



Christ Church
Grammar School

Year 12 Chemistry

Organic Chemistry Test 2019

Time allowed: 45 minutes

Name:

Teacher: DGM JT CEM JJF

Mark =/47

SECTION 1

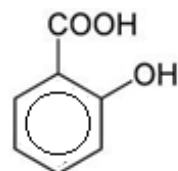
MULTIPLE CHOICE 10 Questions

10 marks

1. The formula of the isomer of hexane expected to have the lowest boiling point could be written as
- A. $(\text{CH}_3)_2\text{CHCH}_2\text{CH}_2\text{CH}_3$
 - B. $\text{CH}_3\text{CH}_2\text{CH}(\text{CH}_3)_2$
 - C. $\text{CH}_3\text{CH}_2\text{C}(\text{CH}_3)_3$
 - D. $\text{CH}_3(\text{CH}_2)_4\text{CH}_3$
2. Which one of the following is the empirical formula of 1-propyl pentanoate?
- A. $\text{C}_8\text{H}_{16}\text{O}_2$
 - B. $\text{C}_4\text{H}_8\text{O}$
 - C. $\text{C}_7\text{H}_{14}\text{O}_2$
 - D. CH_2O
3. Which one of the following pairs of compounds would produce biodiesel if reacted together, using an appropriate catalyst?
- A. A triglyceride and a strong base.
 - B. A carboxylic acid and a strong oxidising agent.
 - C. An alcohol and a triglyceride.
 - D. A fatty acid and an ester.
4. Which of the following molecules will engage in hydrogen bonding with water?
- I. propanone
 - II. propanal
 - III. propan-2-ol
 - IV. 1-propyl propanoate
 - V. propanamine
- A. all of them
 - B. II, III and V only
 - C. III and V only
 - D. II and III only

5. An oxidation product of 3-methylbutan-2-ol could be
- A. methyl butanone
 - B. 3-methylbutanal
 - C. 3-methylbutanone
 - D. 3-methylbutanoic acid
6. Which of the following is the most likely product when propene and hydrogen bromide gas are reacted together?
- A. $\text{CH}_3\text{CHBrCH}_2\text{Br}$
 - B. $\text{CH}_2\text{BrCH}_2\text{CH}_2\text{Br}$
 - C. $\text{CH}_3\text{CHBrCH}_3$
 - D. $\text{CH}_3\text{CH}_2\text{CHBr}_2$
7. Which of the following compounds has the lowest vapour pressure?
- A. $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{OH}$
 - B. $\text{CH}_3\text{CH}_2\text{CH}_2\text{OHCH}_3$
 - C. $\text{CH}_3\text{CH}_2\text{CH}_2\text{CHO}$
 - D. $\text{CH}_3\text{CH}_2\text{COCH}_3$

8. Ethyl salicylate can be manufactured from salicylic acid. The structure of salicylic acid is shown to the right.



To convert salicylic acid into aspirin, with what other substance should it be reacted?

- A. ethanol
- B. ethanoic acid
- C. acidified potassium dichromate
- D. sodium hydroxide solution

SECTION 2

SHORT ANSWERS

37 marks

Question 11

4 marks

Draw the structural formulae of the following compounds, showing **ALL** bonds and atoms:

Name	Structure
(a) Draw an alcohol that can be oxidised to butanal	
(b) Draw a compound with the molecular formula $C_4H_8O_2$ and a fruity odour	
(c) Draw a product formed when propene is hydrated	
(d) Draw the compound formed when your product from '(c)' is completely oxidised with acidified dichromate	

Question 12**7 marks**

Write a chemical equation/s to show how the following organic products could be made. Include relevant catalysts.

(a) ethanol 2 marks

(b) 2-propyl ethanoate 2 marks

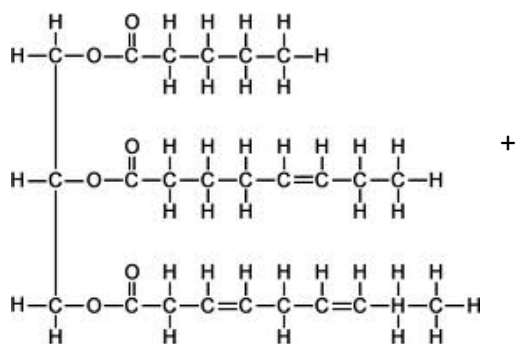
(c) propanone 3 marks

Oxidation
Reduction
Overall

Question 13**7 marks**

- (a) Using the following triglyceride as a starting material, to write a reaction to show how a soap is formed.

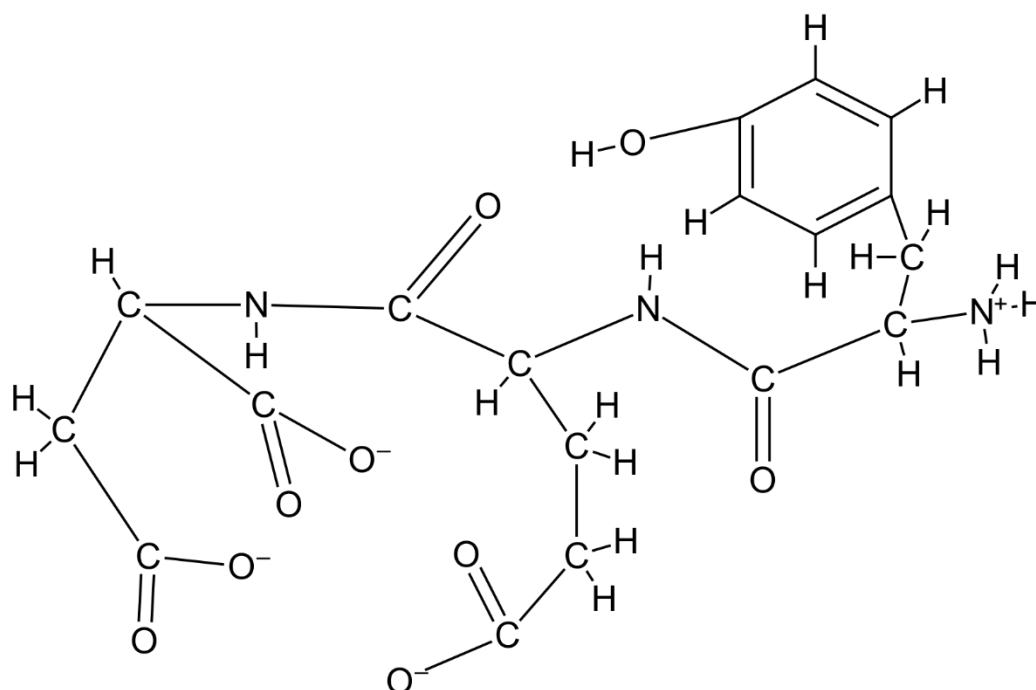
3 marks



Question 14

8 marks

Below is a structural diagram of a tripeptide.

(a) Name the three α amino acids that form the tripeptide.

3 mark

(b) What pH environment is the tripeptide in? Explain your answer

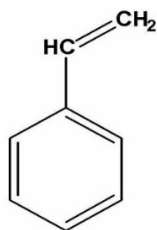
2 marks

(c) On the above diagram label with;

- (i) **A:** the C (carboxyl)- terminal 1 mark
- (ii) **B:** a peptide bond 1 mark
- (iii) **C:** where a hydrogen bond could form within the tripeptide. 1 mark

Question 15**5 marks**

The diagram below shows the benzene derivative, styrene.

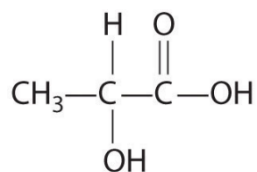


- (a) In the space below, draw 3 repeating units, showing the polymer that can be formed.

2 marks

- (b) What is the name given to the type of reaction used to make this polymer? 1 mark

The diagram below shows the structure of lactic acid, which can form a polymer.



- (c) Draw a structure of the polymer formed from lactic acid showing 2 repeating units.

2 marks

