

Everyday Consumer Products

N4 & N5 Homework Questions

Answer questions as directed
by your teacher.

National 4 level questions are
first followed by National 5 level
questions.

National 4 Questions

1. Starch is a carbohydrate.
Identify the two correct statements about starch.

A	Starch is a polymer made in plants from glucose.
B	Starch is very soluble in water.
C	Iodine solution can be used to test for starch.
D	Starch is sweet.
E	Starch molecules are made of carbon and hydrogen only.

(2)

2. Glucose is made when green plants absorb light energy from the sun.
(a) Name the elements present in glucose.
(b) Describe the chemical test, including the result, for glucose.

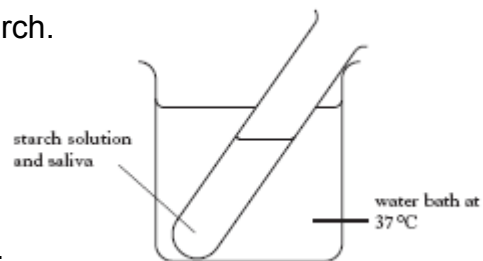
(2)

3. A student made some statements about glucose.
Identify the two correct statements about glucose.

A	Glucose is a carbohydrate.
B	Glucose is insoluble in water.
C	Glucose is made during photosynthesis.
D	Iodine solution can be used to test for glucose.
E	Glucose molecules are too large to pass through the gut wall.

(2)

4. Saliva contains an enzyme which breaks down starch.
(a) What is an enzyme?
(b) A student carried out an experiment to break down starch. He repeated the experiment at 100°C . What effect would this have on the activity of the enzyme?
(c) Glucose is produced when starch breaks down.
Write the molecular formula for glucose.



(1)


(3)

5. Ethanol for alcoholic drinks can be made from glucose. (1)
- (a) Write out a word equation for this process. (1)
- (b) The table below shows the relationship between the percentage of ethanol and the density of alcoholic drinks.

Percentage of ethanol (%)	40	50	60	70	80
Density of alcoholic drink (g/cm ³)	0.928	0.907	0.886	0.865	0.844

- (i) Write a general statement describing how the percentage of ethanol affects the density of the alcoholic drink. (1)
- (ii) The density of a particular brand of alcoholic drink is 0.970g/cm³. Predict the percentage of ethanol in this alcoholic drink. (1)

6.



The little pen-tailed tree shrew, found in the jungles of West Malaysia, feeds on nectar from the Bertam palm tree. This nectar contains glucose which ferments, producing solutions of up to 3.8% alcohol. Therefore, the tree shrew regularly drinks a solution which is equivalent to a man drinking 9 units of alcohol per day. It seems that the tree shrew never gets drunk because it is able to breakdown the alcohol much quicker than humans can.

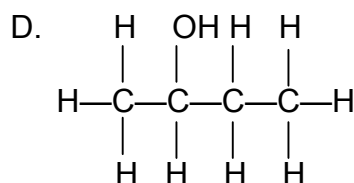
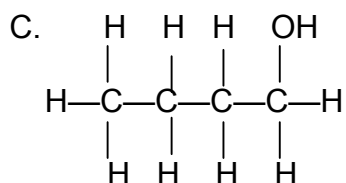
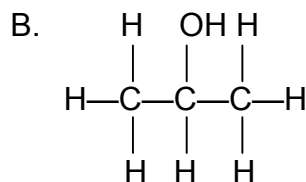
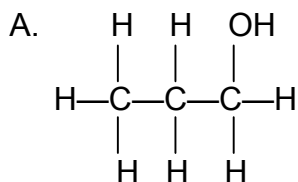
- (a) Name the process by which plants make glucose from carbon dioxide and water. (1)
- (b) What type of substance must be present in the nectar to allow the fermentation of glucose to take place? (1)
- (c) The alcohol produced is ethanol. Write its molecular formula and draw its full structural formula. (2)
- (d) Name the process used to increase the concentration of fermented products. (1)
- (e) Using information in the passage above, calculate the volume of alcohol solution the tree shrew drinks each day.

$$\text{Volume of alcohol solution} = \frac{\text{units of alcohol} \times 1.25}{\% \text{ of alcohol}} \quad (1)$$

7. Carbohydrates supply the body with energy. Explain why eating a mars bar (containing glucose) just before a race might be of more value to a sportsperson than eating bread (containing starch). (2)

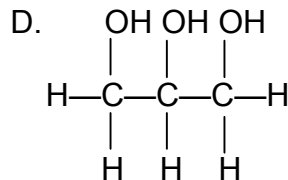
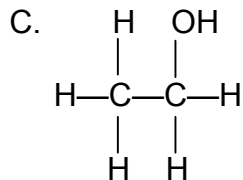
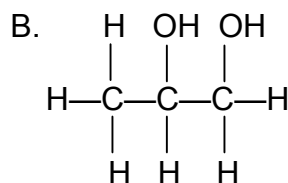
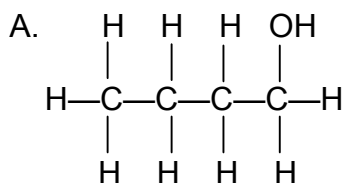
National 5 Questions

1. Which of the following alcohols has the highest boiling point?
(You may wish to use page 9 of the data booklet.)



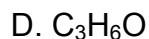
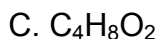
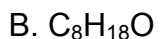
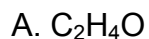
(1)

2. Which of the following alcohols is the **most** viscous?



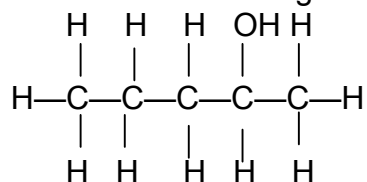
(1)

3. Which of the following represents the molecular formula of an alcohol?



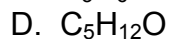
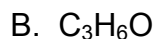
(1)

4. What is the systematic name of the following alcohol?



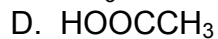
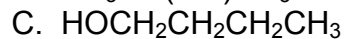
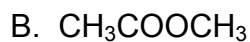
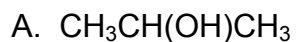
(1)

5. Which of the following is an isomer of propan-2-ol?



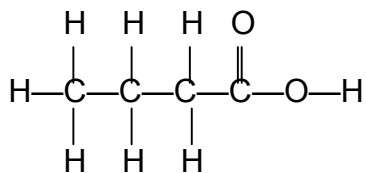
(1)

6. Which of the following organic compounds contains the carboxyl group?



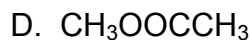
(1)

7. The systematic name for the following organic compound is



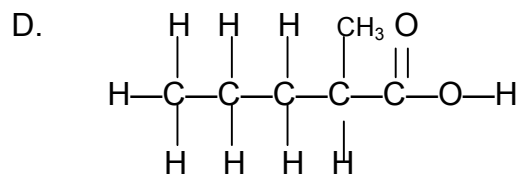
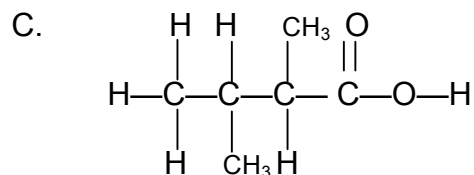
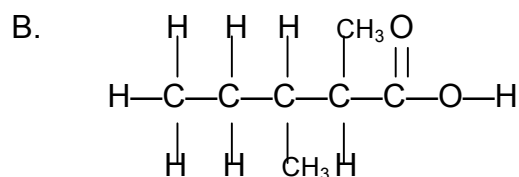
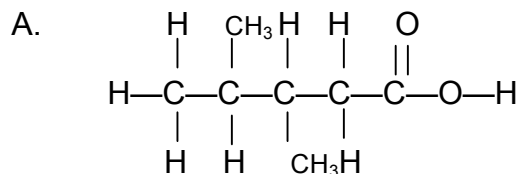
(1)

8. Which of the following is the structure for a carboxylic acid?



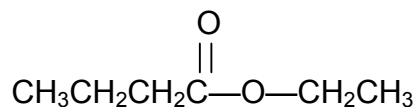
(1)

9. The full structural formula for 2,3- dimethyl pentanoic acid is



(1)

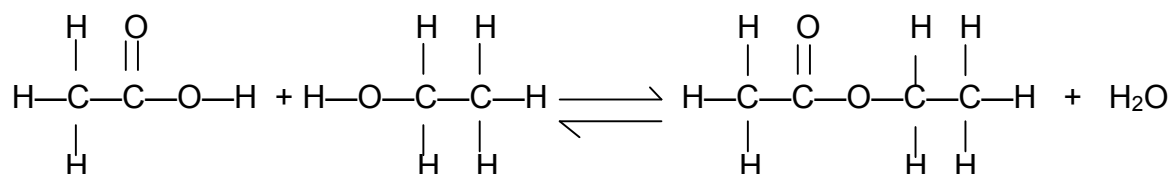
10. Rum flavouring is based on the compound with the formula shown.



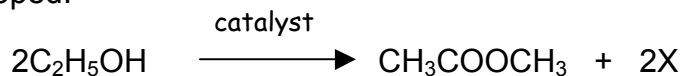
It can be made from

- A. ethanol and butanoic acid B. propanol and ethanoic acid
 C. butanol and methanoic acid D. propanol and propanoic acid (1)

11. Ethyl ethanoate can be made by reacting ethanoic acid and ethanol



- (a) Name this type of reaction (1)
 (b) A method of making ethyl ethanoate from ethanol **only**, has been developed.



- (i) Name substance X. (1)
 (ii) This method was developed for use in countries where ethanol is made from a renewable source. Name this source of ethanol. (1)

12. Carboxylic acids have many uses. A list of different carboxylic acids and their uses is given below.

Methanoic acid is used as an antibacterial agent in livestock feed. To prevent mould forming on bread propanoic acid is added during the baking process. Pentanoic acid is used as flavouring in food. For many skin ailments like warts, acne or psoriasis salicylic acid is added to help cure the ailment. Butanoic acid is used to make esters and polymers.

Present the above information as a table. (2)

13. Which of the following consumer products is least likely to contain esters?

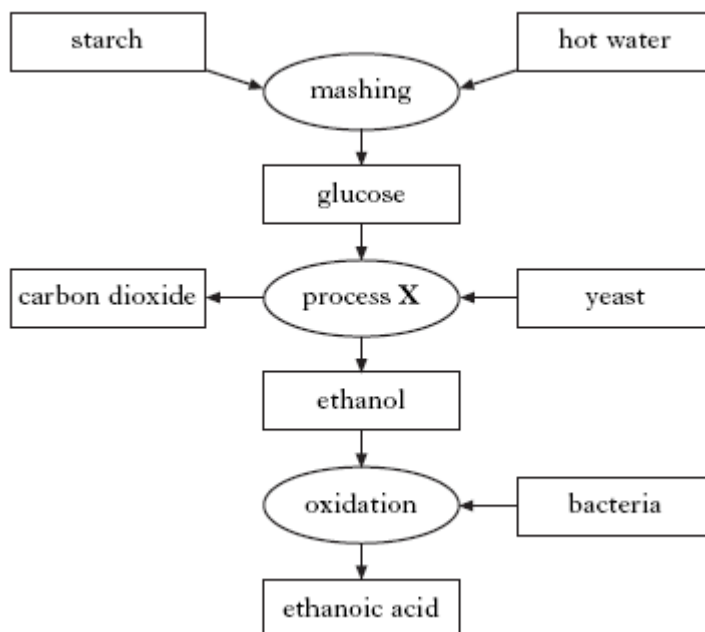
- A solvents B perfumes C toothpastes D flavourings (1)

14. An antibacterial gel contains two alcohols, ethanol and propan-1-ol.
- (a) Write the general formula for alcohols. (1)
- (b) Draw an isomer of propan-1-ol. (1)
- (c) When alcohols are oxidised, carboxylic acids are produced



Draw the full structural formula for the carboxylic acid produced when propan-1-ol is oxidised. (1)

15. The flow diagram shows some of the stages in the manufacture of ethanoic acid.



- (a) Using the flow diagram write the word equation for the reaction taking place in the mashing process. (1)
- (b) Name process X. (1)
- (c) Draw the full structural formula for ethanoic acid. (1)
- (d) Ethanoic acid can be reacted to form an ester which is used as a solvent in nail varnish remover. What type of molecule should ethanoic acid be reacted with? (1)

16. Esters are formed by the reaction between which two functional groups?

- A a hydroxyl group and carboxyl group
 B a hydroxyl and a carbonyl group
 C a hydroxide group and a carboxyl group
 D a hydroxide group and a carbonyl group

(1)

17. Ethanol is a member of the alcohol homologous series.

(a) Ethanol can be manufactured from ethene as shown in the following addition reaction.



What other name can be given to this type of addition reaction?

(1)

(b) Ethanol can be used to make esters. State a use for esters.

(1)

(c) Butan-2-ol is another member of the alcohols.

Draw the full structural formula of an isomer of butan-2-ol and name it.

(2)

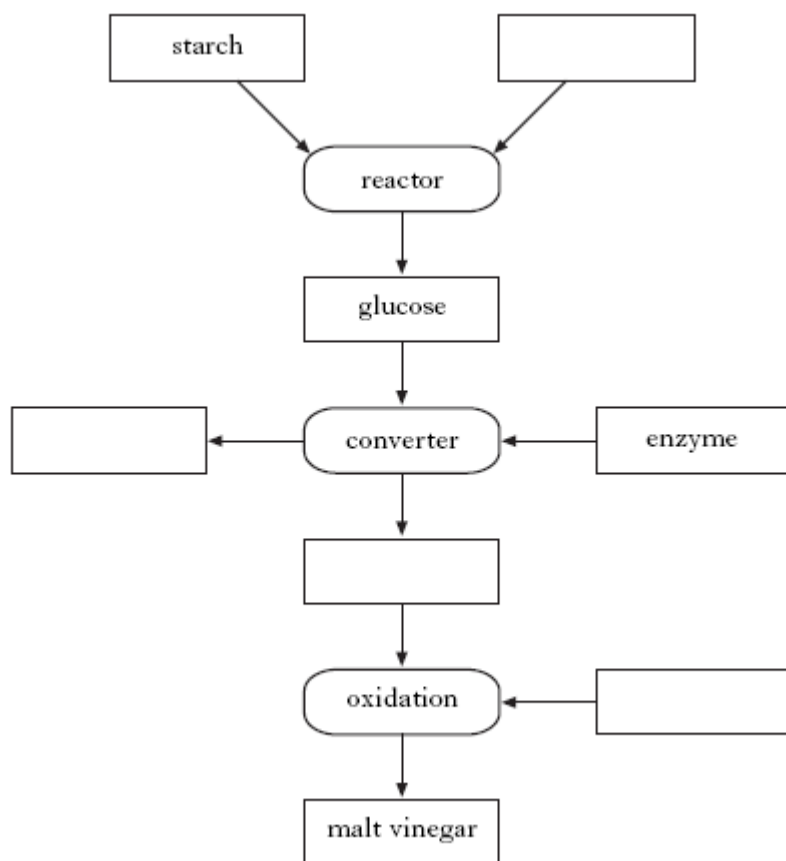
18. In the manufacture of malt vinegar, starch reacts with water to produce glucose.

Glucose is converted to carbon dioxide and ethanol using an enzyme.

Ethanol is oxidised, by bacteria, producing malt vinegar.

(a) Copy the flow diagram and use the information to complete it.

(2)



(b) Write a balanced chemical equation for the reaction of glucose using an enzyme.

(2)