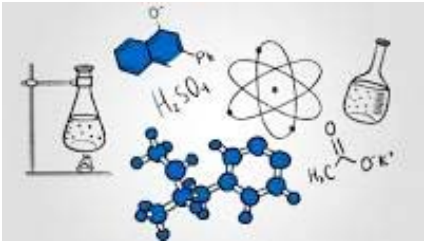
SWINBURNE
SENIOR SECONDARY COLLEGE



2018 Chemistry Holiday Homework

VCAA - links	
Study Design - http://www.vcaa.vic.edu.au/Documents/vce/chemistry/ChemistrySD-2016.pdf	
How can chemical processes be designed to optimise efficiency?	Page 25 of Study Design
Past Exams - http://www.vcaa.vic.edu.au/Pages/vce/studies/chemistry/exams.aspx	
Data Book - http://www.vcaa.vic.edu.au/Documents/exams/chemistry/chemdata-w.pdf	
Edrolo - https://edrolo.com.au/	Compass Resources – Homework and Course Outline
Chemistry Education Association http://www.cea.asn.au/vce-chemistry	

Chemistry is a practical subject. VCAA require about 5 hours for pracs and investigations testing outcomes.
Outcomes (SACs) are practical work, completed and written up, followed by an assessment task based on the prac.
Course follows the chapters in 5th Edition Pearson Heinemann Chemistry 2

Suggested revision of year 11 work

1: Write formulae and balance equations

Example

Sodium + sulphuric acid → magnesium sulphate + hydrogen

$2Na\ (s) + H_2SO_4\ (aq) \rightarrow Na_2SO_4(aq) + H_2(g)$

Practice here - https://www.thoughtco.com/balancing-equations-practice-quiz-4085427

And here - http://www.sciencegeek.net/APchemistry/APtaters/EquationBalancing.htm

There are plenty of other sites as well.

2: Moles → Mass conversion and **Mass → Moles** conversion

Examples

1. What is the mass of 4.0 moles of sodium (Mr = 23)?

Ans → number of moles(n) x molar mass (M_r) = mass in grams (m), n x M_r = m

4.0 x 23 = 92 grams

2: How many moles are in 22 grams of carbon dioxide (CO_2 Mr = 44)?

Ans → number of moles(n) = mass(m)/ molar mass (M_r), $n = \frac{m}{Mr} = \frac{22}{44} = 0.5\ mol$

More examples - http://www.ausetute.com.au/massmole.html

Practice here -http://www.sciencegeek.net/Chemistry/taters/Unit4MoleConversion.htm

3: Organic Chemistry

Revise naming alkanes, alkenes, alkynes, alcohols, and carboxylic acids (up to 8 carbon atoms)

Intro here - https://www.wikihow.com/Name-Organic-Compounds-(Simple)

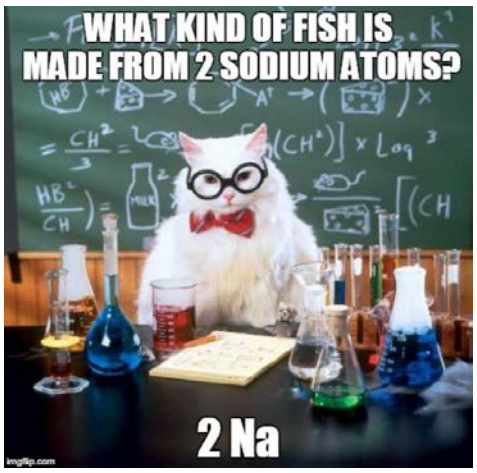
Practice here -
http://www.dynamicscience.com.au/tester/solutions1/chemistry/organic/namingorganic.htm

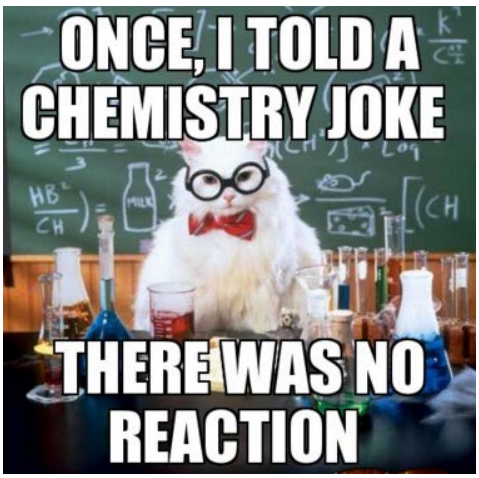
4. Redox reactions and Galvanic cells (Khan Academy Videos)

Redox Reactions

Galvanic Cells – watch the series (Extension – link to standard Cell Potentials)

Suggested homework for Year 12 – Read Chapter 1	Types of fuels - Fossil fuels and biofuels Compared in terms of energy content, energy transformations and efficiencies, renewability and environmental impact. Biodiesel Production Video https://www.youtube.com/watch?v=Zph5usgWkN0





INSTRUCTIONS FOR Edrolo

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To activate your account (you only need to do this once)

1. Go to edrolo.com.au/swinburne
2. Enter your surname and check that it recognises your correct first name
3. Choose an email address and password
4. You will be asked to enter your mobile number.
5. Click "let me in"
6. You'll then be logged into your account

To log-in once your account is active

1. Go to Edrolo.com.au
2. Select Log In at the top right
3. Enter your email address and chosen password
4. Please watch the 5 minute lesson called Student Training
5. You're now ready to go!

Unit 3 - How can chemical processes be designed to optimize efficiency?

The global demand for energy and materials is increasing with world population growth. In this unit students explore energy options and the chemical production of materials with reference to efficiencies, renewability and the minimization of their impact on the environment.

Unit 4: How are organic compounds categorized, analyzed and used?

Carbon is the basis of the diverse compounds found in living tissues and in the fuels, foods, medicines and many of the materials we use in everyday life. In this unit students

investigate the structural features, bonding, reactions and uses of the major families of organic compounds including those found in food.

Work required in preparation for start of 2019.

Read chapter 1 in your textbook and try these questions

1. Coal and ethanol are both produced from plants. Which of the following statements about the classification of these two fuels is correct?

A Coal and ethanol are both fossil fuels.
B Coal is a fossil fuel but ethanol is a biofuel.
C Coal and ethanol are both biofuels.
D Coal is a biofuel but ethanol is a fossil fuel.

2. Which of the following is *not* a fossil fuel?

A Black coal
B Oil
C Natural gas
D Biogas

3. Which of the following best describes a renewable energy source?

A A renewable energy source can be produced at slower rate than the rate at which it is used by society.
B A renewable energy source can be produced at a faster rate than the rate at which it is used by society.
C A renewable energy source can be produced at the same rate as the rate at which it is used by society.
D The rate at which a renewable energy source can be produced is unrelated to the rate at which it is used by society.

4. Which of the following is a renewable source of energy?

A Coal
B Bioethanol
C Natural gas
D Oil

5. The energy conversions that occur in a coal-fired power station may be best represented as:

A chemical energy to thermal energy to mechanical energy to electrical energy
B chemical energy to mechanical energy to thermal energy to electrical energy
C chemical energy to mechanical energy to electrical energy to thermal energy
D chemical energy to electrical energy to mechanical energy to thermal energy.

6. A device converts 85 MJ of input energy into 50 MJ of useable output energy. The efficiency of this device is closest to:

A 50%
B 60%
C 64%
D 85%.

7. The overall efficiency of the photosynthetic process can be as low as 1%. This means that:

A photosynthesis is a very efficient process
B for every 200 J of solar energy received, 1 J of chemical energy is stored in the products
C photosynthesis requires other energy sources in addition to solar energy
D 99% of the solar energy received by plants is not used for photosynthesis.

8. In which of the following situations might a biogas generator be built?

A As part of a sewage treatment works
B As part of a piggery
C As part of a dairy farm
D All the above

9. When petrodiesel is compared with biodiesel in terms of their chemical components, it can be said that:

A both consist of alkanes
B petrodiesel consists of alkanes whereas biodiesel consists of esters

C petrodiesel consists of esters whereas biodiesel consists of alkanes
D both consist of esters.

10. When biofuels are burned, the carbon dioxide produced:
A puts carbon atoms back into the atmosphere that were only recently removed
B puts carbon atoms back into the atmosphere that were removed millions of years ago
C puts oxygen atoms back into the atmosphere that were removed millions of years ago
D puts carbon atoms back into the atmosphere at a slower rate than when an equivalent amount of fossil fuel is burned.

We will look at the answers during the first lesson.