***Work sheet 01# organic chemistry chem. 5070***

1. Petroleum is a source of many important chemicals.
2. Name **two** industrial processes which must take place to produce alkenes from petroleum.

...............................................................................................................................................

.............................................................................................................................................. [2]

1. Ethene, CH2=CH2, and propene, CH2=CHCH3, can both be converted into polymers.
2. What type of polymerisation takes place when ethene forms a polymer?

....................................................................................................................................... [1]

1. What is the empirical formula of the polymer formed from ethene?

....................................................................................................................................... [1]

1. Propene has the structural formula CH2=CHCH3

Draw **two** repeat units of the polymer made from propene.

 [2]

1. Ethene will react with steam to form ethanol

Propene will react with steam to form two isomers, both of which are alcohols

Suggest the structures of these alcohols

 [1]

1. Esters are organic chemicals noted for their characteristic smells. Ethanoic acid and methanol will react to form an ester.
2. Name the catalyst needed to form an ester from ethanoic acid and methanol.

....................................................................................................................................... [1]

1. Name the ester formed when ethanoic acid reacts with methanol.

....................................................................................................................................... [1]

1. Draw the structure of the ester formed when ethanoic acid reacts with methanol. Show all bonds

 ***[3]***

1. Give the name of a polyester.

....................................................................................................................................... [1]

1. Alkanes and alkenes are both series of hydrocarbons
2.

Explain the term *hydrocarbon*

....................................................................................................................................

.............................................................................................................................. [1]

1. What is the difference between these two series of hydrocarbons?

....................................................................................................................................

.............................................................................................................................. [2]

1. Alkenes and simpler alkanes are made from long-chain alkanes by cracking.

Complete the following equation for the cracking of the alkane C20H42.



1. Alkenes such as butene and ethene are more reactive than alkanes.

Alkenes are used in the petrochemical industry to make a range of products, which

includes polymers and alcohols.

1. Dibromoethane is used as a pesticide. Complete the equation for its preparation

from ethene.



1. The structural formula of a poly(alkene) is given below.



Deduce the structural formula of its monomer.

 [2]

1. How is butanol made from butene, CH3 – CH2 – CH = CH2? Include an equation in

your answer

....................................................................................................................................

.............................................................................................................................. [2]

1. Cracking changes alkanes into alkenes. How could an alkene be converted into an

alkane? Include an equation in your answer.

....................................................................................................................................

.............................................................................................................................. [2]

1. 20 cm3 of a hydrocarbon was burnt in 175 cm3 of oxygen. After cooling, the volume of

the remaining gases was 125 cm3. The addition of aqueous sodium hydroxide removed

carbon dioxide leaving 25 cm3 of unreacted oxygen.

1. volume of oxygen used = .......... cm3
2. volume of carbon dioxide formed = .......... cm3
3. Deduce the formula of the hydrocarbon and the balanced equation for the reaction.

...................................................................................................................................

....................................................................................................................................

....................................................................................................................................

.............................................................................................................................. [2]