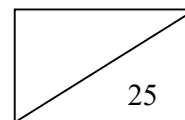


Name: _____ () Class: _____ Date: _____

AFL Worksheet
Alcohols and Carboxylic Acids



Multiple-Choice Questions (10 marks)

1. Ethanol can be produced from ethene by _____.

A addition	B oxidation
C reduction	D substitution

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2. Fermentation occurs when yeast is added to sugar solution. Which of these changes would speed up the fermentation process?

A Increasing the temperature above 35°C	
B Placing the fermenting flask in boiling water	
C Using distilled water when making the sugar solution	
D Making the sugar solution more concentrated	

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3. An alcohol contains 50% by mass of oxygen. Which of these alcohols could it be?

A Butanol	B Ethanol
C Methanol	D Propanol

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4. Which of the following substances could be a carboxylic acid?

A CH ₂ O	B CH ₂ O ₂
C C ₂ H ₃ O ₂	D C ₂ H ₄ O ₂

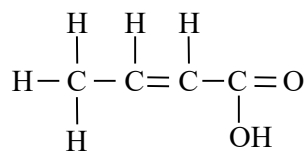
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5. Which of the following reactions does **not** produce water?

A Combustion of ethanol	
B Fermentation of glucose	
C Reaction of ethanoic acid with sodium carbonate	
D Oxidation of ethanol to ethanoic acid	

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6. An organic compound, **Y**, has the following structural formula.



Which of the following statements about **Y** is **not** correct?

- A It changes red litmus to blue.
- B It is an unsaturated compound.
- C It has a relative molecular mass of 86.
- D It decolourises aqueous bromine. ()

7. Which of these statements are true about carboxylic acids?

- 1 They react with magnesium to produce oxygen gas.
- 2 They are fully ionised in solution.
- 3 They neutralise bases to form a salt and water.
- 4 They give off carbon dioxide gas when added to carbonates.

- A 1, 2 and 3
- B 2, 3 and 4
- C 3 and 4
- D 1, 2, 3 and 4 ()

8. Ethanol is oxidised when it is heated with acidified potassium manganate(VII) solution. What colour change is observed?

- A Colourless to purple
- B Purple to colourless
- C Orange to green
- D Reddish-brown to colourless ()

9. An ester is formed by warming an alcohol with a carboxylic acid. A few drops of concentrated sulfuric acid are also added. What is the purpose of adding sulfuric acid?

- A To catalyse the reaction
- B To increase the yield of the ester
- C To neutralise any excess alcohol
- D To slow down the evaporation of reactants and products ()

10. What is the product formed when propanol, $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$, reacts with ethanoic acid, CH_3COOH ?

- A $\text{CH}_3\text{COOCH}_2\text{CH}_2\text{CH}_3$
B $\text{CH}_3\text{CH}_2\text{CH}_2\text{COOCH}_3$
C $\text{CH}_3\text{CH}_2\text{COOCH}_2\text{CH}_3$
D $\text{CH}_3\text{COOCH}_2\text{CH}_3$

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Structured Questions (15 marks)

11. Consider the following four compounds:



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Q

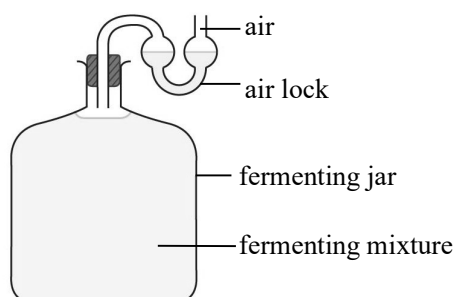
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State the compound which

- (a) has the empirical formula CH_2O ; _____ [1]
(b) reacts with acidified potassium manganate(VII); _____ [1]
(c) has a sweet and pleasant smell; _____ [1]
(d) decolourises bromine water; _____ [1]
(e) produces hydrogen when reacted with metals. _____ [1]

12. A fermenting flask or a demijohn is shown below. It is used in the fermentation of sugars during wine making.



- (a) (i) What is the gas given off during the fermentation process? [1]

(ii) Describe how this gas may be identified. [1]

(b) Why is it important to prevent air from entering the flask? [1]

(c) Why does the fermentation process gradually stop when the temperature is raised above 35°C? [1]

(d) State how pure ethanol is obtained from the fermentation process. [1]

13. An organic compound, **Z**, has the structural formula $\text{CH}_3\text{CH}_2\text{COOC}_2\text{H}_5$.

(a) (i) Describe how **Z** can be produced and name the reaction involved. [3]

(ii) Write a chemical equation for the reaction in (i). [1]

(b) Identify the organic compound **Z**. [1]
