2018
VCE
Chemistry
Trial Examination
Detailed Answers

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Answer Summary for Multiple-Choice Questions
2018 Kilbaha VCE Chemistry Trial Examination

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

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

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

Answer distribution: A 7 B 8 C 8 D 7

Question 1 ANS D
The chromium atom has a +3 oxidation state in all three compounds in D. The order of oxidation states in the other three choices is: A: +3, +6, +6. B: +2, +3, +6. C: +6, +6, +3.

Question 2 ANS A
Biodiesel is produced by the process of esterification of fatty acids while petrodiesel is produced by the distillation of crude oil. Both biodiesel and petrodiesel produce CO_2. However, biodiesel has less impact on the environment. Biodiesel is the compound with the higher viscosity.

Question 3 ANS D
The variable kept unchanged is the controlled variable.

Question 4 ANS A
A chiral carbon, in a molecule, is a carbon atom that is attached to four different types of atoms or groups of atoms. From the given alternatives, A (2-chlorobutane), is the compound which has a carbon atom attached to four different atoms or groups of atoms. $CH_3CHClCH_2CH_3$ has C attached to H, Cl, CH_3 and CH_2.

Question 5 ANS C
To obtain the equation $C(s) + 2H_2O(l) \longrightarrow CO_2(g) + 2H_2(g)$ by addition, the second reaction must be reversed (ΔH will become + 571.6 kJ mol $^{-1}$) while ΔH for the other reaction, which must remain the same, will be – 393.5 kJ mol $^{-1}$. Add the equations and add the ΔH values.
This gives + 571.6 – 393.5 = +178.1 kJ mol^{-1}.

Question 6 ANS C
The highest quantity of energy released per gram of fuel is from nuclear fission. When large nuclei go through fission, energy is released from a measurable decrease in mass. Some of the mass is converted to energy.

Question 7 ANS C
From the electrochemical series, the correct order from strongest oxidant to weakest oxidant is
F_2, Br_2, Ag^+, Cu^{2+}, Zn^{2+}, Mg^{2+}

Question 8 ANS C
The anode in a galvanic cell is the negative electrode at which the oxidation process takes place. Electrons are produced in the reaction which makes the electrode negative.

Question 9 ANS B
Reduction occurs at the cathode. There is only one reduction reaction shown here. The electrons must be on the left hand side of the equation: $O_2(g) + 2H_2O(g) + 4e^- \rightarrow 4OH^-(aq)$

Question 10 ANS C
All four types of bonding are present in the tertiary structure of a protein. Disulfide bridges are covalent bonds. Charged R groups are joined by attraction between ions. Hydrogen bonding occurs between polar functional groups. Dispersion forces are present between non-polar R groups.

Question 11 ANS B
Since it is an exothermic reaction, the enthalpy of the products will be lower than that of the reactants. A catalyst lowers the peak of the energy profile. However, neither the enthalpy of the products nor that of the reactants changes.

Question 12 ANS D
Follow the IUPAC naming rules. The longest chain consists of a 5 carbon chain/ backbone. Starting on the right hand side, it is found that the ethyl group is attached to C-3 and the methyl group attached to C-2. This gives the name: 2-methyl-3-ethylpentane.

Question 13 ANS D
The molecular formula is C_8H_{18}. The C and H atoms can be arranged in many more than 4 structures. There are 18 structural isomers.

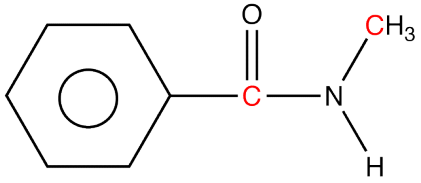
- Octane
- 2-Methylheptane
- 3-Methylheptane
- 4-Methylheptane
- 2,2-Dimethylhexane
- 2,3-Dimethylhexane
- 2,4-Dimethylhexane
- 2,5-Dimethylhexane
- 3,3-Dimethylhexane
- 3,4-Dimethylhexane
- 3-Ethylhexane
- 2,2,3-Trimethylpentane
- 2,2,4-Trimethylpentane
- 2,3,3-Trimethylpentane
- 2,3,4-Trimethylpentane
- 2-Methyl-3-ethylpentane
- 3-Methyl-3-ethylpentane
- Tetramethylbutane

Question 14 ANS B
To prepare an ester, an alcohol and a carboxylic acid are needed to react together. Propyl methanoate needs propan-1-ol (alcohol) and methanoic acid (carboxylic acid). The reaction is

$$CH_3CH_2CH_2OH + HCOOH \rightleftharpoons HCOOCH_2CH_2CH_3 + H_2O$$

Question 15 ANS B
Tallow, an alkanol and an acidic solution.
Tallow is the a hard fatty substance made from animal fat. It is mixed with both an alcohol and an acid to produce biodiesel.

Question 16 ANS D
A primary amide is an amide (molecule containing the group –CONH–) in which the nitrogen atom is bonded to **only one** carbon atom. $C_6H_5CONHCH_3$ is **not** a primary amide since the N is bonded to two carbon atoms as shown in the structure below.



Question 17 ANS B
^{1}H NMR works on the principle of causing a chemical shift, on the resonant frequencies of the nuclei present in the sample, as a result of nuclear spin.

Question 18 ANS B
The key is the cathode and is connected to the negative terminal of the power supply so that silver ions will deposit on the key according to the equation: $Ag^+(aq) + e^- \rightarrow Ag(s)$. Note that reduction always occurs at the cathode. The anode in electroplating is made of the metal to be plated, in this case Ag(s)

Question 19 ANS A

The balanced chemical equation is $CH_3COOH + C_2H_5OH \rightleftharpoons CH_3COOC_2H_5 + H_2O$

$$K_c = \frac{[CH_3COOC_2H_5]_e[H_2O]_e}{[CH_3COOH]_e[C_2H_5OH]_e} = 4.0$$

$$\Rightarrow \frac{[CH_3COOC_2H_5]_e \times 1.50}{0.40 \times 0.40} = 4.0$$

$$\Rightarrow [CH_3COOC_2H_5]_e = \frac{4.0 \times 0.40 \times 0.40}{1.50}$$

$$\Rightarrow [CH_3COOC_2H_5]_e = 0.43\text{M}$$

Question 20 ANS A

The formation of hydrogen ions and hydroxide ions from water is an endothermic process. Therefore, the forward reaction absorbs heat. According to Le Chatelier's Principle, if you make a change to the conditions of a reaction in dynamic equilibrium, the position of equilibrium moves to counter the change made. If we increase the temperature of the water, the equilibrium will move to lower the temperature again. It will do that by absorbing the extra heat. This means that the forward reaction will be favoured, and more hydrogen ions and hydroxide ions will be formed. The effect of that is to increase the value of K_w and the concentration of hydrogen ions and, therefore, lower the pH.

Question 21 ANS A

The hydrolysis of a triglyceride produces glycerol, $C_3H_5(OH)_3$, and 3 molecules of a carboxylic acid, RCOOH.

Question 22 ANS C

$CH_2ClCHClCH_2CH_3$ is a semi- structural formula of $C_4H_8Cl_2$ as it is shows the order of C backbone and the Cl atoms that are added across the double bond. One chlorine atom goes on the first carbon atom and one chlorine atom goes on the second carbon atom.

Question 23 ANS D

In a galvanic cell the reductant is oxidised; oxidation occurs at the anode; the anode is the negative electrode. In each cell, the stronger reductant is at the negative electrode. According to the data relative reductant strengths are: I and IV Cu > P; II and IV Q > Cu; III and IV R > Cu; II and III R > Q Hence, the order of increasing reductant strength is P , Cu , Q , R.

Question 24 ANS D

D is the incorrect reaction because when HCl reacts with an unsaturated hydrocarbon the H and Cl add at opposite ends of the C=C double bond.

Question 25 ANS C

The extended molecular formula for ethyl ethanoate is $CH_3COOCH_2CH_3$. There are 3 spectral lines in the ^{1}H NMR spectrum because there are 3 distinct hydrogen environments CH_3, CH_2 and CH_3.

Question 26 ANS A

$$K_a = \frac{[CH_3CH_2COO^-]_e[H_3O^+]_e}{[CH_3CH_2COOH]_e}$$

$$[H_3O^+]_e = 10^{-pH} = 10^{-2.8} = 0.00158\,M$$

From the equation, $[CH_3CH_2COO^-] = [H_3O^+] = 0.00158$ M

$$K_a = \frac{[CH_3CH_2COO^-]_e[H_3O^+]_e}{[CH_3CH_2COOH]_e} = \frac{(0.00158)^2}{0.184} = 1.36 \times 10^{-5}$$

Question 27 ANS B

$M(C_{57}H_{110}O_6) = (57 \times 12) + (110 \times 1) + (6 \times 16) = 684 + 110 + 96 = 890$ g mol $^{-1}$

Energy released $= 890 \times 38 = 33820$ kJ $= 33.8$ MJ

Question 28 ANS C

$$n(C_8H_{18}) = \frac{m}{M} = \frac{45000}{114} = 394.74 \text{ mol}$$

From the balanced equation, 2 mole of C_8H_{18} releases 10108 kJ

Let 395 mole of C_8H_{18} release x kJ

$$\frac{x}{10108} = \frac{395}{2}$$

$$\Rightarrow x = \frac{395}{2} \times 10108 = 1996330 = 2.0 \times 10^6 \text{ kJ}$$

Question 29 ANS B

In an endothermic reaction the molar heat of solution is positive.

Question 30 ANS A

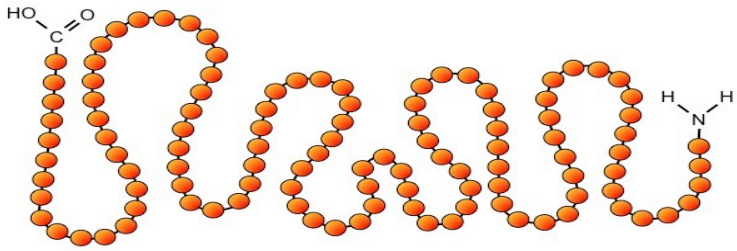
The general formula for a saturated fatty acids is $C_nH_{2n}O_2$. Saturated fatty acids are compounds that contain a carboxylic acid group (COOH) attached to a long hydrocarbon chain consisting of carbon and hydrogen atoms with only single bonds. For example, lauric acid, $CH_3(CH_2)_{10}COOH$ which is $C_{12}H_{24}O_2$.

END OF ANSWERS
SECTION A

Question 1 (8 marks)

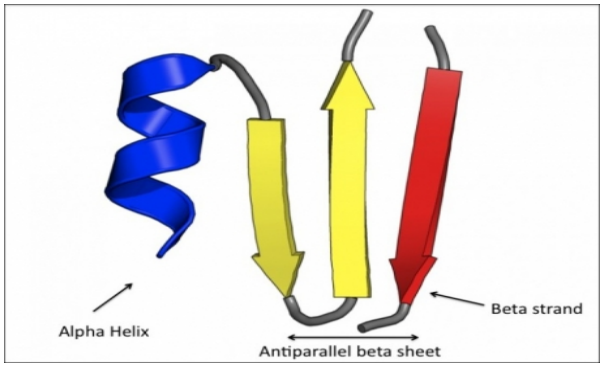
a.

i. The primary structure of protein is the simplest level of protein structure. It consists of a sequence of amino acids making a polypeptide chain. The amino acids are held together by peptide bonds. –CONH–



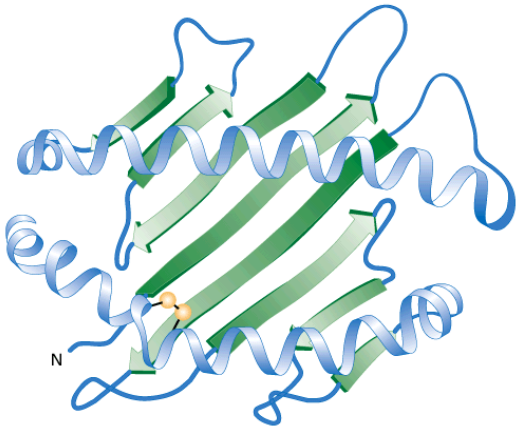
1 mark

ii. The secondary structure of protein consists of the folded structures that form within a polypeptide due to the interaction between the atoms of the backbone. For example, the alpha helix and beta pleats are held together by H-bonding between the Carbonyl O of one amino acid and the H of another amino acid.



1 mark

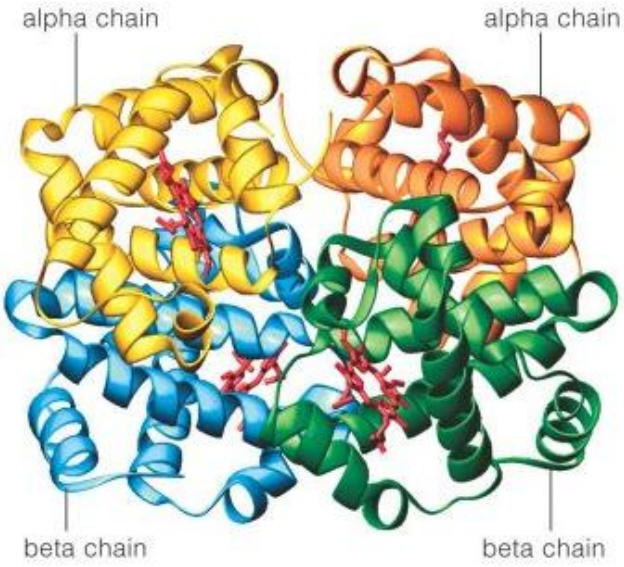
iii. The tertiary structure is the 3-dimensional structure of a polypeptide. This structure is due to the interactions between the R-groups of the amino acids that make the protein. R-group interactions may include H- bonding, dipole-dipole interactions and dispersion forces.



1 mark

Question 1 a. (continued)

iv. Quaternary structure: Proteins that are made up of multiple polypeptide chains.



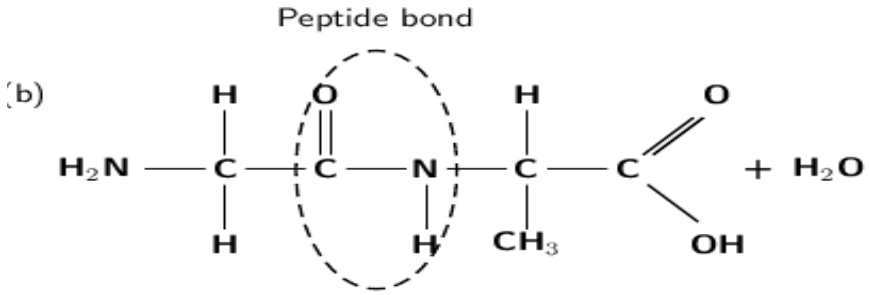
1 mark

b. Condensation reaction

1 mark

c.

d.



1 mark
1 mark

e. Glycyl- Valine

1 mark

Question 2 (13 marks)

a. A Zwitterion group is a dipolar compound that is electrically neutral overall but contains positively and negatively charged sections.

1 mark

b.

Only one answer required for each

i.	An amino acid with a polar side chain	glutamine, histidine, serine, tyrosine, cysteine, tryptophan
ii.	An amino acid with a non-polar side chain	alanine, leucine, methionine, valine, glycine, proline, isoleucine
iii.	An amino acid that has an acidic side chain	aspartate, glutamate
iv.	A cyclic amino acid	tyrosine, phenylalanine, tryptophan
v.	An amino acid with a basic side chain	lysin

3 marks for five correct, 2 marks for four correct, 1 mark for two correct

c. The omega carbon of an unsaturated fatty acid is the carbon in the CH_3 group at the end of the hydrocarbon chain. (**alpha** is the 'beginning' **omega** is the 'end') An omega-3 fatty acid has a carbon-carbon double bond starting on the **third** carbon atom from the omega carbon. An example is linolenic acid. An omega-6 fatty acid has a carbon-carbon double bond starting on the **sixth** carbon atom from the omega carbon. An example is linoleic acid.

1 mark

d.

i. Saturated fatty acids contain no double bonds between their carbon atoms. (They have single bonds between their carbon atoms), so the molecules are saturated with hydrogen. These fats do not breakdown easily.

1 mark

ii. Monounsaturated fatty acids have one carbon-carbon double bond in their molecules.

1 mark

iii. Polyunsaturated fatty acids more than one carbon-carbon double bond in their molecules.

1 mark

Question 2 (continued)
e.

i. A triglyceride is formed when 3 molecules of one or more different fatty acids react with glycerol. The reaction by which this process happens is a condensation reaction. Every time a triglyceride is formed it releases three H_2O molecules. This triglyceride formed will be an unsaturated fatty acid because oleic acid has one double bond between two of its carbon atoms.

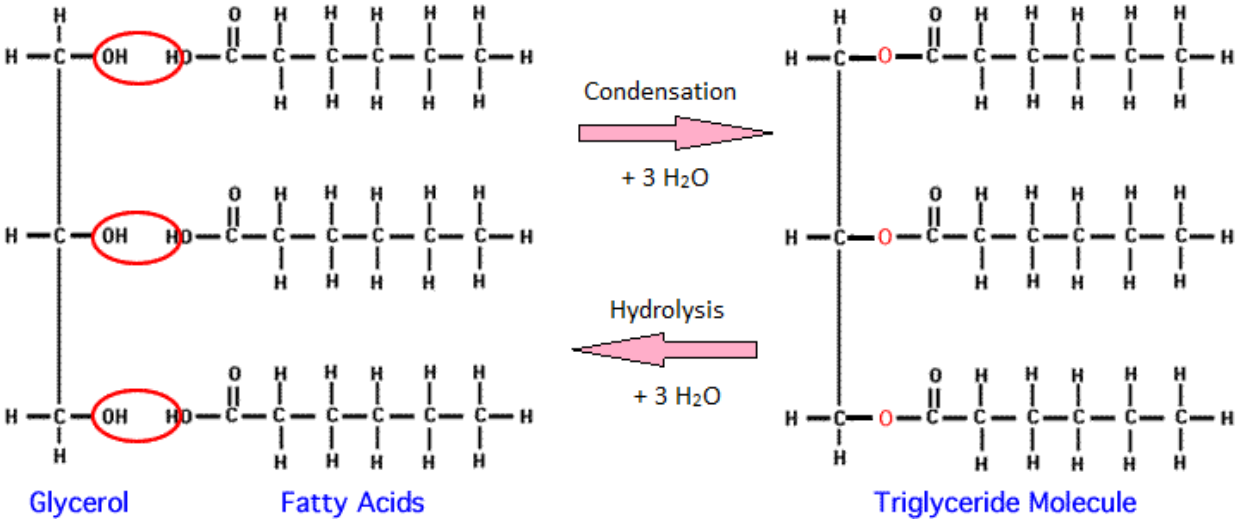
2 marks

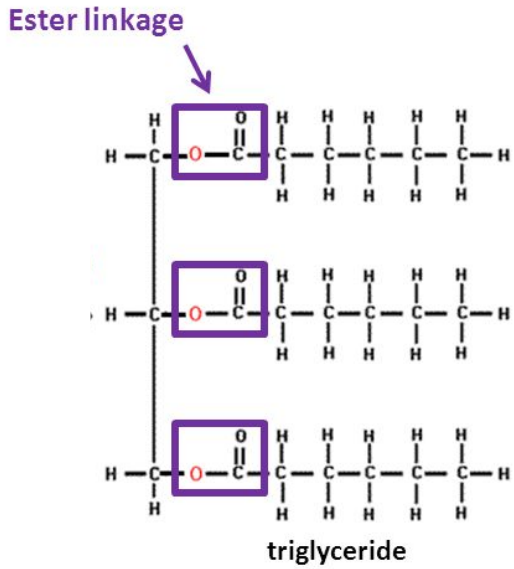
ii.

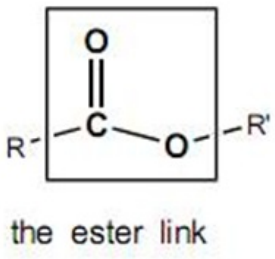
2 marks

iii.

1 mark







Question 3 (6 marks)

a.

$$n(CO_2) = \frac{5.00}{44} = 0.1136\,\text{mol}$$

Since V = 1.00 L $[CO_2]$ = 0.1136 M *(1)*

$$K = \frac{p(CO_2, g)}{[CO_2(aq)]} = \frac{3.00}{0.1136} = 26.4 \quad (1)$$

2 marks

b.

$n(CO_2)$ evolved = $n(CO_2)$ in 0.500 L of the solution = 0. 1136/2 = 0.0568 mol *(1)*

$p(CO_2)$ = 101.325 kPa

$$V(CO_2) = \frac{nRT}{P} = \frac{0.0568 \times 8.31 \times (30 + 273)}{101.325} = 1.41\text{L} \quad (1)$$

2 marks

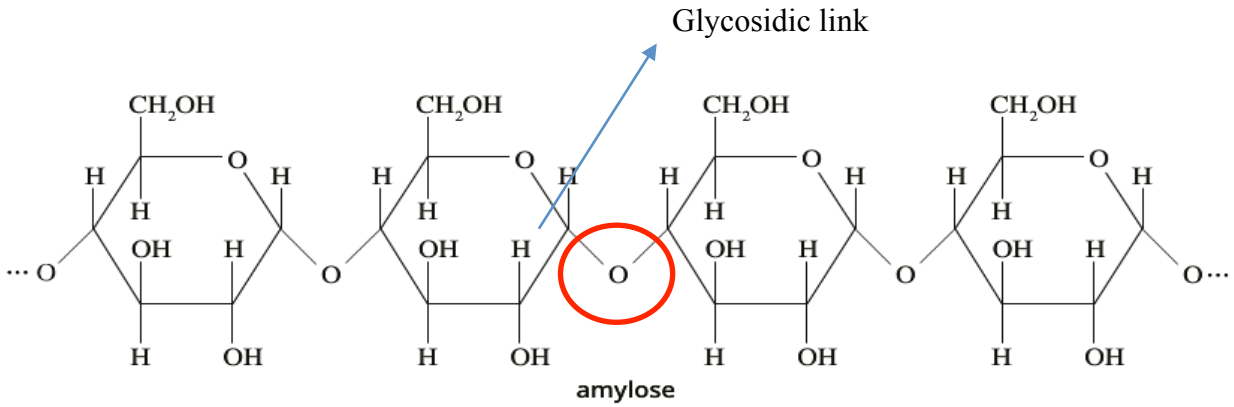
c.

$$[H^+] = \frac{K_a \times [CO_2]}{[HCO_3^-]} = \frac{4.5 \times 10^{-7} \times 0.0020}{0.050} = 1.8 \times 10^{-8}\,\text{M} \quad (1)$$

$$\text{pH} = -\log_{10}(1.8 \times 10^{-8}) = 7.7 \quad (1)$$

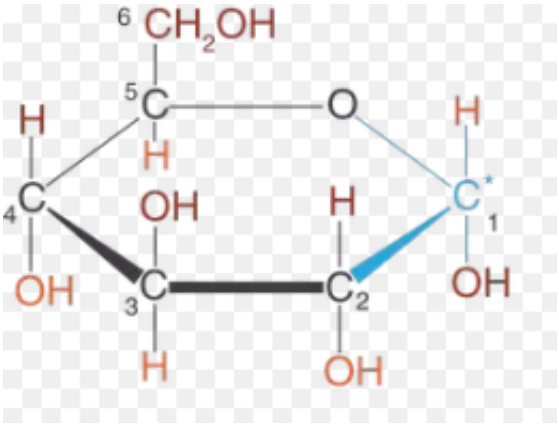
2 marks

Question 4 (5 marks)



1 mark

b. The monomer that forms amylose is alpha-glucose



1 mark

c. The long molecules of amylose pack tightly together and the OH groups are not in contact with water to form hydrogen bonds. Amylose is insoluble. The branching in amylopectin restricts the packing of the polymer leaving many OH groups in contact with water so that it dissolves.

1 mark

d. Cellulose is a linear polysaccharide that consists of glucose monosaccharide units. The linkages are different from starch. Humans are unable to digest cellulose because the appropriate enzymes to breakdown the linkages are lacking.

1 mark

e. Lactose intolerance is caused by a deficiency of the intestinal enzyme lactase that splits lactose into two smaller sugars, glucose and galactose, and allows lactose to be absorbed in the intestines.

1 mark

Question 5 (6 marks)

a.

i. the cathode: $Mg^{2+}(l) + 2e^- \rightarrow Mg(l)$

1 mark

ii the anode: $2Cl^-(l) \rightarrow Cl_2(g) + 2e^-$

1 mark

b. Both Na^+ and Ca^{2+} are weaker oxidants than Mg^{2+} and so are will not prevent the production of Mg at the cathode. Zn^{2+} is stronger oxidant than Mg^{2+} ions and would be reduced to Zn.

2 marks

c. According to the electrochemical series, Fe is a stronger reductant than Cl^-. So at the anode, Fe would be oxidised instead of Cl^- . Fe^{2+} would be produced rather than Cl_2.

Half-equation: $Fe(s) \rightarrow Fe^{2+} + 2e^-$

The cations Fe^{2+} would migrate to the cathode. Fe^{2+} is a stronger oxidant than Mg^{2+} .

Hence, Fe would be produced according to the cathode half-equation: $Fe^{2+} + 2e– \rightarrow Fe(s)$.

2 marks

Question 6 (7 marks)

a. $K = \dfrac{[CH_3OH]}{[CO][H_2]^2}$

1 mark

b. High pressure is required to get high yield of methanol. All reactants and products are in the gaseous state. Therefore, an increase in the pressure of the system will result in shifting the reaction in the direction of smaller number of mole. In this reaction, it is the side of methanol CH_3OH.

1 mark

c. This is an exothermic reaction so a decrease in temperature will make the system oppose the change and move in the forward direction of the reaction and, hence, obtain a higher equilibrium yield of methanol?

1 mark

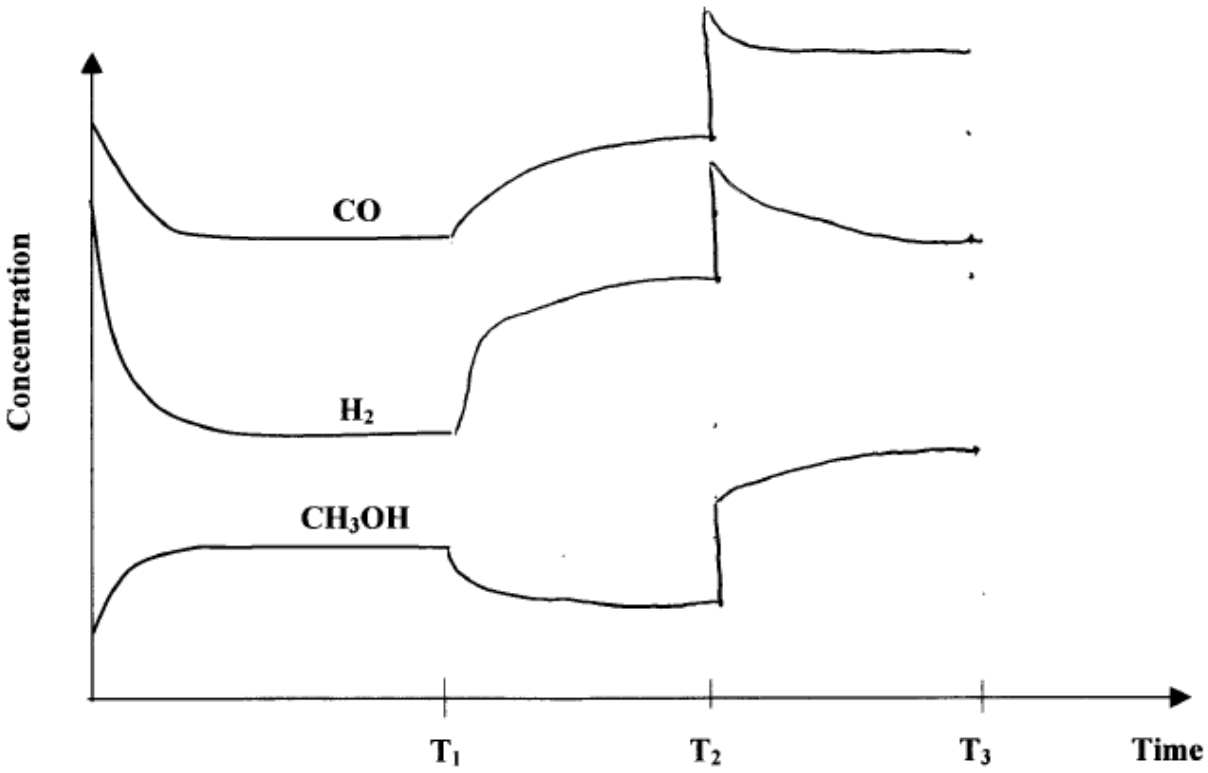
Question 6 (continued)

d. At T_1, an increase in temperature shifts the equilibrium to the left (endothermic reaction).

1 mark

e. At T_2, an increase in pressure causes an immediate increase in the concentration of all three gases followed by a shift in equilibrium to the right (smaller number of mole).

1 mark



f. The only change in the graph would be that the time taken to reach equilibrium at each stage would be shorter. The equilibrium concentrations would not change.

1 mark

g. $$K = \frac{[CH_3OH]}{[CO][H_2]^2} = \frac{0.2}{0.5 \times 0.3 \times 0.3} = 4.4\,M^{-1}$$

1 mark

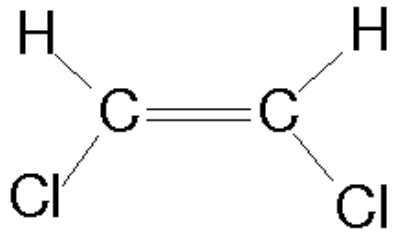
Question 7 (12 marks)

a. Isomers are molecules with the same molecular formula but different structural formalae. The functional groups attached to the carbon are on the same side in the cis isomer but on opposite sides of the carbon in the trans isomer. The cis isomer is a polar molecule whereas the trans isomer is non-polar.

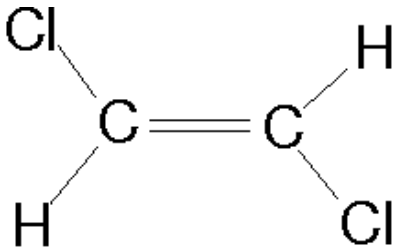
2 marks

b.

i. 1,2-dichloroethene



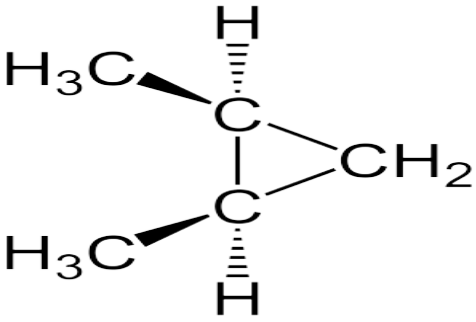
cis-1,2-dichloroethene



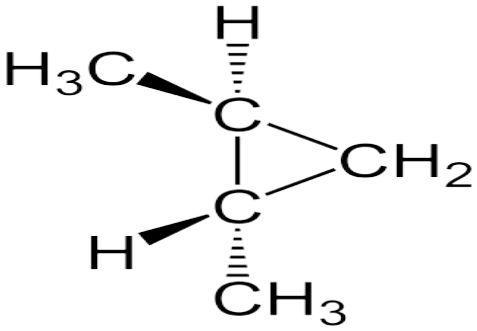
trans-1,2-dichloroethene

2 marks

ii. 1,2-dimethylcyclopropane



cis-1,2-dimethylcyclopropane



trans-1,2-dimethylcyclopropane

2 marks

c.

i. $CH_2 = CBrCH_3$ **NO** 2-bromopropene

1 mark

ii. $CH_3CH = CHCH_2CH_3$ **YES** 2-pentene

1 mark

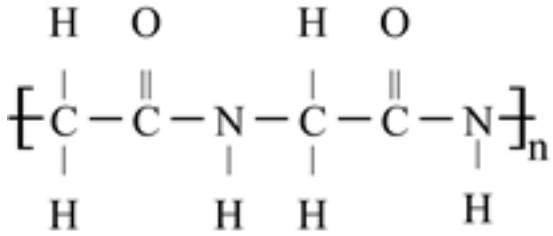
iii. CHCl = CHBr **YES** 1-bromo-2-chloroethene

1 mark

Question 7 (continued)

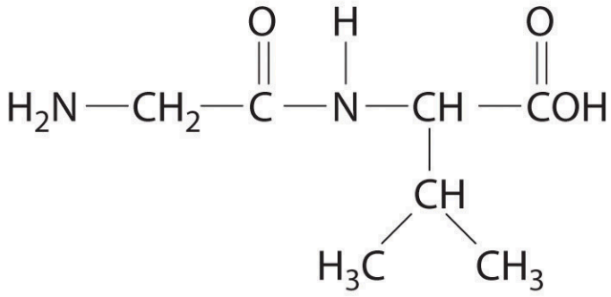
d.

i.



1 mark

ii.



Glycyl-valine

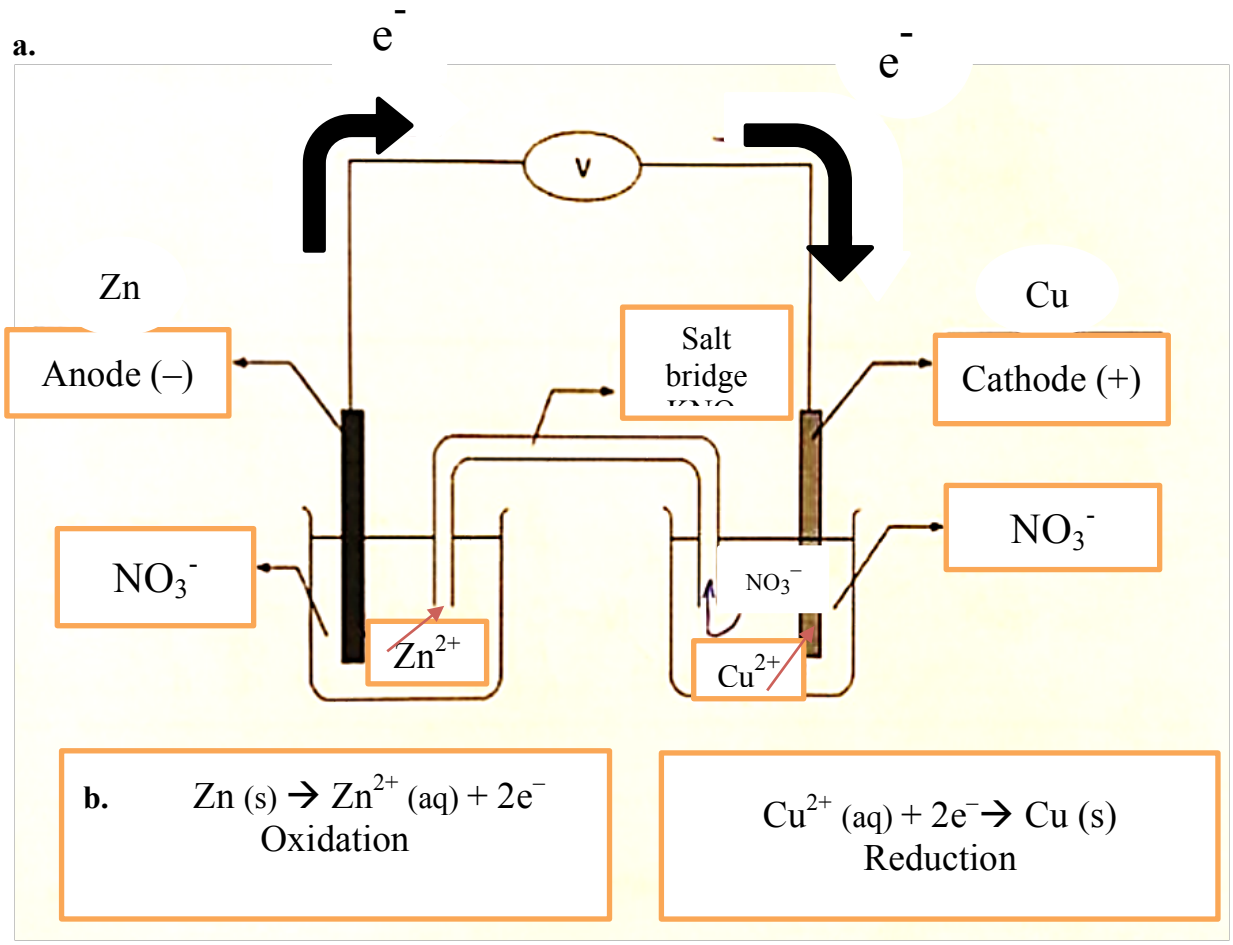
1 mark

iii. Condensation polymerisation reactions

1 mark

Question 8 (10 marks)

a.



b. $Zn\ (s) \rightarrow Zn^{2+}\ (aq) + 2e^-$
Oxidation

$Cu^{2+}\ (aq) + 2e^- \rightarrow Cu\ (s)$
Reduction

$(6 \times \frac{1}{2} = 3$ marks)

$(2 \times 1 = 2$ marks)

c. $Zn\ (s) + Cu^{2+}\ (aq) \longrightarrow Zn^{2+}\ (aq) + Cu\ (s)$

1 mark

d. Zn (s) is the reductant

1 mark

e. $Cu^{2+}\ (aq)$ is the oxidant

1 mark

f. The purpose of the salt bridge is to maintain charge balance when the electrons are moving from one half cell to the other rom the anode to the cathode. Negative ions move in the same (clockwise) direction as the electrons.

1 mark

g. $E^0_{cell} = E^0_{oxidant} - E^0_{reductant}$

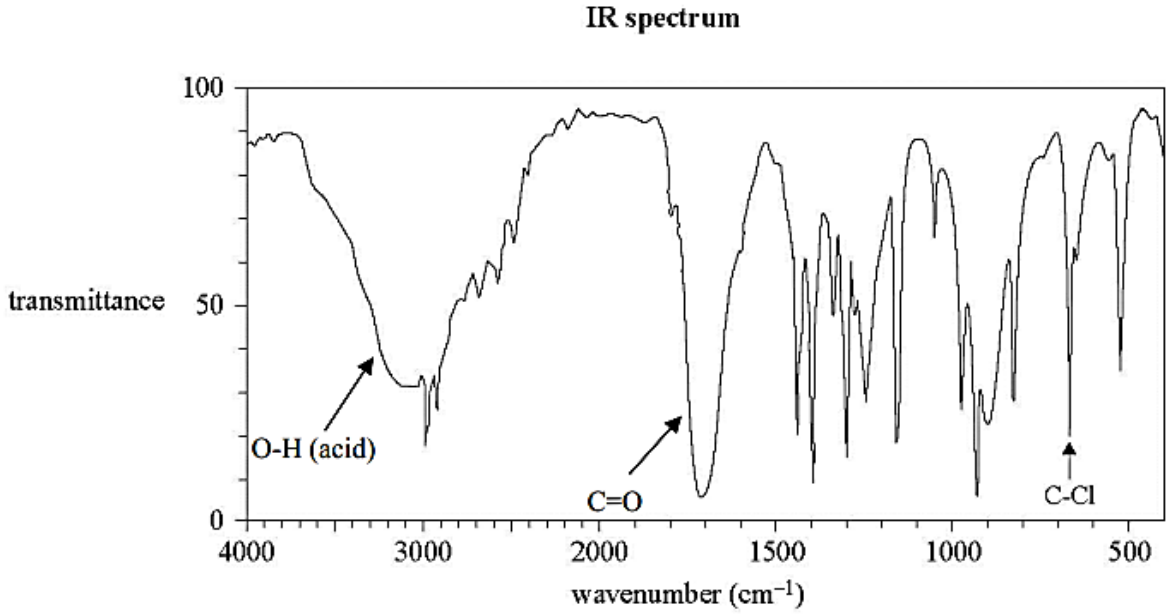
$= +0.34 - (-0.76)$

$= 1.10$ V

1 mark

Question 9 (7 marks)

a.



(2 × 1 = 2 marks)

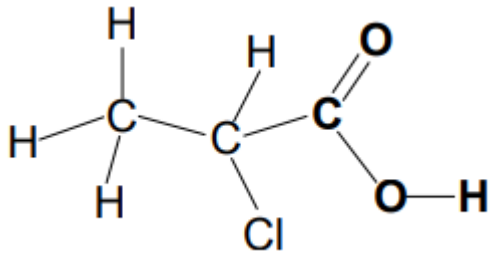
b. The ^{13}C NMR spectrum shows that there are 3 distinct carbon environments.
Use the n +1 rule from the peak splitting information in the ^{1}H NMR spectrum. This gives three hydrogen environments in the molecule, one with three neighbouring H atoms, one with one neighbouring H atom and one with zero neighbouring H atoms.
This gives the groups CH_3 , CH and COOH.

1 mark

c. Therefore, in $CxHyO_2Cl$, $\boldsymbol{x = 3}$ and $\boldsymbol{y = 5}$

2 marks

d.



1 mark

e. The reason for this is the presence of the two chlorine isotopes, ^{35}Cl and ^{37}Cl. Therefore, the two peaks are due to $[CH_3CH^{35}ClCOOH]+$ and $[CH_3CH^{37}ClCOOH]$

1 mark

Question 10 (6 marks)

a. $C_2H_5OH\ (l) + 3O_2\ (g) \longrightarrow 2CO_2\ (g) + 3H_2O\ (g)$

1 mark

b.

$m(C_2H_5OH) = 2.00\ kg = 2000\ g$

$$n(C_2H_5OH) = \frac{m}{M} = \frac{2000}{46.0}$$

$$n(CO_2) = 2 \times n(C_2H_5OH) = 2 \times \frac{2000}{46.0}$$

$$m(CO_2) = n \times M = 2 \times \frac{2000}{46.0} \times 44.0 = 3826\,g = 3.8\,kg$$

1 mark

c. $$V(CO_2) = n \times V_m = 2 \times \frac{2000}{46.0} \times 24.8 = 2156\ L = 2.16 \times 10^3\ L$$

1 mark

d. Density $= d = \frac{m}{V}$ so $m(C_2H_5OH) = d \times V = 0.785 \times 70.0 \times 1000 = 54950\ g = 55.0\ kg$

1 mark

e. From page 10 of the **Data Book**, 2 mole of CO_2 are released when 1360 kJ of energy is generated.

So, x mole of CO_2 is released when 3.00 kJ of energy is generated.

By proportion:

$$\frac{x}{2} = \frac{3.00}{1360}$$
$$\Rightarrow x = \frac{6.00}{1360}$$

$$m(CO_2) = n \times M = x = \frac{6.00}{1360} \times 44.0 = 0.194\,g$$

1 mark

Question 10 (continued)

f. $m(C_2H_5OH) = d \times V = 0.785 \times 50.0 \times 1000 = 39250$ g

$$n(C_2H_5OH) = \frac{m}{M} = \frac{39250}{46.0} = 853.26\,\text{mol}$$

Since the reaction of 1 mol C_2H_5OH generates 1360 kJ, the reaction of 853.26 mol of C_2H_5OH generates x kJ.

By proportion:

$$\frac{x}{853.26} = \frac{1360}{1}$$
$$\Rightarrow x = 1360 \times 853.26 = 1160434.78\,\text{kJ} = 1160\,\text{MJ}$$

1 mark

Question 11 (5 marks)

a. **A** and **C** are both amino acids and so can react to form a dipeptide.

1 mark

b. **E** is urea which is the end product of the breakdown of protein in the human body.

1 mark

c. **I** is glucose which can polymerise to form starch.

1 mark

d. **D** is a long chain carboxylic acid which can be formed formed as a result of the hydrolysis of a triglyceride

1 mark

e. **G** and **H** are saturated hydrocarbons which burn in excess oxygen to produce CO_2 and H_2O

1 mark

Question 12 (5 marks)

a. Petrodiesel consists of smaller non-polar molecules in which the only intermolecular forces between the molecules are weak dispersion forces. However, since the hydrocarbon chain in biodiesel is much longer and each molecule contains highly electronegative oxygen atoms, this results in the two oxygen atoms creating a dipole- dipole bonds between molecules. (dipole-dipole bonds are much stronger intermolecular forces than dispersion forces). This makes the viscosity and melting points of biodiesel greater than that of petrodiesel as greater amount of energy is required to break those intermolecular forces.

2 marks

b. Biodiesel cannot be stored for as long as petrodiesel because biodiesel reacts with oxygen gas in the atmosphere more readily than petrodiesel.

1 mark

c. Biodiesel has greater tendency to absorb water. This is because of the presence of polar bonds in the biodiesel molecules. Since water is a polar molecule it is attracted to other polar molecules, it can be attracted to the slightly polar molecule of biodiesel but not to the non-polar molecule of petrodiesel.

1 mark

d. This is because of biodiesel's high cloud point which is a measure of its performance at low temperatures. It is the point at which small crystals start forming due to the decrease of temperature. Biodiesel has higher cloud point than petrodiesel because of its molecular structure that consists of larger polar molecules that possess dipole-dipole intermolecular forces between them in comparison with petrodiesel that has smaller non-polar molecules with only dispersion forces holding them together.

1 mark

End of 2018 Kilbaha VCE Chemistry Trial Examination
Detailed Answers

Kilbaha Multimedia Publishing **PO Box 2227** **Kew Vic 3101** **Australia**	**Tel: (03) 9018 5376** **Fax: (03) 9817 4334** **kilbaha@gmail.com** **http://kilbaha.com.au**

Useful Web Links for further study of VCE Chemistry

http://www.chemguide.co.uk/physical/equilibria/haber.html

http://www.chemistry.adelaide.edu.au/external/soc-rel/content/standard.htm

http://www.chemguide.co.uk/physical/acidbaseeqia/acids.html#top

http://www.chemguide.co.uk/analysis/chromatography/thinlayer.html#top

http://www.ausetute.com.au/massmole.html

http://www.webqc.org/balance.php

http://www.chemguide.co.uk/physical/redoxeqia/ecs.html

http://www.chemguide.co.uk/physical/equilibria/lechatelier.html#top

http://www.chemguide.co.uk/physical/equilibria/lechatelier.html

http://www.chemguide.co.uk/physical/acidbaseeqia/acids.html#top

http://www.chemguide.co.uk/physical/acidbaseeqia/acids.html#top

http://www.chemguide.co.uk/organicprops/alkenes/polymerisation.html#top

http://www.chemguide.co.uk/basicorg/conventions/names.html#top

http://www.chemguide.co.uk/physical/energetics/neutralisation.html#top

http://chemed.chem.wisc.edu/chempaths/GenChem-Textbook/Galvanic-Cells-699.html

http://www.chemguide.co.uk/physical/redoxeqia/ecs.html#top

http://chemed.chem.purdue.edu/genchem/topicreview/bp/ch20/faraday.php

http://www.princeton.edu/~achaney/tmve/wiki100k/docs/Ether.html

http://tasisbio.blogspot.com.au/2012/10/molecules-joining.html

http://www.elmhurst.edu/~chm/vchembook/547glycogen.html

http://www.chembio.uoguelph.ca/chemzine/v1i1feb02/page6.shtml

Useful Web Links for further study of VCE Chemistry (continued)

http://www.chemguide.co.uk/physical/redoxeqia/ecs.html

http://www.genericmaker.com/2012_04_01_archive.html

http://en.wikipedia.org/wiki/Alpha-Linolenic_acid

http://www.chemguide.co.uk/organicprops/aminoacids/dna1.html

http://en.wikipedia.org/wiki/IUPAC_nomenclature_of_organic_chemistry#Alcohols

http://chemwiki.ucdavis.edu/Organic_Chemistry/Alcohols/Naming_Alcohols

http://www.chemguide.co.uk/analysis/ir/fingerprint.html#top

http://www.chemguide.co.uk/analysis/uvvisible/radiation.html#top

http://www.chemguide.co.uk/analysis/masspec/howitworks.html

www.educationscotland.gov.uk/images/chemmolecalcsunitlabel_tcm4-148466.pdf

http://www.chemguide.co.uk/physical/kt/idealgases.html#top

http://www.chemguide.co.uk/analysis/chromatography/gas.html#top

http://www.bbc.co.uk/bitesize/higher/chemistry/calculations_3/redox_titr/revision/1/

http://en.wikipedia.org/wiki/Ethylene

http://bit.ly/WYNVr5

http://bit.ly/1aiFW2R

http://science.howstuffworks.com/environmental/energy/natural-gas-renewable3.htm

http://www.youtube.com/watch?v=yumnYB_iGfU

Useful Web Links for further study of VCE Chemistry (continued)

http://www.youtube.com/watch?v=mfDApGo8PC0

http://click4biology.info/c4b/3/images/3.2/dipeptide.gif

http://firstyear.chem.usyd.edu.au/bridging_course/Questions/electrolysis.htm

http://www.chemguide.co.uk/physical/catalysis/esterify.html

http://www.chemguide.co.uk/organicprops/aminoacids/proteinstruct.html

http://chemed.chem.wisc.edu/chempaths/GenChem-Textbook/Disaccharides-1022.html

http://www.chemguide.co.uk/physical/acidbaseeqia/acids.html

http://www2.chemistry.msu.edu/faculty/reusch/VirtTxtJml/Spectrpy/nmr/nmr1.htm

http://www.files.chem.vt.edu/chem-ed/spec/atomic/aa.html

http://www.chemguide.co.uk/analysis/chromatography/paper.html

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