SAFFRON WALDEN
COUNTY HIGH SCHOOL

SWCHS SIXTH FORM SUMMER WORK

OCR Level 3 Applied Science

TASK

Applied Science

If you have any queries regarding this work, please email dchadwick@swchs.net

Task – You will spend an hour on each of the three TASKS below that will directly feed into your coursework or subject content at the start of year 12. These tasks can do done on paper and brought to your first class in September

TASK 1 for BIOLOGY you must create a revision poster illustrating a labelled diagram of the eukaryotic cell AND prokaryotic cell. For each of the labelled parts you should write out their functions.

You must watch this video to help with the BIOLOGY summer work:

https://www.youtube.com/watch?v=vEzXQGJSXhU

TASK 2 for CHEMISTRY – complete the task below:

Title: ACIDS

You must watch this video to help with the CHEMISTRY summer work:

https://www.bbc.co.uk/bitesize/guides/zpqvtv4/revision/5

1. Make a table showing the chemical formula of the following acids: hydrochloric acid, sulfuric acid, nitric acid, citric acid, phosphoric acid and carbonic acid.
2. Copy and complete the sentence: All acids dissociate to produce _____ ions.
3. Write a short and simple explanation of the difference between strong acids and weak acids.
4. Look at the acids in question 1 – which are strong, and which are weak?
5. Find out which acids are commonly found in fizzy drinks. Are these strong or weak?
6. Write out word and balanced equations for the following reactions:
   a. Sodium hydroxide reacting with hydrochloric acid
   b. Magnesium reacting with sulfuric acid
   c. Copper carbonate reacting with sulfuric acid
   d. Aluminium reacting with hydrochloric acid
7. Complete the table showing what colour the following indicators turn in acid and alkali:

Indicator	Colour in acid	Colour in alkali
Litmus		
Methyl orange		
phenolpthalein		

8. Draw a diagram of a titration in which hydrochloric acid is added to sodium hydroxide. Label the burette and conical flask.
9. Read this article about how titrations are used in everyday life https://www.chemicals.co.uk/blog/what-is-titration-used-for-in-real-life#:~:text=As%20an%20essential%20analytical%20tool,and%20for%20quality%20control%20purposes.
10. Briefly describe 2 uses of titrations in everyday life (from the article)

TASK 3 for PHYSICS – complete the task below:

You must watch this video to help with the CHEMISTRY summer work:

Voltage – current – resistance (https://www.youtube.com/watch?v=hRojfU77c38)

Series circuits (https://www.youtube.com/watch?v=ZQurBlu35Fo)

Parallel circuits (https://www.youtube.com/watch?v=jNFXtjt5muI)

1. Copy and complete this grid:

Quantity	Symbol (in equations)	Units [Name and symbol]	Definition
Charge	Q		
Current	I		The rate of flow of charge
Potential difference		Volts (V)	
Resistance		Ohms (Ω)	
Power	P		

2. What is Ohms law?
3. If a circuit contains a lamp with a resistance of 10 Ohms and it is powered by a 12V cell, what current would flow through the lamp?
4. What would happen to the current in question 3 if I added another lamp in series?
5. What would happen to the current in question 3 if I added another lamp in parallel?
6. In which of the circuits (question 4 or 5) would the lamps be shining the brightest? (Hint: lamps are brighter if they have a higher potential difference)
7. What is the circuit symbol for a thermistor?
8. Describe how the resistance of a thermistor changes as temperature increases.
9. Explain why the resistance of a thermistor changes as temperature increases.
10. Briefly describe two real world uses of thermistors.

How will this work be used in lessons?

The biology will be used as a revision resource and the chemistry and physics will go towards your coursework unit.

How long will this task take?

It should take 1 hour for each task – so 3 hours in total