NAME

## Year 12 Chemistry **Organic & Biological Chemistry** Formative Test: 4.1 - 4.11

1. Write the systematic name for the compound below:

$$CH_{3} - CH - CH - CO - CH_{3}$$

$$F F$$
/2

12

12

12

12

13

12

12

12

12

/1

2.

(a) Write an equation for the conversion of a disaccharide to glucose.

(b) State two conditions necessary for fermentation to occur.

3. Consider the compound below:

$$\begin{array}{c} \mathsf{CH}_3\\ \mathsf{HO}-\mathsf{CH}_2-\overset{|}{\underset{\mathsf{OH}}{\mathsf{C}}}-\mathsf{CH}_3\\ \mathsf{OH}\end{array}$$

(a) Write the systematic name for the compound above.

(b) State and explain the colour change that would occur if a drop of acidified dichromate were added to a sample of the compound above and the mixture warmed. 13

4.

- (a) Draw the structural formula for hexanal.
- (b) Draw or name the organic product of the reaction between hexanal and Tollen's reagent. 12
- (c) State and explain, with the aid of an equation, what would be observed in the reaction between hexanal and Tollen's reagent.
- 5. Consider the compound below:

$$\begin{array}{c} \mathbf{CH}_3 & \mathbf{O} \\ | & | \\ \mathbf{CH}_3 - \mathbf{CH} - \mathbf{CH}_2 - \mathbf{C} - \mathbf{OH} \end{array}$$

- (a) Circle and name any functional groups in the compound above.
- (b) Write a molecular formula equation for the ionisation of the compound above in water.
- (c) State what would be observed if a solution of sodium bicarbonate was added to a sample of the above compound. /1

6.

- (a) Draw the structural formula for 2-methyl propan-2-anime. 12 12
- (b) Explain why 2-methyl propan-2-anime is able to react with hydrochloric acid.
- (c) State whether 2-methyl propan-2-anime is a primary, secondary or tertiary amine. /1

7. Consider the compound below:

$$\mathbf{CH}_{3} - \mathbf{C} - \mathbf{O} - \mathbf{CH}_{3}$$

- (a) Write the systematic name for the compound above.
- (b) Name or draw the reactants that would form the compound above.
- (c) State one reaction condition that would be used in the formation of the compound above.
- (d) With the aid of an example, explain why the boiling point of the compound above differs from the boiling point of its isomeric acids. 13

8. Consider the amino acid below.

## $\mathbf{O}_{||} \\ \mathbf{H}_{2}\mathbf{N} - \mathbf{C}\mathbf{H}_{2} - \mathbf{C} - \mathbf{O}\mathbf{H}$

(a) Draw the structural formula for the self-ionised form of the amino acid above.
(b) Draw a section of the protein chain formed from the amino acid above.
(c) State why formation of a protein chain is classified as a condensation reaction.
(d) Explain how water molecules are able to be attracted to the protein chain.
(e) Explain why increasing temperature could alter the biological function of the protein.

9. Consider the oil below:



(a) Draw the structural formula for one product of the hydrolysis of the oil above.	/2
(b) Identify the likely source of the oil above.	/1
(c) Explain what would would be observed if a drop of iodine solution was added to the oil above.	/3
(d) Name the reaction that would increase the melting point of the oil above.	/1

10.

- (a) State the definition of a carbohydrate.
- (b) Draw the monosaccharide that would be formed by hydrolysis of the carbohydrate below:



(c) State why the ring form of the monosaccharide formed is not able to react with Tollen's reagant. /1

TOTAL /56

/1

12