2021
VCE
Chemistry
Trial Examination
Detailed Answers

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Answer Summary for Multiple-Choice Questions
2021 Kilbaha VCE Chemistry Trial Examination

Q1	C	Q16	B
Q2	D	Q17	D
Q3	D	Q18	A
Q4	C	Q19	C
Q5	A	Q20	D
Q6	B	Q21	A
Q7	D	Q22	A
Q8	B	Q23	B
Q9	C	Q24	C
Q10	B	Q25	B
Q11	A	Q26	D
Q12	A	Q27	B
Q13	A	Q28	C
Q14	C	Q29	D
Q15	D	Q30	C

ONE ANSWER PER LINE

1.	A	B		D
2.	A	B	C	
3.	A	B	C	
4.	A	B		D
5.		B	C	D
6.	A		C	D
7.	A	B	C	
8.	A		C	D
9.	A	B		D
10.	A		C	D
11.		B	C	D
12.		B	C	D
13.		B	C	D
14.	A	B		D
15.	A	B	C	

ONE ANSWER PER LINE

16.	A		C	D
17.	A	B	C	
18.		B	C	D
19.	A	B		D
20.	A	B	C	
21.		B	C	D
22.		B	C	D
23.	A		C	D
24.	A	B		D
25.	A		C	D
26.	A	B	C	
27.	A		C	D
28.	A	B		D
29.	A	B	C	
30.	A	B		D

Answer distribution:	A	B	C	D
	7	7	8	8

Question 1 ANS C

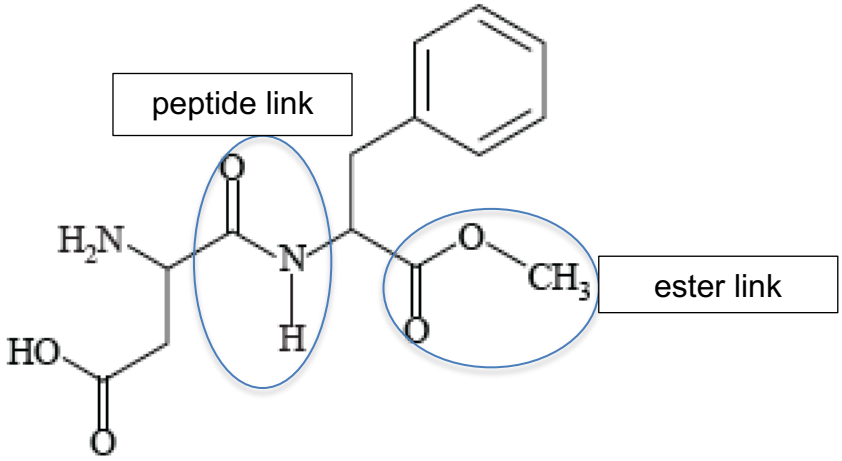
Electrochemical cells can be **either** galvanic (producing electricity) or electrolytic (consuming electricity). A and B are false. Fuel cells show only galvanic action. D is false. Primary cells show only galvanic action. C is true.

Question 2 ANS D

The molecular formula of methyl phenylacetate is $C_9H_{10}O_2$.
The extended molecular formula is $C_6H_5CH_2COOCH_3$.

Question 3 ANS D

The peptide link and the ester link are shown in the structure below.



Question 4 ANS C

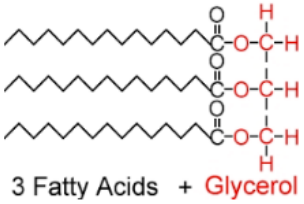
From the **Data Book, Section 12 – Heats of combustion of common blended fuels**, natural gas is a mixture of compounds with a typical heat of combustion of 54.0 kJg^{-1} compared with kerosene with a value of 46.2 kJg^{-1}.

Question 5 ANS A

The oxidation number of carbon in glucose = 0 since 6C + (12 x 1) + (6 x -2) = 0.
The oxidation number of carbon in C_2H_5OH = -2 since 2C + (6 x 1) – 2 = 0. This is reduction because the oxidation number of carbon has decreased from 0 to -2. The oxidation number of carbon in CO_2 is +4 and in CO it is +2. Therefore, these reactions are oxidation because the oxidation number of carbon has increased. In $C_3H_6O_3$ the oxidation number of carbon is 0 so this reaction is neither oxidation nor reduction.

Question 6 ANS B

The general structure for a triglyceride is a combination of 3 Fatty acids with Glycerol.



Reaction of the triglyceride with water (hydrolysis) will produce fatty acids and glycerol.

Question 7 ANS D

To produce Li(s) from $Li^+(aq)$, a reduction reaction must occur. This will be at the cathode. However, from the Data Book, Section 2 – electrochemical series, $H_2O(l)$ is a stronger oxidising agent (-0.83 V) than $Li^+(aq)$ (-3.04 V). $H_2(g)$ is produced at the cathode not Li(s).

Question 8 ANS B

Using an alkaline environment, the relevant half-equations from the Data Book, Section 2 – electrochemical series are:

$O_2(g) + 2H_2O(l) + 4e^- \rightleftharpoons 4OH^-(aq)$ $E^0 = +0.40$ V and

$2H_2O(l) + 2e^- \rightleftharpoons H_2(g) + 2OH^-(aq)$ $E^0 = -0.83$ V. Cell voltage = 0.40 – (-0.83)= 1.23 V.

The other cell voltages are:

$Ni^{2+}(aq)$ / Ni(s) // $Pb^{2+}(aq)$ / Pb(s)	0.12 V
$Zn^{2+}(aq)$ / Zn(s) // $Cd^{2+}(aq)$ / Cd(s)	0.36 V
$Cu^{2+}(aq)$ / Cu(s) // $H_2O(l)$ / $H_2(g)$, $OH^-(aq)$	1.17 V

Question 9 ANS C

E_a (forward) < E_a (reverse) is the correct answer. Since the forward reaction is exothermic, the energy content of the products must be lower than the energy content of the reactants. Hence, the activation energy of the reverse reaction must be greater than the activation energy of the forward reaction.

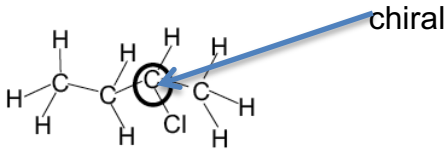
Question 10 ANS B

The flashpoint is the lowest temperature at which vapours of a fuel will ignite. The smaller the dispersion forces between molecules, the lower the flashpoint will be. The intramolecular (covalent) bonding is not related to the flashpoint. It is the intermolecular bonding that is important.

Question 11 ANS A

Coenzymes bind to the active site of an enzyme during catalysis, thereby changing the surface shape and, hence, the binding properties of the active site so that it can function as a carrier of electrons and/or groups of atoms. The primary and secondary structures of the enzyme are not altered by the coenzyme.

Question 12 ANS A



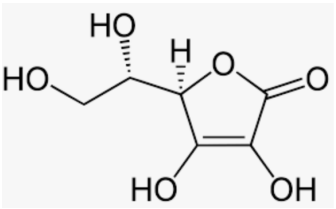
This is the structure of 2-chlorobutane. The carbon atom shown is chiral because it is bonded to four different atoms or groups of atoms.

Question 13 ANS A

In the Data Book Section 17 – 2-amino acids, the side-groups of the first 4 amino acids listed are respectively: alanine (CH_3) non-polar; arginine ($–CH_2–CH_2–CH_2–NH–C(NH)–NH_2$) polar and basic; asparagine ($–CH_2–CO–NH_2$) polar; aspartic acid ($–CH_2–COOH$) polar and acidic.

Question 14 ANS C

Vitamin C has the structure (See your Data Book)



The –OH groups make it water-soluble. It is an essential vitamin because “essential” is defined as a molecule that cannot be synthesised in the body. It is, therefore, “essential” in the diet.

Question 15 ANS D

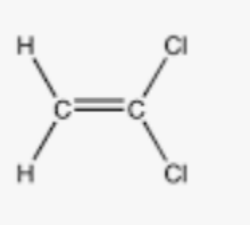
In an unsaturated fatty acid, there is at least one carbon-carbon double bond. In this example, one mole of the unsaturated fatty acid reacts exactly with **two** mole of hydrogen gas. Hence, there must be two carbon-carbon double bonds. The number of hydrogen atoms in the hydrocarbon chain = 2 x number of carbon atoms – 3. $C_xH_{2x-3}COOH$

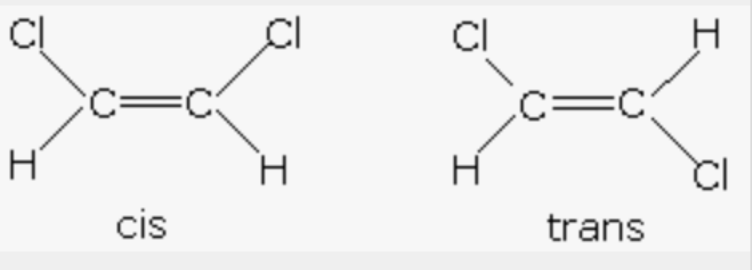
Question 16 ANS B

One mole of the unsaturated fatty acid reacts exactly with two mole of hydrogen gas. Therefore, the unsaturated fatty acid must be di-unsaturated. Two carbon-carbon double bonds. From the Data Book Section 9 – Formulas of some fatty acids, only linoleic is di-unsaturated.

Question 17 ANS D

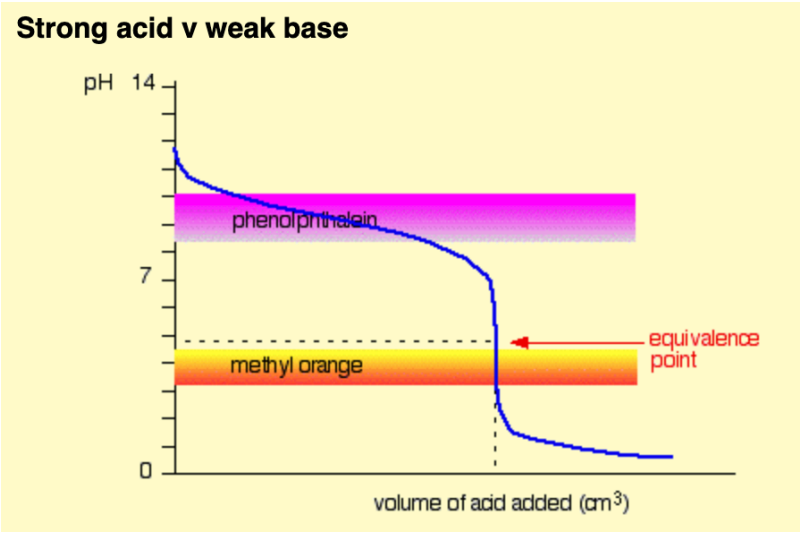
Dichloroethene has the molecular formula $C_2H_2Cl_2$. It could be 1,1-dichloroethene or 1,2-dichloroethene. 1,2-dichloroethene can be either cis or trans. Total number of structural isomers is three. There are no chiral carbon atoms in the structures and, therefore, no optical isomers. The three structural isomers are shown below.





Question 18 ANS A

This is the reaction between a strong acid (HCl) and a weak base (Na_2CO_3). Therefore, the end point is best indicated by an indicator that changes colour in a pH range less than 7. This is shown in the diagram below. Phenolphthalein would not be a suitable indicator because the colour change would occur over a large addition of acid. See Data Book Section 7 Acid-base indicators.



https://www.chemguide.co.uk/physical/acidbaseeqia/indicators.html

Question 19 ANS C

The balanced equation for this reaction is $Na_2CO_3(aq) + 2HCl(aq) \rightarrow NaCl(aq) + CO_2(g) + H_2O(l)$. The equivalence point occurs when $n(HCl) = 2 \times n(Na_2CO_3)$. The colour change is called the end point of the reaction.

Question 20 ANS D

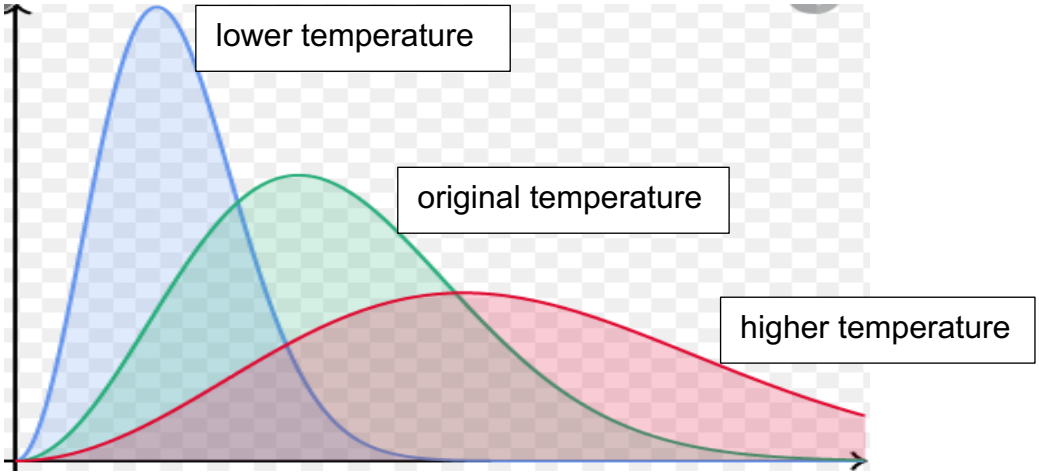
According to Le Chatelier's Principle, a system reacts to partially oppose the changes forced upon it. One mole of methane gas produces 2 mole of hydrogen gas. The carbon is solid and can be ignored. According to Le Chatelier's Principle, low pressure will favour the forward reaction since it produces the larger number of mole of gas. The forward reaction is endothermic and, therefore, will be favoured by high temperature.

Question 21 ANS A

In an equilibrium system, a catalyst lowers the activation energies of both the forward and reverse reactions. The equilibrium yield and the purity of the product do not change. The state of the product is not changed by a catalyst.

Question 22 ANS A

When the temperature is increased a greater proportion of the molecules have higher energies so the graph shifts to the right. The total number of molecules remains the same so the area under the graph remains the same and the maximum point on the graph has a lower value as shown below.



Question 23 ANS B

When experiments are repeated, random errors are eliminated but not any systematic errors due to faulty instruments. Repetition does not mean that a correct procedure is being used nor does it ensure that all variables have been correctly accounted for (controlled).

Question 24 ANS C

Use the Data Book Sections 1, 2, 3 and 4.

The chemical reaction is $Sn^{4+}(aq) + 4e^- \rightarrow Sn(s)$ (in a 2 step process via $Sn^{2+}(aq)$)

Therefore, *n*(Sn) produced =

$$\frac{1}{4}\times n(e^-) = \frac{1}{4}\times\frac{Q}{F} = \frac{1}{4}\times\frac{I\times t}{F} = \frac{1}{4}\times\frac{3.0\times 3600}{96500} = 0.02798$$

$$m(\text{Sn}) = \frac{1}{4}\times\frac{3.0\times 3600}{96500}\times 118.7 = 3.3\,\text{g}$$

Question 25 ANS B

[*X*] = 1M, [*Y*] = 2M, [*Z*] = 3M. When the volume is doubled from 1.0 L to 2.0 L, each of the concentrations is instantly halved from the original concentrations to give [*X*] = 0.5M, [*Y*] = 1M, [*Z*] = 1.5M The reverse reaction will then be favoured by Le Chatelier's Principle since the larger volume favours the side of the equation with the larger number of mole of gas. Hence, in the new equilibrium position, [*Z*] < 1.5M.

Question 26 ANS D

Heat of combustion of the fuel = (calorimeter constant x temperature rise)/mass
Remember to change joules (J) to kilojoules (kJ).

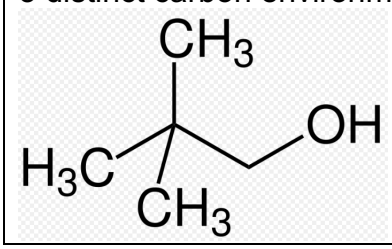
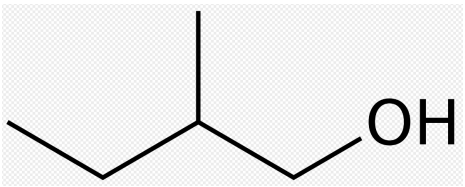
$$=\frac{12000\times 24.7}{10\times 1000} = 1.2\times 24.7 = 29.64\,\text{kJg}^{-1}$$

Use the Data Book Section 7 – Heats of combustion of common fuels.
Ethanol has a heat of combustion of 29.6 kJg^{-1}.

Question 27 ANS B

Propanone is a ketone with the formula CH_3COCH_3.From the Data Book Section 14 – *Characteristic ranges for infra-red absorption*, the wave number for ketone absorption is between 1680 and 1850 cm^{-1}. The C=O bond absorbs the radiation. It does not transmit it.

Question 28 ANS C

2,2-dimethyl-propan-1-ol, $C_5H_{12}O$ 3 distinct carbon environments 	2-methyl-butan-1-ol, $C_5H_{12}O$ 5 distinct carbon environments 

Question 29 ANS D

The equilibrium expression for the reaction: $N_2(g) + 3H_2(g) \rightleftharpoons 2NH_3(g)$ is: $K_1 = \dfrac{[NH_3]_e^2}{[N_2]_e[H_2]_e^3}$

The units of K_1 are $\dfrac{M^2}{M^1 \times M^3} = M^{-2}$

The equilibrium expression for the reaction: $2N_2(g) + 6H_2(g) \rightleftharpoons 4NH_3(g)$ is: $K_2 = \dfrac{[NH_3]_e^4}{[N_2]_e^2[H_2]_e^6}$

The units of K_2 are $\dfrac{M^4}{M^2 \times M^6} = M^{-4}$

Therefore, $K_2 = (K_1)^2$ and the equilibrium constants have different units.

Question 30 ANS C

The balanced equation for the reaction is:

$6Fe^{2+}(aq) + Cr_2O_7^{2-}(aq) + 14H^+(aq) \rightarrow 6Fe^{3+}(aq) + 2Cr^{3+}(aq) + 7H_2O(l)$

$n(Fe^{2+})$ reacting = 6 x $n(Cr_2O_7^{2-})$ reacting = 6 x c x V = 6 x 0.0400 x 0.02150

$c(Fe^{2+}) = \dfrac{n}{V} = \dfrac{6 \times 0.0400 \times 0.02150}{0.02500} = 0.206\,M$

END OF ANSWERS
SECTION A

Section B marking: (1) in italics indicates allocation of marks for parts of each question.

Question 1 (17 marks)

a. cyclohexane *(1)* , benzene *(1)* , ethanamide *(1)*

(3 x 1 = 3 marks)

b. A hydrocarbon contains only C and H atoms. A saturated compound contains only single bonds. Cyclohexane (C_6H_6) is a saturated hydrocarbon.

(1 mark)

c. Two addition reactions are required:

(1) $CH_3CH_2CHCH_2 + HBr \rightarrow CH_3CH_2CH_2CH_2Br$ *(1)*

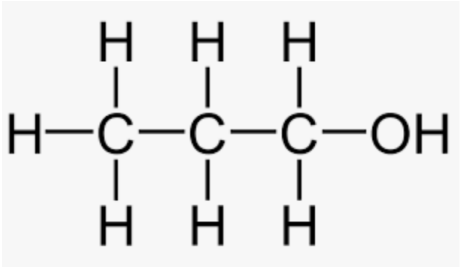
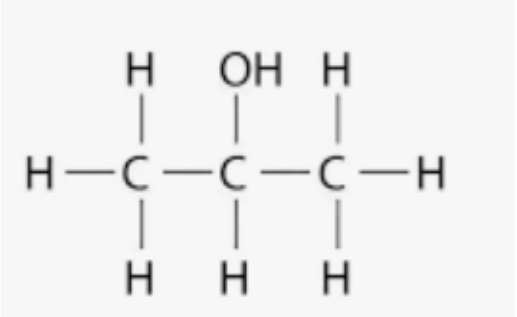
(2) $CH_3CH_2CHCH_2 + HBr \rightarrow CH_3CH_2CHBrCH_3$ *(1)*

(2 x 1 = 2 marks)

d. These reactions are addition reactions. A characteristic reaction of alkenes.

(1 mark)

e. Number of peaks equals the number of unique carbon and hydrogen environments in each molecule.

Compound	**Structure**	**Number of Peaks** ^{13}C NMR	**Number of Peaks** ^{1}H NMR
propan-1-ol		3	4
propan-2-ol		2	3

(6 x 1 = 6 marks)

Question 1 (continued)

f. In propan-2-ol, carbon atom 2 with the OH group attached has 6 hydrogen atoms on the neighbouring carbon atoms 1 and 3. *(1)* Hence, using the n + 1 rule, this will create a splitting with 7 peaks. *(1)* This is called a septet. Notice that carbon 2 in propan-1-ol has 5 hydrogen atoms on the neighbouring carbon atoms 1 and 3.
This will give a sextet (6 peaks)

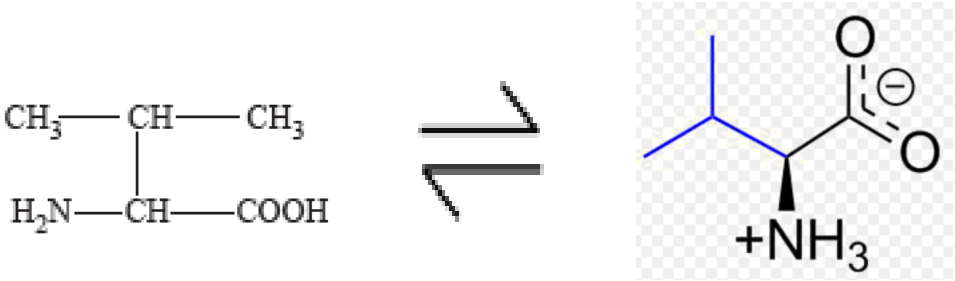
(2 x 1 = 2 marks)

g. The infra-red spectra of these two compounds would not be a suitable way of identifying them because they each contain the same functional group *(1)* and this functional group gives the same infra-red absorption range *(1)* of 3200 – 3600 cm^{-1}.

(2 x 1 = 2 marks)

Question 2 (6 marks)

a. Use the Data Book Section 17 2-amino acids. The zwitter ion for valine is shown below in equilibrium with the uncharged valine molecule.
The NH_2 group has acquired a proton to give an overall positive charge. *(1)*
The COOH group has lost a proton to give an overall negative charge *(1)*

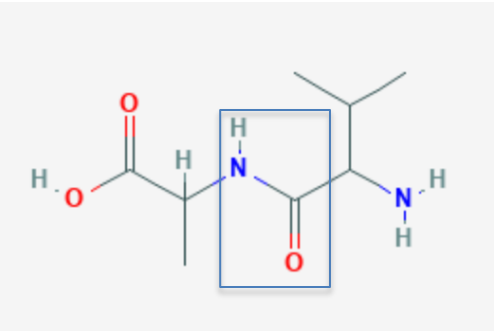


(2 x 1 = 2 marks)

b. Valine is synthesised by plants but not by animals.
Hence, it is “essential” is the diet of humans.

(1 mark)

c. The dipeptide **alanylvaline** is shown below. *(1) for each correct part of the structure.*



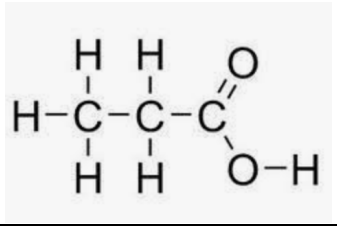
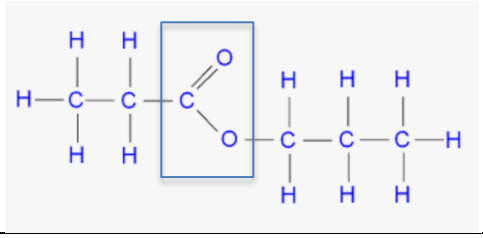
(2 x 1 = 2 marks)

d. A rectangular box has been drawn around the peptide link above.

(1 mark)

Question 3 (9 marks)

a.

Name	Structural Formula
propanoic acid	
propyl propanoate	

(2 x 1 = 2 marks)

b. A rectangular box has been drawn around the ester functional group above.

(1 mark)

c. There are two substitution reactions in this synthesis.

$CH_3CH_2CH_3 + Cl_2 \rightarrow CH_3CH_2CH_2Cl + HCl$

or $CH_3CH_2CH_2Cl + NaOH \rightarrow CH_3CH_2CH_2OH + NaCl$

(1 mark)

d. The oxidation reaction in this synthesis is $C_3H_7OH \rightarrow C_2H_5COOH$
The oxidation number of carbon increases from -2 in C_3H_7OH to -1 in C_2H_5COOH.

(1 mark)

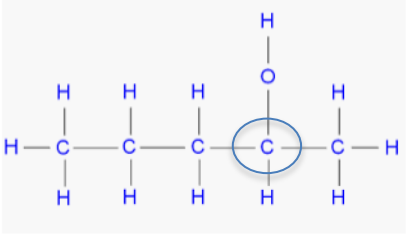
e. The condensation reaction in this synthesis is
$C_2H_5COOH + CH_3CH_2CH_2OH \rightarrow C_2H_5COOCH_2CH_2CH_3 + H_2O$

(1 mark)

f. There are no chiral carbon atoms in propyl propanoate because none of the carbon atoms have four different atoms or groups of atoms attached.

(1 mark)

g. Pentan-2-ol has a chiral carbon atom as marked. *(1) for the structure. (1) for the carbon.*



(2 x 1 = 2 marks)

Question 4 (11 marks)

a. Sources of methane include natural gas from fossil fuel deposits and animal agriculture.

(1 mark)

b. Uses for methanol include a precursor molecule for other chemicals and an energy source in fuel cells.

(1 mark)

c. In the production of CO, an increase in pressure shifts the equilibrium position to the left *(1)* since there is a smaller number of molecules of gas on the left-hand side of the equation. *(1)*

(2 x 1 = 2 marks)

d. In the production of CH_3OH, an increase in pressure shifts the equilibrium position to the right since there is a smaller number of molecules of gas on the right-hand side of the equation.

(1 mark)

e. In the production of CO, an increase in temperature shifts the equilibrium position to the right *(1)* since the forward reaction is an endothermic reaction. *(1)*

(2 x 1 = 2 marks)

f. In the production of CH_3OH, an increase in temperature shifts the equilibrium position to the left since the reverse reaction is an endothermic reaction.

(1 mark)

g. For the production of CO, use low pressure to increase the equilibrium yield of CO and use a high temperature to increase both the rate of reaction and the equilibrium yield of CO. *(1)*

For the production of CH_3OH, use a high pressure (within cost considerations) to increase the equilibrium yield of CH_3OH and use a compromise temperature *(1)* with an effective catalyst *(1)* to obtain a reasonable equilibrium yield of CH_3OH in a reasonable time.

(3 x 1 = 3 marks)

Question 5 (13 marks)

a. The molecular ion with a charge of +1 is the largest mass present in the mass spectrum. The mass is 72.

(1 mark)

b. A mass of 15 could be CH_3. 12 + (3 x 1) = 15.

(1 mark)

c. The most common molecular fragment has a mass of 43. A mass of 43 could be CH_3CO. 12 + (3 x 1) + 12 + 16 = 43.

(1 mark)

d. From the Data Book Section 14 – Characteristic ranges for infra-red absorption, the functional group at 1750 cm^{-1} is probably C=O.

(1 mark)

e. There are 4 lines in the 13C NMR spectrum so there are 4 different carbon environments.

(1 mark)

f. There are 3 main lines in the high resolution ^1H NMR spectrum so there are 3 different hydrogen environments.

(1 mark)

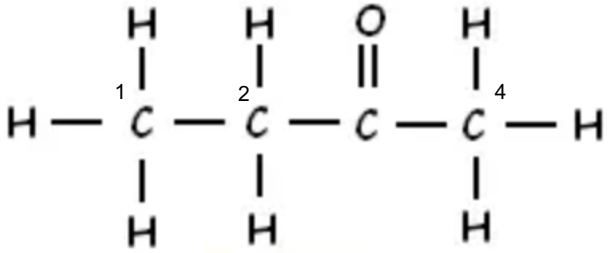
Question 5 (continued)

g. butanone

(1 mark)

C_4H_8O (molecular mass = (4 x12) + (8 x 1) + 16 = 72)

(1 mark)

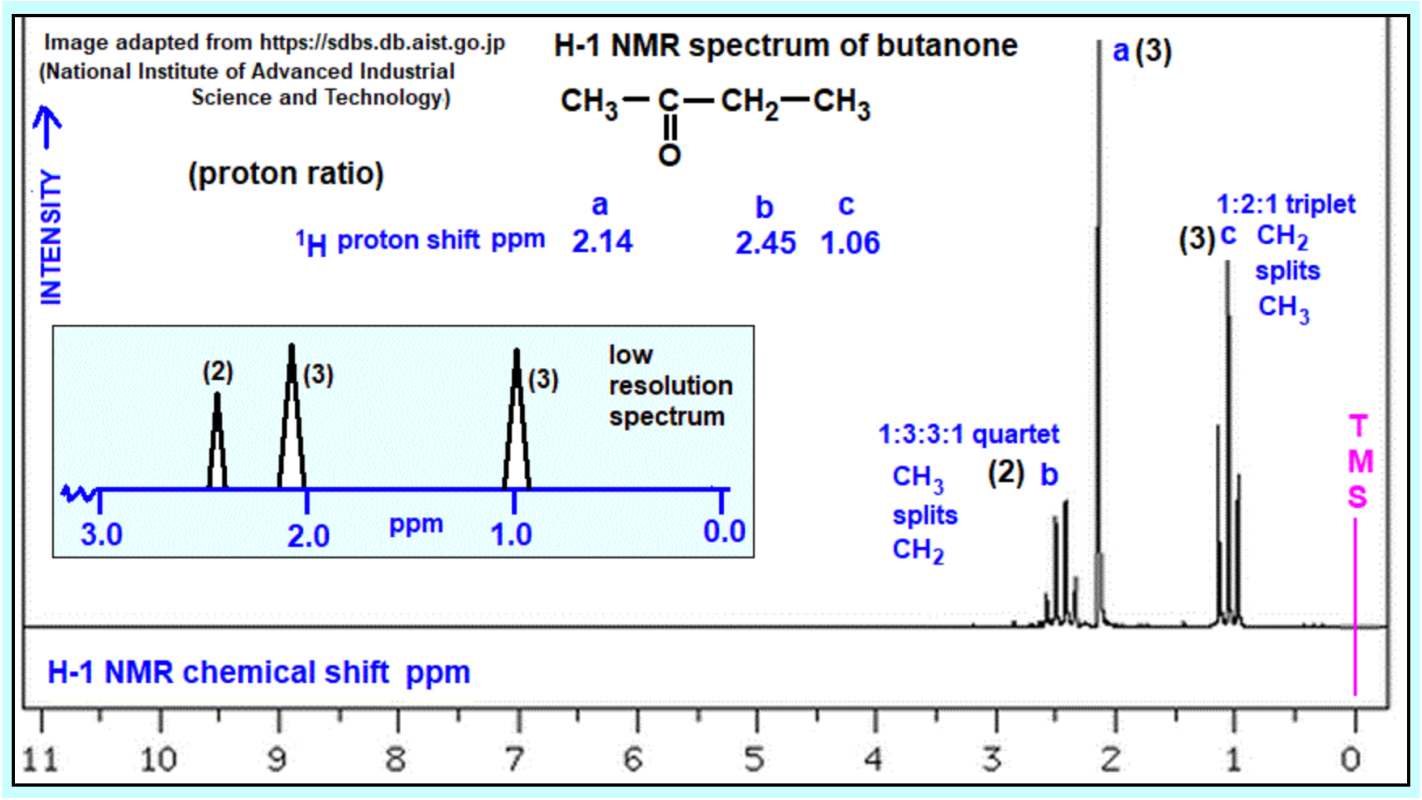


(2 marks)

h. Carbon 1 is next to a CH_2 group so by the n+1 rule, this will be a triplet. *(1)*
Carbon 2 is next to a CH_3 group so by the n+1 rule, this will be a quartet. *(1)*
Carbon 4 has no hydrogens on the neighbouring carbon so this will be a singlet. *(1)*

The structural isomer butanal $CH_3CH_2CH_2CHO$ has **4 different hydrogen environments.**

(3 x 1 = 3 marks)



https://www.docbrown.info/page06/spectra/butanone-nmr1h.htm

Question 6 (8 marks)

a. A standard solution is a solution in which the concentration is accurately known.

(1 mark)

b. A set of standard solutions of the compound is prepared and analysed using HPLC to determine the peak areas of each. *(1)* The calibration curve is prepared by measuring several concentrations to create a linear line. *(1)* These concentrations should include concentrations that are both lower and higher than the expected concentration of the unknown sample. *(1)*

(3 x 1 = 3 marks)

c. From the calibration curve, the concentration of unknown sample = 20 μg mL^{-1}. *(1)*
= 20 x 10^{-6} g mL^{-1}
= 20 x 10^{-6} x 10^{3} g L^{-1}
= 20 x 10^{-3} g L^{-1}
= 0.02 g L^{-1} *(1)*

Mass of unknown in 50 mL = 0.02 x (50/1000) g *(1)*

Molar mass 200 g mol^{-1}.

Number of mol of unknown in 50 mL = $\frac{0.02\times 50}{1000\times 200}=5.0\times 10^{-6}\,\text{mol}$ *(1)*

(4 x 1 = 4 marks)

Question 7 (7 marks)

a. Use the Data Book Section 13 – Energy content of food groups.

Energy content of 25 g of chocolate
= (1.3 x 17) + (5.4 x 37) + (15.7 x 16) *(1)*
= 22.1 + 199.8 + 251.2
= 473.1 kJ *(1)*

(2 x 1 = 2 marks)

b. The quoted value for energy in the NUTRITION INFORMATION is 492 kJ. Hence, it may be that there are molecules other than proteins, fats and carbohydrates that produce a small amount of energy. Alternatively, the Data Book figures may be rounded to whole numbers so that the calculation is low.

(1 mark)

c. Use the Data Book Section 11 – Heats of combustion of common fuels.

Heat of combustion of ethanol = 29.6 kJ g^{-1}. *(1)*

Energy released by the ethanol = 0.500 x 29.6 kJ = 14.8 kJ *(1)*

This produced a temperature rise of 3.19 ^{o}C.

Calibration factor for the calorimeter = 14.8/3.19 = 4.64 kJ / ^{o}C *(1)*

Energy produced by 25 g of chocolate = (14.8/3.19) x 2.14 kJ x (25/0.51) = 486 kJ *(1)*

(4 x 1 = 4 marks)

Question 8 (10 marks)

a. The quantity of electricity used = current x time = 1.5 x 8 x 60 = 720 coulombs.

(1 mark)

b. The reaction at the positive electrode is $Cu(s) \rightarrow Cu^{2+}(aq) + 2e^-$. *(1)*
$n(e^-) = 2 \times n(Cu)$ reacting $= 2 \times 0.241/63.5 = 0.00759$ mol *(1)*

(2 x 1 = 2 marks)

c. The charge on one electron is 1.6×10^{-19} coulombs. *(1)*
Hence, the number of electrons used in this experiment = $720/1.6 \times 10^{-19}$. *(1)*
Hence, the Avogadro Constant, N_A, the number of electrons in one mole,
$= 720/(1.6 \times 10^{-19} \times 0.00759)$ *(1)*
$= 5.9 \times 10^{23}$. *(1)*

(4 x 1 = 4 marks)

Notice that this value has been **experimentally determined** and is not the same as the accepted value of the Avogadro Constant. You cannot simply divide 96500 by 1.6×10^{-19} to obtain the 'correct' value of 6.0×10^{23}!

d. Cu^{2+} (+0.34V) is a stronger oxidant than H_2O (-0.83V) and Cu (+0.34V) is a stronger reductant than H_2O (1.23V).
In the first experiment, the reactions are:
X (positive electrode): $Cu(s) \rightarrow Cu^{2+}(aq) + 2e^-$
Y (negative electrode): $Cu^{2+}(aq) + 2e^- \rightarrow Cu(s)$

As the voltage is increased, the water will react first at the positive electrode (**X**) *(1)* to form oxygen. *(1)*

(2 x 1 = 2 marks)

e. $2H_2O(l) \rightarrow O_2(g) + 4H^+(aq) + 4e^-$

(1 mark)

Note: Only when the concentration of copper(II) ions in the solution has decreased to a very low value will hydrogen be produced at the negative electrode.

Question 9 (9 marks)

a. $C_6H_{12}O_6(aq) \rightarrow 2C_2H_5OH(aq) + 2CO_2(g)$

(1 mark)

b. From the Data Book Section 3 – Chemical relationships,

$$\begin{aligned}&\%\text{ atom economy}\\&=\frac{\text{molar mass of ethanol}}{\text{molar mass of glucose}}\times\frac{100}{1}\\&=\frac{2\times46}{180}\times\frac{100}{1}\quad(1)\\&=\frac{92}{180}\times\frac{100}{1}\\&=51.1\%\quad(1)\end{aligned}$$

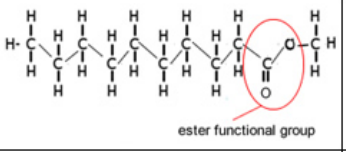
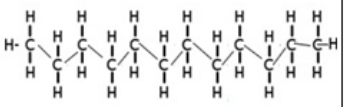
(2 x 1 = 2 marks)

c. Biodiesel molecules produced from plant oils often contain carbon-carbon double bonds. *(1)*
This gives a kink in the molecules and makes it more difficult for them to pack closely together. Hence, the dispersion forces between these molecules are weaker and more easily overcome. *(1)* Therefore, biodiesel molecules produced from saturated fats (with no carbon-carbon double bonds) obtained from animals have higher melting points.

(2 x 1 = 2 marks)

d. Biodiesel molecules are esters, whereas petrodiesel molecules are hydrocarbons. *(1)*
The ester group is polar and this increases the viscosity and the freezing point of biodiesel due to the interactions between the molecules. *(1)*

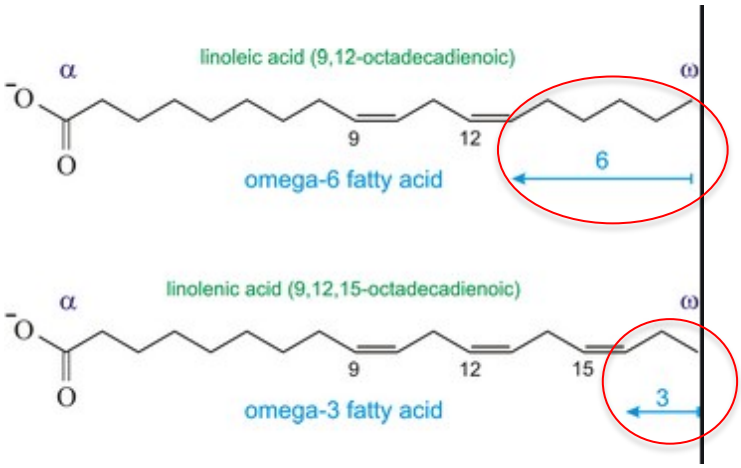
Here is an overall summary of the two diesel fuels.

Fuel	Renewable	Structure	Origin	Viscosity	Freezing point	Energy density (MJ/Kg)
Biodiesel	Yes		Plant matter	Relatively high	Relatively high	38
Petrodiesel	No		Fossil fuels	Relatively low	Relatively low	43

(2 x 1 = 2 marks)

Question 9 (continued)

e. In the omega-3 fatty acid, linolenic acid, shown below, a C=C double bond starts at the third C atom from the terminal methyl group away from the carboxyl group. *(1)* In the omega-6 fatty acid, linoleic acid, shown below, a C=C double bond starts at the sixth C atom from the terminal methyl group away from the carboxyl group. *(1)*



(2 x 1 = 2 marks)

End of 2021 Kilbaha VCE Chemistry Trial Examination
Detailed Answers

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