2019
VCE
Chemistry
Trial Examination

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VICTORIAN CERTIFICATE OF EDUCATION
Year 2019

STUDENT NUMBER Letter

Figures										
Words										

CHEMISTRY

Trial Written Examination

Reading time: 15 minutes
Writing time: 2 hours 30 minutes

QUESTION AND ANSWER BOOK

Structure of book

Section	*Number of questions*	*Number of questions to be answered*	*Number of marks*
A	30	30	30
B	11	11	90
			Total 120

- Students are permitted to bring into the examination room: pens, pencils, highlighters, erasers, sharpeners, rulers and one scientific calculator.
- Students are NOT permitted to bring into the examination room: blank sheets of paper and/or white out liquid/tape.

Materials supplied
- Question and answer book of 36 pages.
- A data book
- Answer sheet for multiple-choice questions.

Instructions
- Write your **student number** in the space provided above on this page.
- Check that your **name** and **student number** as printed on your answer sheet for multiple-choice questions are correct, **and** sign your name in the space provided to verify this.
- All written responses must be in English.

At the end of the examination
- Place the answer sheet for multiple-choice questions inside the front cover of this book.
- You may keep the data book

Students are NOT permitted to bring mobile phones and/or any other unauthorised electronic devices into the examination room.

VCE CHEMISTRY 2019
Trial Written Examination

MULTIPLE-CHOICE ANSWER SHEET

Student Name _____

Student Number _____

Signature _____

If your name or number on this sheet is incorrect, notify the Supervisor.
Use a **PENCIL** for **ALL** entries. For each question, shade the box that indicates your answer.
All answers must be completed like **THIS** example.

A	■	C	D

Marks will **NOT** be deducted for incorrect answers.
NO MARK will be given if more than **ONE** answer is completed for any question.
If you make a mistake, **ERASE** the incorrect answer. **DO NOT** cross it out.

ONE ANSWER PER LINE **ONE ANSWER PER LINE**

1.	A	B	C	D	16.	A	B	C	D
2.	A	B	C	D	17.	A	B	C	D
3.	A	B	C	D	18.	A	B	C	D
4.	A	B	C	D	19.	A	B	C	D
5.	A	B	C	D	20.	A	B	C	D
6.	A	B	C	D	21.	A	B	C	D
7.	A	B	C	D	22.	A	B	C	D
8.	A	B	C	D	23.	A	B	C	D
9.	A	B	C	D	24.	A	B	C	D
10.	A	B	C	D	25.	A	B	C	D
11.	A	B	C	D	26.	A	B	C	D
12.	A	B	C	D	27.	A	B	C	D
13.	A	B	C	D	28.	A	B	C	D
14.	A	B	C	D	29.	A	B	C	D
15.	A	B	C	D	30.	A	B	C	D

SECTION A – Multiple-choice questions

Answer **all** questions in pencil on the answer sheet provided for multiple-choice questions.

Choose the response that is **correct** for the question.

A correct answer scores 1, an incorrect answer scores 0.

Marks will **not** be deducted for incorrect answers.

No marks will be given if more than one answer is completed for any question.

Question 1

The following equation represents the combustion of octane.

$$2C_8H_{18}(g) + 25O_2(g) \rightarrow 16CO_2(g) + 18H_2O(g) \quad \Delta H = -10\ 108\ \text{kJ mol}^{-1}$$

The energy produced, in kJ, by the complete oxidation of 45 kg of octane is

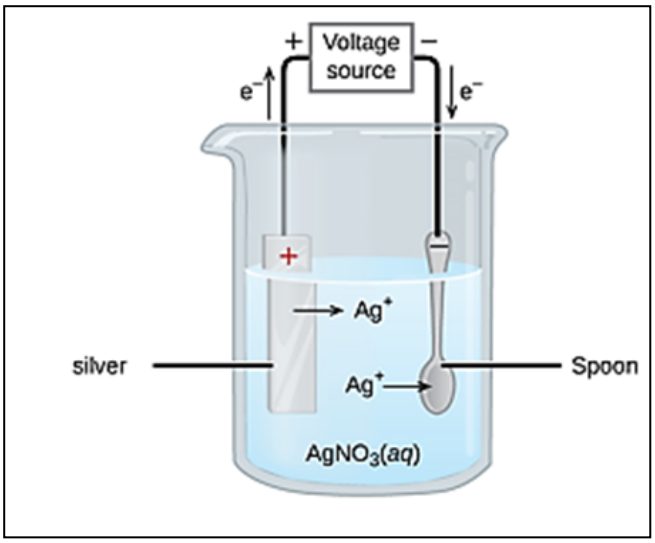
A. 2.0×10^6
B. 4.0×10^6
C. 2.0×10^3
D. 4.0×10^3

Question 2

One of the methods used in preventing iron pipes from corrosion, is to connect them to a magnesium bar buried in the ground so that the magnesium corrodes in preference to the iron. If the average current flowing between the two metals is 2.0×10^{-6} A, the amount of magnesium metal, in mol, reacting each second, would be

A. 1.0×10^{-11}
B. 2.1×10^{-11}
C. 4.1×10^{-11}
D. 0.19

Question 3



When silver plating the spoon in the process shown above, the spoon in this cell is

A. the anode, and is connected to the positive terminal of the power supply.
B. the anode, and is connected to the negative terminal of the power supply.
C. the cathode, and is connected to the positive terminal of the power supply.
D. the cathode, and is connected to the negative terminal of the power supply.

Question 4

Which one of the following compounds would be the most viscous?

A. $CH_3(CH_2)_5CH_3$
B. $CH_3(CH_2)_{10}CH_3$
C. $CH_3(CH2)_7CH_3$
D. $CH_3(CH_2)_{12}CH_3$

Question 5

The following table gives the percentage composition by mass of protein, carbohydrate and fats and oils of four different types of foods.

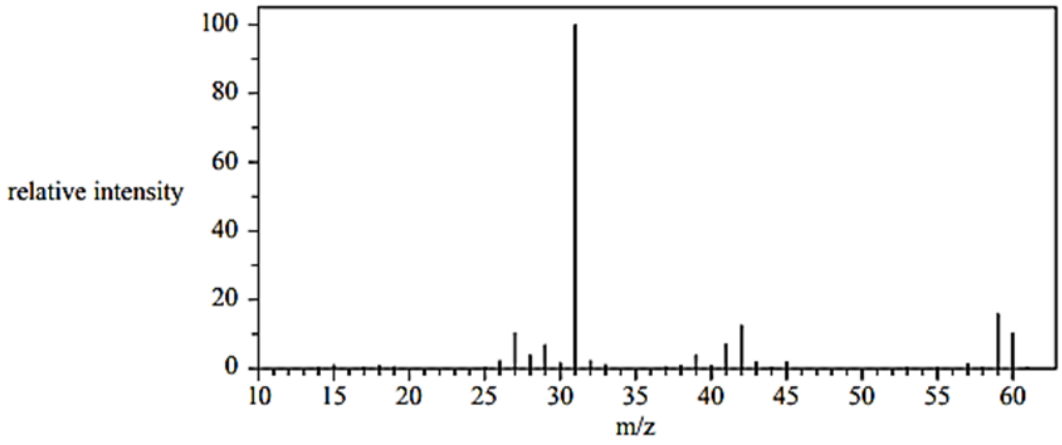
Food	% protein content	% carbohydrate content	% fats and oils content
eggs	13.0	1.1	11.0
beef	26.0	0.0	4.0
bread	9.0	35.0	3.0
cheese	25.0	1.3	33.0

Based on the information above, which one of the following servings has the highest energy content?

A. 100g of eggs
B. 100g of beef
C. 100g of bread
D. 100g of cheese

Question 6

This is the mass spectrum of alkanol X.



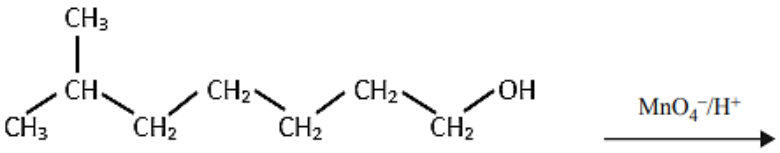
Source: National Institute of Advanced Industrial Science and Technology

What is the name of alkanol X?

A. butan-1-ol
B. ethanol
C. methanol
D. propan-1-ol

Question 7

Name the product of the reaction below.



A. 7- methyloctanoic acid
B. 2- methyloctanoic acid
C. 6- methylheptanoic acid
D. 2- methylheptanoic acid

Question 8

Methane is considered to be a renewable energy source when it is produced from

A. natural gas.
B. coal seam gas.
C. microbial decomposition.
D. methane hydrate.

Question 9

When more food is consumed than the body's energy requirements, the excess energy is stored by the body. In adults, this excess energy is usually stored as

A. glucose and fats.
B. glycogen and fats.
C. starch and glucose.
D. protein and carbohydrates.

Question 10

Why is it difficult to use biodiesel in cold climates?

A. It has a high viscosity and a high flash point.
B. It has a high viscosity and a low flash point.
C. It has a low viscosity and a high flash point.
D. It has a low viscosity and a low flash point.

Question 11

Which one of the following partial equations best describes the reaction at the cathode when a 1.0 M iron(III) chloride solution is electrolysed using graphite electrodes?

A. $Fe(s) \rightarrow Fe^{3+}(aq) + 3e^-$
B. $Fe^{2+}(aq) + 2e^- \rightarrow Fe(s)$
C. $Fe^{2+}(aq) \rightarrow Fe^{3+}(aq) + e^-$
D. $Fe^{3+}(aq) + e^- \rightarrow Fe^{2+}(aq)$

Question 12

When comparing biofuels with fossil fuels, which one of the following statements is **incorrect**?

A. The chemical energy in both fossil fuels and biofuels has originated from solar energy.
B. The use of both is carbon neutral.
C. Both fossil fuels and biofuels are made from biological material.
D. Biofuels are sustainable but fossil fuels are not.

Question 13

The process of oxygen transportation in the body involves the complex molecules haemoglobin and oxyhaemoglobin. The process by which this happens can be presented by this equation,

$$\text{haemoglobin} + \text{oxygen} \rightleftharpoons \text{oxyhaemoglobin}$$

If carbon monoxide is present in the air, it can cause poisoning. This is because

A. the equilibrium constant K, for the above reaction is reduced.
B. CO reacts with oxygen to form CO_2, driving the equilibrium to the left.
C. the equilibrium shifts to the left because haemoglobin bonds strongly with CO.
D. CO catalyses the decomposition of oxyhaemoglobin into haemoglobin and oxygen.

Question 14

Which of the following is **not** a correct comparison between galvanic cells and electrolytic cells?

A. In both galvanic cells and electrolytic cells, oxidation occurs at the anode.
B. In both galvanic and electrolytic cells, the redox reactions occurring are spontaneous and exothermic.
C. Galvanic cells convert chemical energy to electrical energy, but electrolytic cells convert electrical energy to chemical energy.
D. In galvanic cells the anode is the negative electrode, but in electrolytic cells the anode is the positive electrode.

Question 15

The mass of one molecule of octane is

A. 114 g

B. $114 \times 6.02 \times 10^{23}$ g

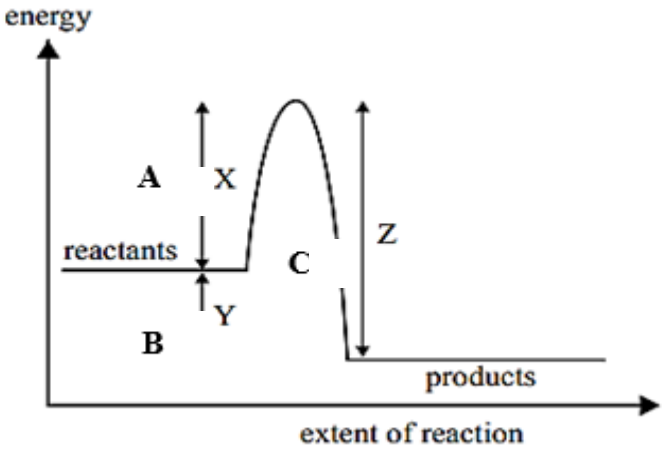
C. $\frac{114}{6.02 \times 10^{23}}$ g

D. $\frac{6.02 \times 10^{23}}{114}$ g

Use the following diagram to answer questions 16 and 17.

Consider the following reaction:
$CH_3CH_2Cl_{(aq)} + OH^-_{(aq)} \rightarrow CH_3CH_2OH_{(aq)} + Cl^-_{(aq)}$

Below is the energy change diagram for this reaction when it reaches completion in an aqueous solution.



Question 16

A reaction occurs between a CH_3CH_2Cl molecule and an OH^- ion

A. every time they collide.
B. only when they collide with an energy greater than energy X.
C. only when they collide with exactly the energy represented by X.
D. only when they collide with an energy equal to Z – X.

Question 17

An appropriate catalyst for this reaction will change the value of

A. X only.
B. Y only.
C. X and Z only.
D. X, Y and Z.

Question 18

A large polyethene molecule has a relative molecular mass of 1.4×10^4. The number of mol of carbon atoms in the molecule would be closest to

A. 250
B. 1000
C. 3.92×10^5
D. 7.84×10^5

Question 19

What is the systematic name for the following semi-structural formula?
$(CH_3)_2C(OH)CHClCH_2CH_2CH_3$

A. 3-chloro-dimethylpentan-2-ol
B. 3-chloro-4,4-dimethylbutan-2-ol
C. 3-chloro-2-methylhexan-2-ol
D. 3-chloro-2-methylpentan-4-ol

Question 20

The principle, governing chemical equilibrium, known as *Le Chatelier's Principle*

A. works to make equal the forward and reverse rates of a chemical reaction.
B. applies to homogeneous solutions only.
C. applies to all chemical reactions.
D. gaseous reactions only.

Question 21

The two equations below represent reactions that involve two different oxides of sulfur:

$2S_{(s)} + 3O_{2(g)} \rightarrow 2SO_{3(g)}$ $\Delta H = -800$ kJ mol^{-1}

$2SO_{2(s)} + O_{2(g)} \rightarrow 2SO_{3(g)}$ $\Delta H = -200$ kJ mol^{-1}

Based on the above information, the ΔH value for the reaction $S_{(s)} + O_{2(g)} \rightarrow SO_{2(g)}$ would be

A. – 600 kJ mol^{-1}
B. – 400 kJ mol^{-1}
C. – 300 kJ mol^{-1}
D. – 100 kJ mol^{-1}

Question 22

When a protein is heated to 100°C, the part of the protein structure which is least affected is the

A. primary structure.
B. secondary structure.
C. tertiary structure.
D. quaternary structure.

Question 23

Which one or more of the following changes would shift the position of equilibrium **to the right** for the reaction below?

$$A(aq) + 2B(aq) \rightleftharpoons 2C(aq) + D(aq) \quad \Delta H = +100 \text{ kJ mol}^{-1}$$

I. Adding a catalyst
II. Increasing the temperature
III. Adding more reactant *A*
IV. Decreasing the volume of the solution

A. **I** only
B. **I** and **II** only
C. **II** and **III** only
D. **III** and **IV** only

Question 24

When aluminium oxide, Al_2O_3, is heated to high temperatures, it decomposes to produce aluminium metal according to the following thermochemical equation.

$$2Al_2O_{3(s)} \rightarrow 4Al_{(s)} + 3O_{2\,(g)};\ \Delta H = +3352\ \text{kJ mol}^{-1}$$

When 200 g of aluminium is produced, the heat energy absorbed is

A. 9320 kJ
B. 2330 kJ
C. 1210 kJ
D. 6207 kJ

Question 25

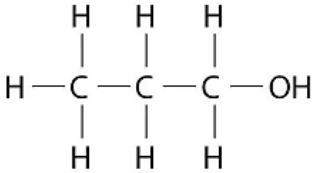
Which one of the following statements is true about all 2-amino acids?

All 2-amino acids

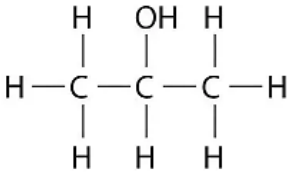
A. are synthesised in the human body.
B. have an $–NH_2$ and a –COOH group attached to the same carbon atom.
C. contain a peptide group.
D. contain an $–NH_2$ group and an –OH group attached to the same carbon atom.

Question 26

Consider the following compounds.



Compound I



Compound II

Which one of the following statements is **not** true?

A. The low resolution ^1H NMR spectrum of I has four peaks, and that of II has three peaks.
B. The mass spectrum of both compounds will show a peak at a mass-to-charge ratio of 60.
C. The ^{13}C NMR spectrum of compound I has three peaks, and that of compound II has two peaks.
D. The fingerprint region of the IR spectra will be identical for both compounds.

Question 27

Which one of the substances below provides the lowest amount of energy per gram for the human body?

A. cellulose
B. stearic acid
C. glycine
D. starch

Question 28

The type of bonding mainly responsible for the helical secondary structure of a protein is

A. dispersion forces.
B. hydrogen.
C. covalent.
D. ionic.

Question 29

The carbohydrate produced by the reaction between the two molecules shown above is

A. maltose.
B. sucrose.
C. galactose.
D. lactose.

Question 30

The class of reactions known as **condensation** is best described as

A. a combination of two molecules with the production of another small molecule.
B. a replacement of one atom with another atom.
C. a reaction with water.
D. a reaction with oxygen.

END OF SECTION A

Instructions for Section B

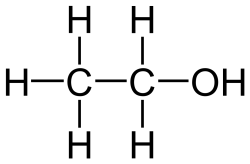
Answer all questions in the spaces provided.

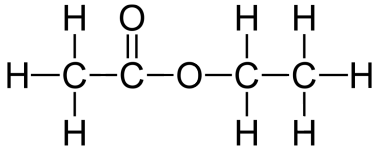
To obtain full marks for your responses you should

- give simplified answers with an appropriate number of significant figures for all numerical questions; unsimplified answers will not be given full marks.
- show all working in your answers to numerical questions. No credit will be given for an incorrect answer unless it is accompanied by details of the working.
- make sure all chemical equations are balanced and that the formulas for individual substances include an indication of state; for example, $H_2(g)$; NaCl(s)

Question 1 (6 marks)

Consider the following structures of two organic molecules.

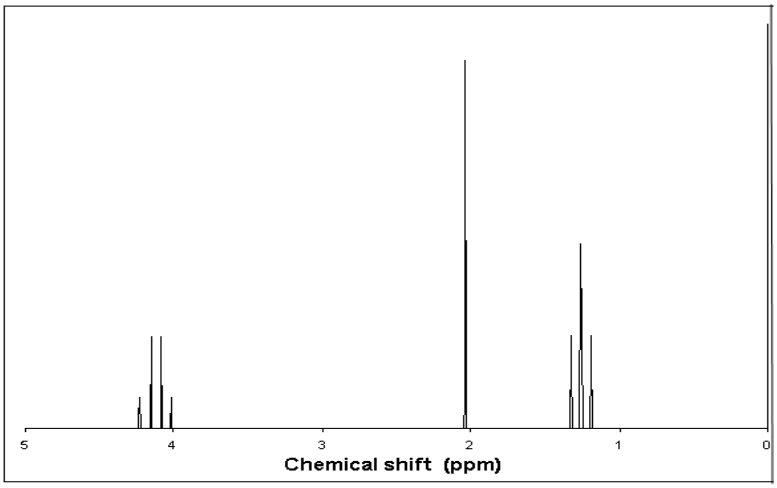




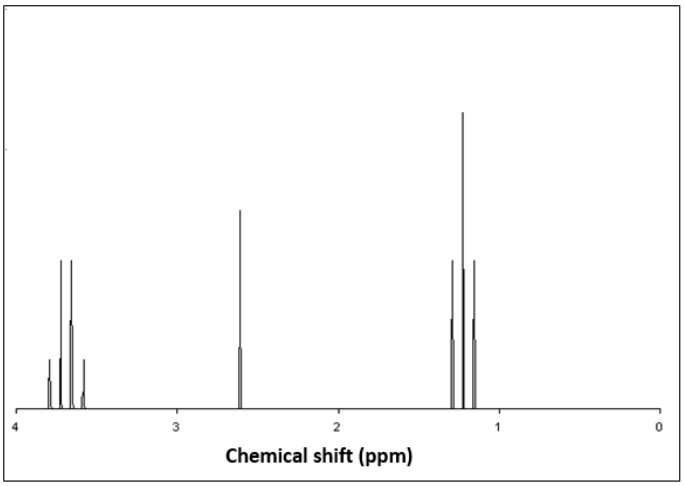
a. i. Which of these two compounds, does each of the following ^{1}H NMR spectra represent?
Both spectra have the same vertical scale.

(2 marks)

Spectrum A



Spectrum B



Name_____ Name_____

Question 1 (continued)

a. ii. Explain the reasons for your answer in **(i)**.

Spectrum A

_____

_____

_____

(1 mark)

Spectrum B

_____

_____

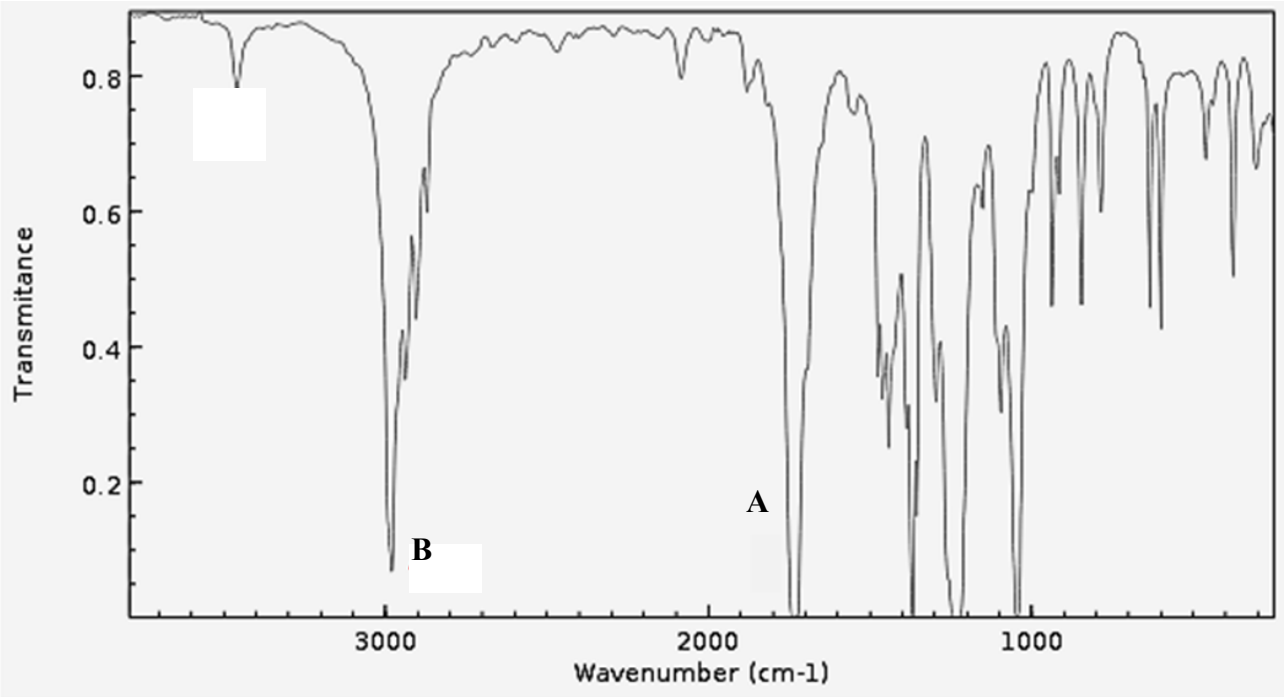
_____

(1 mark)

Question 1 (continued)

b. Examine the IR spectrum of ethyl ethanoate shown below.
Which bonds correspond to the absorption peaks labelled **A** and **B**?

Explain how you obtained your answer for each peak.



A =

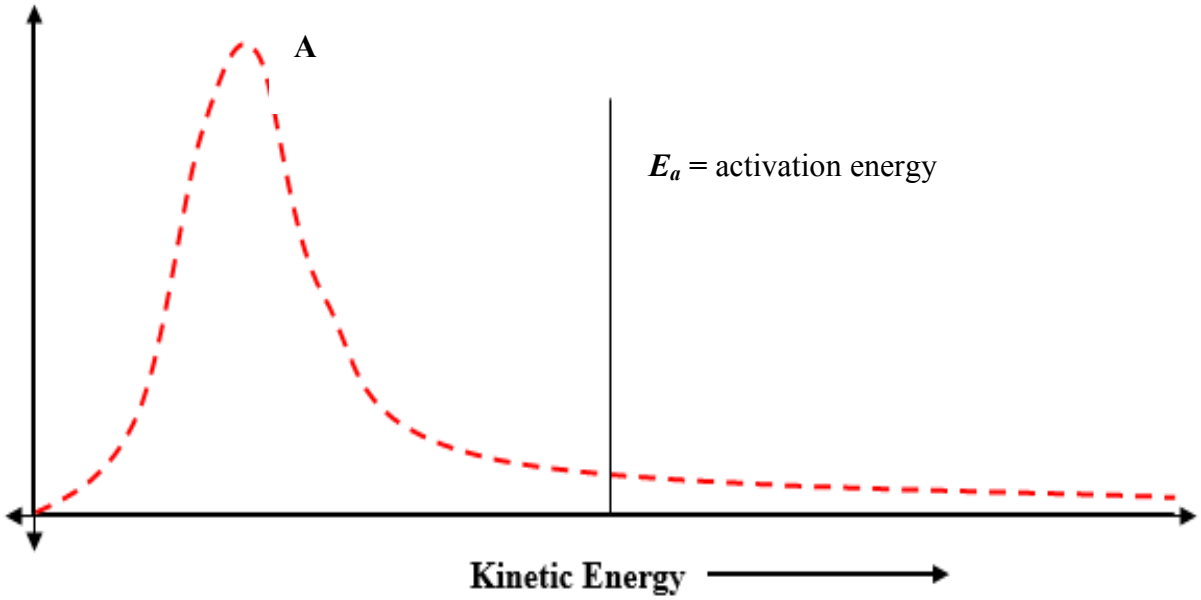
(1 mark)

B =

(1 mark)

Question 2 (5 marks)

The following graph **A** shows the distribution of kinetic energies of molecules in a gaseous mixture at temperature T_1.



a. What does the *Y* axis represent on the graph above?

(1 mark)

---

b. On the diagram above, draw a new graph of the Maxwell-Boltzmann distribution when there is an increase in temperature to T_2. (call this graph **Z**)

(2 marks)

Question 2 (continued)

c. Explain the change of graph with the rise in temperature. Discuss what happens to the gas molecules and the activation energy E_a.

(2 marks)

_____

_____

_____

_____

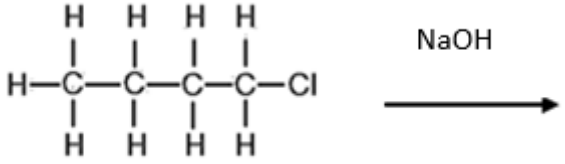
_____

Question 3 (8 marks)

For each of the organic reactions below,

a. Complete the reaction by drawing the structural or the semi-structural formula of the product. Write the name of the product formed in each of the reactions.

i.



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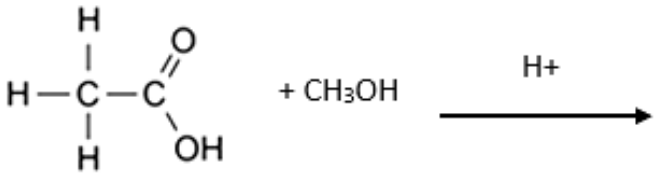
(1 mark)

Name of product: _____

(1 mark)

ii.



……

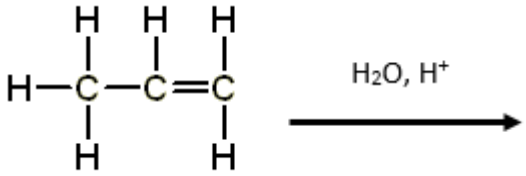
(1 mark)

Name of product: _____

(1 mark)

Question 3 (continued)

iii.



……

(1 mark)

Name of product: _____

(1 mark)

b.

i. What is the name of the reaction occurring in **i**.?

(1 mark)

_____

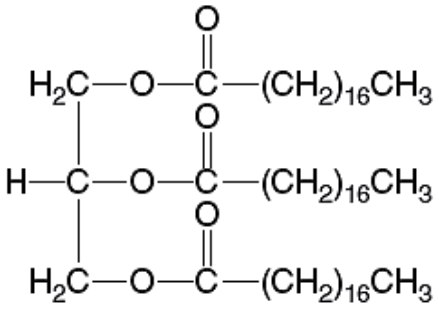
ii. To which group of organic compounds does the product in **ii.** belong to?

(1 mark)

_____

Question 4 (10 marks)

Tristearin is a substance found in the fat of plants and animals. Tristearin is a triglyceride of stearic acid as shown below.



a. On the structure above, circle the ester functional groups.

(1 mark)

b. Is this fat a saturated or an unsaturated fat? Justify your answer.

(1 mark)

_____

_____

c. When taken in food, this fat gets broken down in the stomach and small intestine into two different substances. Name the products formed in this reaction.

Product 1:

_____

(1 mark)

Product 2:

_____

(1 mark)

d. What is the name of the process involved in this reaction?

(1 mark)

_____

Question 4 continued)

e. Write the chemical equation for the reaction.

(1 mark)

f. Describe the type of fatty acids that combine with glycerol to form:

i. Mono-unsaturated fats

(1 mark)

ii. Poly-unsaturated fats

(1 mark)

g. Unsaturated fats are less stable and are more susceptible to oxidation. Explain.

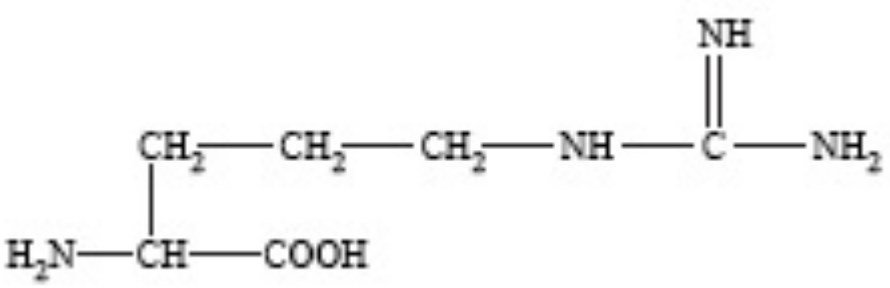
(1 mark)

h. What process is used to convert unsaturated fats to saturated fats?

(1 mark)

Question 5 (11 marks)

Arginine is an essential amino acid with the structural formula below.



a. For the above molecule:

i. Name and give the formula of the acidic functional group in the amino acid.

_____

(1 mark)

ii. Name and give the formula of the basic functional group in the amino acid.

_____

(1 mark)

Question 5 (continued)

b. Arginine is needed to synthesise some important proteins in the body. It is described as an essential amino acid. However, aspartic acid, which is also an amino acid needed for synthesis of proteins, is described as a non-essential amino acid.

Explain the difference between essential and non-essential amino acids.

(1 mark)

c. Draw the structure of arginine is an a solution with a pH of 2.4 and the structure of arginine is a solution of pH of 8.0

i. At pH = 2.4

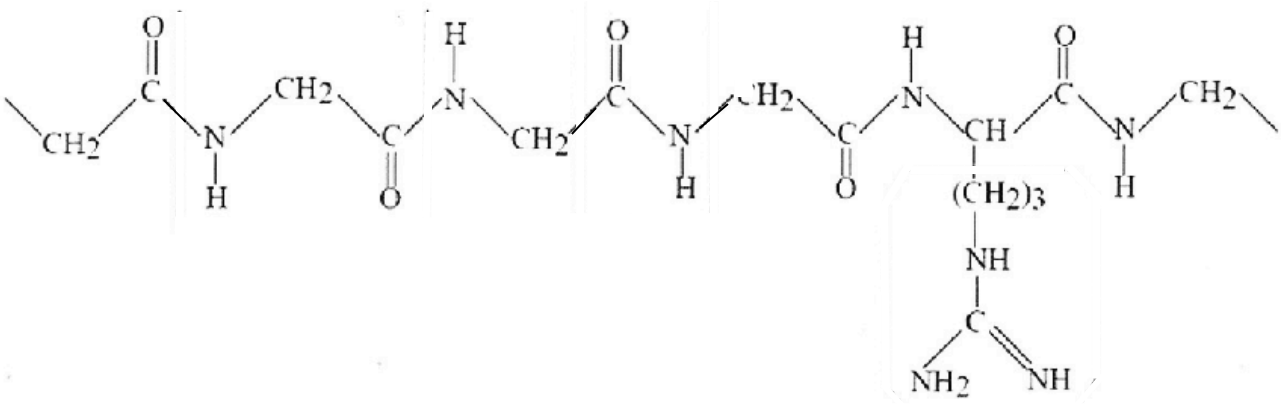
(1 mark)

ii. At pH = 8.0

(1 mark)

Question 5 (continued)

d. Consider the following amino acid sequence in a protein molecule.



i. What is the general name given to the above sequence of amino acids?

_____

(1 mark)

ii. Name the process by which a protein is broken down into amino acids.

_____

(1 mark)

iii. On the structure above, circle **one bond** that joins two amino acids together.

_____

(1 mark)

iv. What name is given to the group of atoms containing this bond in the sequence?

_____

(1 mark)

Question 5 (continued)

e. Give one example of each of the following amino acids.

i.	An amino acid with a polar side chain	(1 mark)
ii.	An amino acid with a non-polar side chain	(1 mark)

Question 6 (8 marks)

The combustion of butane can be represented by the following equation.

$$2C_4H_{10}(g) + 13O_2(g) \rightarrow 8CO_2(g) + 10H_2O(g) \qquad \Delta H = -5760 \text{ kJ mol}^{-1}$$

a. **i.** On the axes below draw the energy profile graph for the above reaction.

(1 mark)

ii. Label the heat of reaction, ΔH , **and** the activation energy, E_a , on the diagram.

(1 mark)

b. Is more energy **stored** in the reactants or in the products of this chemical reaction? Give a reason for your answer.

_____

_____

_____

(1 mark)

Question 6 (continued)

c. Calculate the energy released from the complete combustion of 20.0 g of butane.

(2 marks)

d. Calculate the **total mass** of products from the complete combustion of 20.0 g of butane.

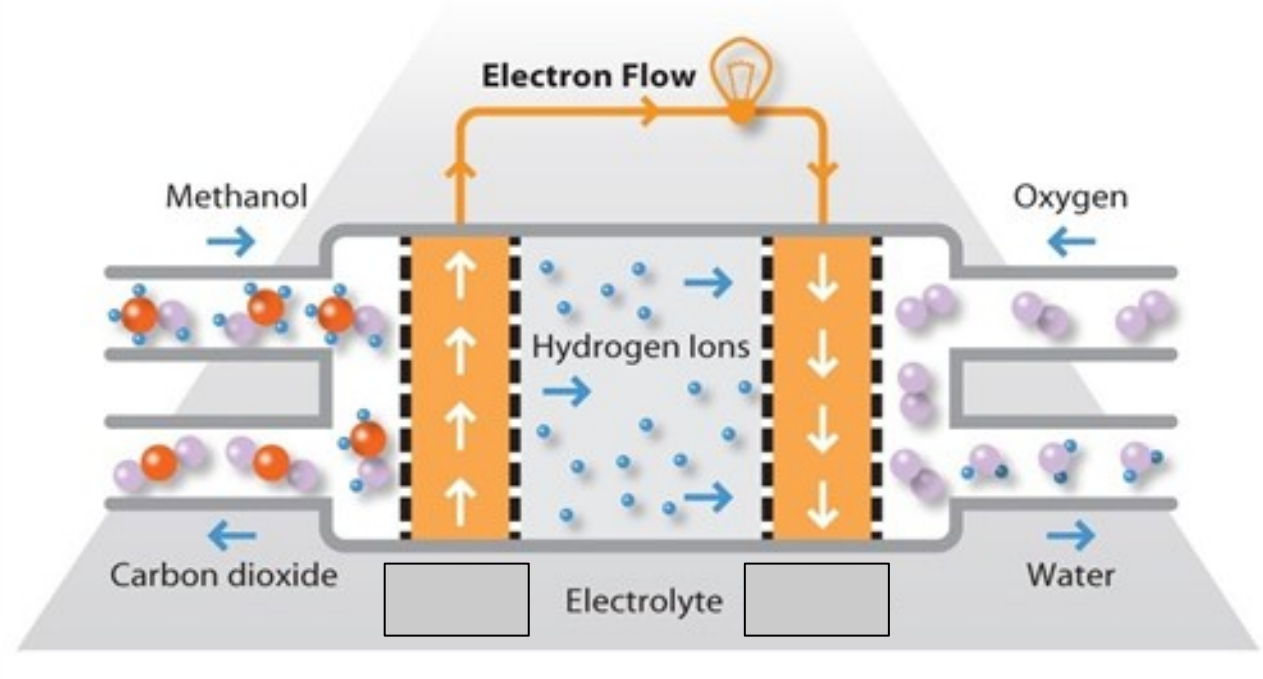
(2 marks)

e. What mass of oxygen was used in this reaction?

(1 mark)

Question 7 (8 marks)

The direct methanol fuel cell (DMFC) is a relatively recent addition to the suite of fuel cell technologies. It was invented and developed in the 1990s by researchers at several institutions in the United States, including NASA and the Jet Propulsion Laboratory.



http://www.fuelcelltoday.com/technologies/dmfc

a. Label the anode and cathode in the diagram above.

(1 mark)

b. Write the two half equations for the fuel cell.

i. Anode:

_____

(1 mark)

ii. Cathode:

_____

(1 mark)

iii. Write the equation for the overall cell reaction equation.

_____

(1 mark)

Question 7 (continued)

c. Choose one answer from the list below.

During the operation of the fuel cell to produce electricity, the pH of the electrolyte would

☐ increase

☐ decrease

☐ remain the same

(1 mark)

Give a reason for your answer

_____

_____

(1 mark)

d. Give two advantages and two disadvantages of using methane fuel cells to produce electricity rather than burning fossil fuels like coal and methane in a power station.

Advantages

1. _____

2. _____

(1 mark)

Disadvantages

1. _____

2. _____

(1 mark)

Question 8 (7 marks)

A chemistry student set up an electrolysis cell to electroplate a brass key with nickel.

This was done by using 20 mL of 0.5 M sulphuric acid and 10 mL of 0.5 M hydrochloric acid.

The acid mixture was warmed to about 50^{o}C, and then nickel carbonate was slowly added to the mixture while continuously stirring until no more fizziness was observed.

The solution was left to settle and then the clear solution was transferred into a fresh beaker.

Boric acid was added to the solution and stirred until completely dissolved.

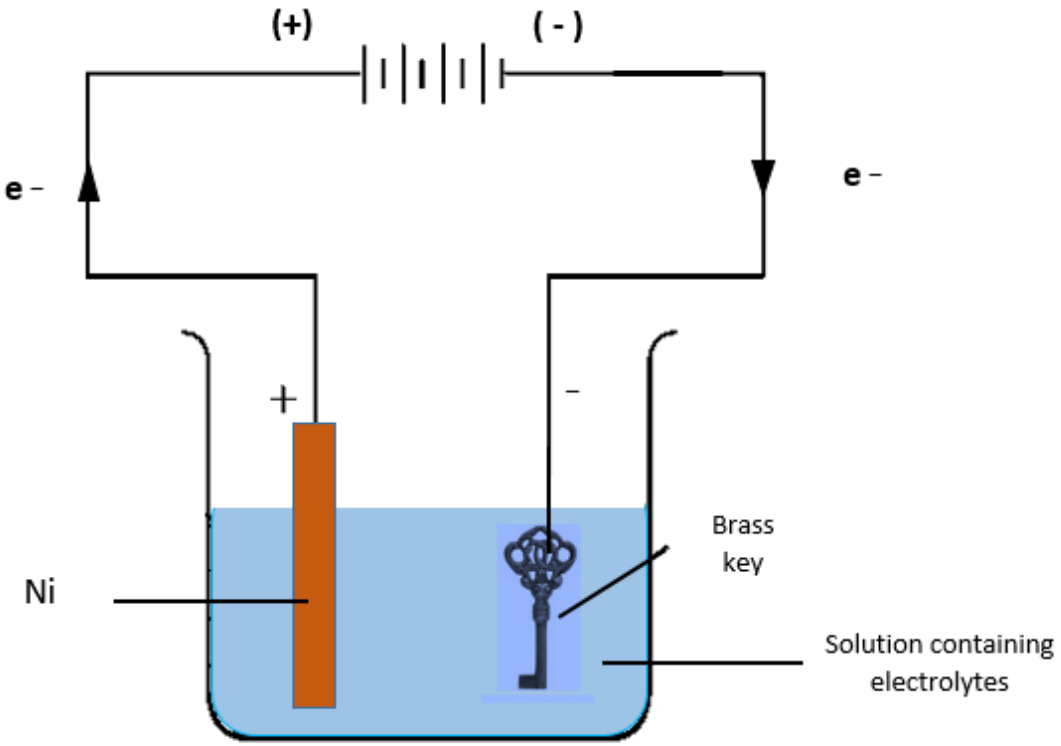
The volume of the solution was then made up to 250 mL using de-ionised water.

The brass key was cleaned with emery paper and washed under the tap.

The circuit was set up as shown in the diagram below using 200 mL of the electrolyte solution.

The power pack was connected and set up to deliver 2 volts.

The solution was allowed to electrolyse for 20 minutes while the key was moved gently from time to time.



Question 8 (continued)

a. What caused the fizzing when the electrolyte solution was being prepared?

_____

_____

(1 mark)

b. What was the purpose of adding boric acid to the solution?

_____

_____

(1 mark)

c. Write the two half equations for this electrolytic cell.

i. Anode:

_____

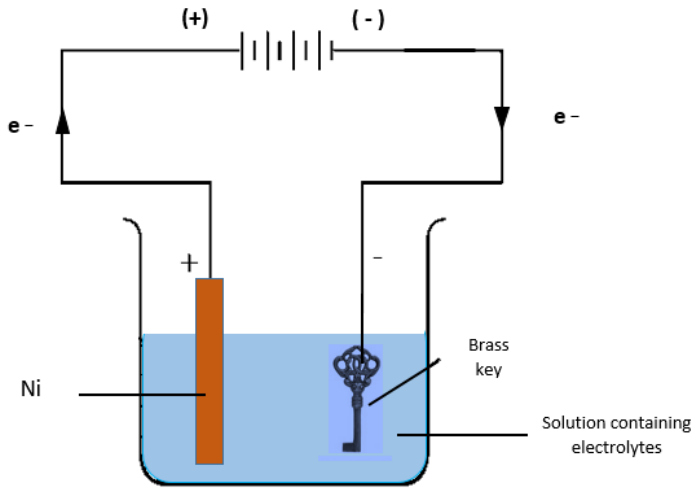
(1 mark)

ii. Cathode:

_____

(1 mark)

d. On the diagram below, label the anode and the cathode.



(1 mark)

Question 8 (continued)

e. Assuming 100% efficiency, what mass of nickel that would be deposited on the key, if a current of 0.2 A is passed through the electrolyte solution for 20 hours?

(2 marks)

Question 9 (9 marks)

a. Complete each of the following for Semi-structural formula, Structural formula and IUPAC name.

Semi-structural formula	Structural formula	IUPAC name
$(CH_3)_2CCHCH_3$		

(1 mark)

Semi-structural formula	Structural formula	IUPAC name
		2-amino-3-hexanol

(1 mark)

Semi-structural formula	Structural formula	IUPAC name
$CH_3CH2CH_2COOCH_3$		

(1 mark)

Semi-structural formula	Structural formula	IUPAC name
		cis-4-methylpent-2-ene

(1 mark)

Question 9 (continued)

b. Write a chemical equation for each of the following.

i. the oxidation of propan-1-ol to propanoic acid under acidic conditions

_____

(1 mark)

ii. condensation of ethanol and propanoic acid to form ethyl propanoate.

_____

(1 mark)

c. Explain the meaning of the term " chiral carbon atom".

_____

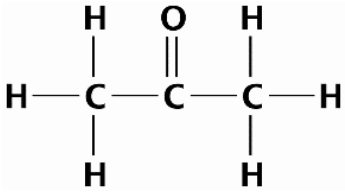
_____

_____

(1 mark)

d. How many chiral carbon atoms are present in each of the following molecules?

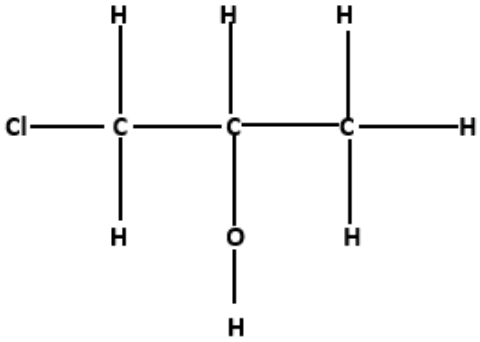
i.



Number of chiral carbon atoms = _____

(1 mark)

ii.



Number of chiral carbon atoms = _____

(1 mark)

Question 10 (9 marks)

A student wanted to determine the ethanoic acid content of white vinegar. She did a titration of 20.00 mL aliquots of the vinegar with a standard solution of 1.00 M sodium hydroxide by adding it slowly to the aliquots from a burette. Phenolphthalein was used as an indicator. The process was repeated three times. For each of the three aliquot samples, the indicator changed from colourless to a permanent 'pink' colour at the following readings of sodium hydroxide solution respectively: 19.50 mL, 19.55 mL and 19.70 mL. An average of the three readings was taken.

a. Write a balanced equation for the chemical reaction that took place.

_____

_____

(1 mark)

b. Why was the titration done three times? Were these titres concordant? Explain.

_____

_____

_____

(1 mark)

c. Calculate the average amount of sodium hydroxide, in mol, used in the titration.

_____

_____

_____

_____

_____

_____

_____

(2 marks)

Question 10 (continued)

d. Calculate the amount of ethanoic acid, in mol, used in the titration.

(1 mark)

e. Calculate the molar concentration of ethanoic acid in the vinegar.

(1 mark)

Question 10 (continued)

f. If Phenolphthalein was not available, what other indicator could have been used? Explain your answer.

_____

_____

(1 mark)

g. List two sources of error that could interfere with the accuracy of the results.

Error source 1

_____

_____

_____

(1 mark)

Error source 2

_____

_____

_____

(1 mark)

Question 11 (9 marks)

A solution is prepared in which the following equilibrium is established.

$$2A(aq) + B(aq) \rightleftharpoons C(aq) + 2D(aq) \quad \Delta H = +100 \text{ kJ mol}^{-1}$$

The value of the equilibrium constant at 30°C is 5.5.

A(aq) is a dark red colour but all of the other species present are colourless.

The following tests are carried out on separate samples of the solution.

Test 1 A few mL of a concentrated solution of *D* are mixed into the solution.

Test 2 A few mL of a concentrated solution that reacts readily with *B* **only** are mixed into the solution.

Test 3 The solution is heated from 30°C to 50°C.

Test 4 A catalyst is added to the solution.

a. Write an expression for the equilibrium constant for this reaction.

(1 mark)

b. For each of the tests, predict whether the mixture would be darker, lighter or unchanged.
Place a tick (✓) in the column of your choice.
For each of your predictions give a brief explanation.

	Test result: Solution colour			Explanation of test result
	Darker	Lighter	No change	
Test 1				(1 mark)
Test 2				(1 mark)
Test 3				(1 mark)
Test 4				(1 mark)

Question 11 (continued)

c. For each of the tests, predict whether the value of the equilibrium constant would be greater than, less than or equal to 5.5. For each of your predictions give an explanation.

	Test result: Value of K_c			Explanation of test result
	> 5.5	= 5.5	< 5.5	
Test 1				(1 mark)
Test 2				(1 mark)
Test 3				(1 mark)
Test 4				(1 mark)

End of question and answer book for the 2019 Kilbaha VCE Chemistry Trial Examination

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