with a water molecule.