## Year 11 into 12 Applied Science Assignment.

# **Organic Chemistry.**

### Name:



As part of your unit 4 module you will be working on producing organic compounds such as ethyl ethanoate and aspirin. The purpose of this assignment is to allow you to review work you have done on organic chemistry and learn some new chemistry to support module 4.

- 1. What is the formula of an alkane?
- 2. What are the first 10 alkanes (Mary eats peanut butter pizza her husband oscar never does)

#### 3. Draw the structure of propane

4. What is the formula for an alkene?

5. Compare the combustion of alkenes and alkanes.

#### 6. Draw the structure of propene.

7. Describe and explain the trend in boiling point as the number of carbons in an alkane increases

8. Describe and explain the trend in viscosity as the number of carbons in an alkane increases.

9. Explain how fractional distillation works.

10. Explain why cracking is used and how it works?

#### 12. Why are alkenes useful?

#### 13. What are monomers?

14. What two methods are used to form polymers and how do they differ?

#### 15. What is the functional group of an alcohol.

17. Describe two ways that alcohols are made - show the reactions.

18. Balance the equation for the combustion of ethanol with oxygen.

19. Describe the reaction of alcohol with sodium.

#### 20. What is the functional group for a carboxylic acid?

21. Draw the structure of ethanoic acid

22. Why are carboxylic acids considered weak acids?

**23**. Describe the reaction of a carboxylic acid with a carbonate.

24. What is the functional group of an ester?

25. Describe the reaction between an alcohol and carboxylic acid.

#### 26. What kind of reaction is this?



#### 28. What is required for a condensation polymerisation reaction?

ethanediol	
$\rm HO-CH_2-CH_2-OH  or  \rm HO-\_OH$	
and	
hexanedioic acid	
${\rm HOOC-CH_2-CH_2-CH_2-COOH} \   {\rm or}$	
нооссоон	
polymerise to produce a polyester:	
$nHO - \Box - OH + nHOOC - \Box - COOH \longrightarrow$	
(00-COCO) + 2nH <sub>2</sub> O	

### 28. What of molecule is $H_2NCH_2COOH$ (Hint its the monomer from which proteins are made)

#### 29. Draw this as a structure

#### 30. How are proteins made?