NAME: AMADIKE CHIDERA LILIAN

MATRIC NUMBER: 19/ENG02/005

DEPARTMENT : COMPUTER ENGINEERING

1a CH3OCH3 – Methoxymethane

 B CH3CH2OCH2 – Ethoxyethane

 C (CH3CH2CH2CH2)2O – Pentanamide

 D CH3CH2OCH3 – Methoxymethane

 E. CH3CH2CH2OCH2CH3 – Ethoxypropane

2a Physical Properties

* An ether molecule has as 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 bonds.
* The miscibility of ethers with water resembles those of alcohols.

B Chemical Properties

* Ethers don’t react with bases, active metals, oxidizing agents and reducing agents.
* Strong acids will cleave ethers at elevated temperature.
* When stored in presence of oxygen, ethers will form explosive peroxide such as diethyl ether peroxide.

3a Making ethers with acid anhydrides

 The reaction can again be used to make ethers from both alcohols and phenols. The reactions are slower than the corresponding reactions with acyl chlorides and you usually need to warm the mixture. In the case of a phenol, you can react the phenol with sodium hydroxide solution first, producing the more reactive phenoxide ion.

 Taking ethanol reacting with ethanoic anhydrides as a typical reaction involving an alcohol. There is a slow reaction at room temperature (or faster on warming) . There is no visible change in the colorless liquids, but a mixture of ethyl ethanoate and ethanoic acid is formed.

 (CH3CO)2O + CH3CH2OH - CH3COOCH3 + CH3COOH

 The reaction with phenol is similar, but will be slower. Phenyl ethanoate is formed with ethanoic acid.

B Making Ethers from carboxylic acids

 This method can be used for converting alcohols into ethers , but it doesn’t work with phenols compounds where the -OH group is attached directly to the bezene ring. Phenols react with carboxylic acids so slowly that the reaction is unstable for preparation purpose.

 Ethers 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 ethers (one where the carboxylic acid contains a bezene ring). The esterification reaction is both slow and reversible .

4a Ethers such as Ethylene oxide is used for the sterilization of medical equipment, including the sterilization of personal protective equipment used by doctors .

B Ethylene oxide is used as an intermediate in the production of other chemicals used to manufacture products such as fabrics , carpets, pillows etc.

C Ethylene glycol which is derived from ethylene oxide is used to manufacture fiberglass used in making products ranging from jet skis to bathtubs to bowling balls.