

## APPLIED SCIENCE (BIOMEDICAL) - LEVEL 3

### SUMMER TASK

#### OBJECTIVES:

1. To provide a bridge from level 2 to level 3 and lead into the early stages of the course
2. To engage you in independent learning & research which is required at level 3
3. To encourage you to develop a good work ethic and commitment to study
4. To assess your scientific knowledge, critical/logical thinking, mathematical and problem-solving skills

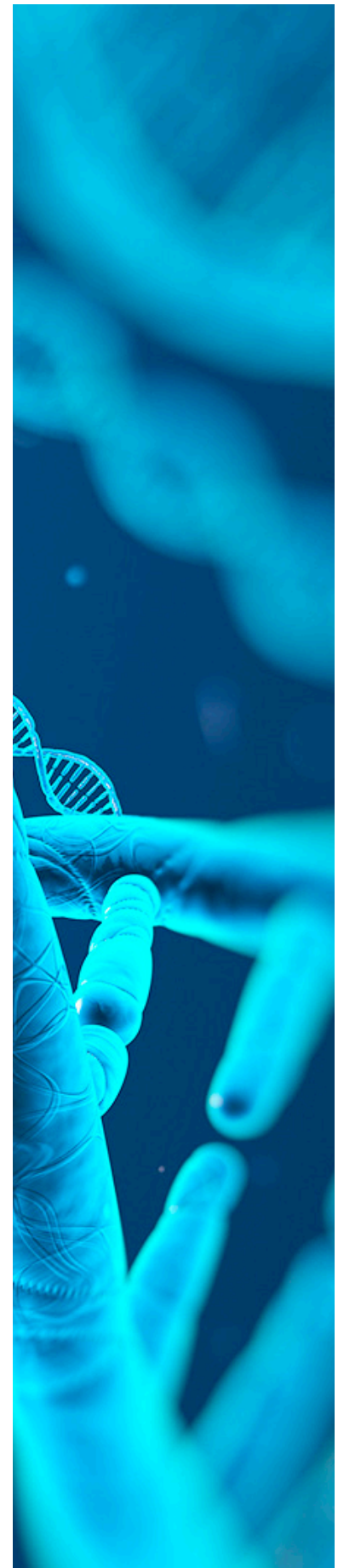
#### USEFUL WEBSITES:

Please have a look through the specification before starting the course,

[https://qualifications.pearson.com/content/dam/pdf/BTEC-Nationals/Applied-Science/2016/specification-and-sample-assessments/9781446938171\\_BTECNat\\_AppSci\\_FDip\\_Spec.pdf](https://qualifications.pearson.com/content/dam/pdf/BTEC-Nationals/Applied-Science/2016/specification-and-sample-assessments/9781446938171_BTECNat_AppSci_FDip_Spec.pdf)

If you need to look answers up that is fine and expected, this is not a test.

Please star questions where you needed to get help. Hand in at your first Chemistry lesson. It should take approx. 2-3 hours.



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### BIOLOGY

1. Cellular Structures Task: produce a large hand drawn & labelled diagrams of a virus and a bacterium cell. Do this on plain, A4 paper.

Useful links

Bacterium cells <https://www.bbc.co.uk/bitesize/guides/zyhrng8/revision/2>

Virus cells <https://www.youtube.com/watch?v=Ld-o5mZ3Rok>

(6 marks)

### 2. Transport Across Membranes

- Define diffusion and give an example of diffusion within an organism .....
- Define osmosis and give an example of osmosis within an organism .....
- Define facilitated diffusion and give an example within an organism .....
- Define active transport and give an example within an organism .....
- Define exocytosis and give an example within an organism .....
- Define endocytosis and give an example within an organism .....
- Describe phagocytosis .....

(14 marks)

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3. Complete the gapped report on DNA.

DNA is usually found in the form of C \_\_\_\_\_ which is strands of proteins and other substances held together in a specific order to form the G \_\_\_\_\_ C \_\_\_\_\_ of an organism. DNA controls cell's activity and to provide certain characteristics of the organism. A section of DNA is called a G \_\_\_\_\_ that codes for the production of a particular P \_\_\_\_\_.

DNA consists of a D \_\_\_\_\_ H \_\_\_\_\_ structure of N \_\_\_\_\_. These consist of a P \_\_\_\_\_ S \_\_\_\_\_, a Ph \_\_\_\_\_ and a B \_\_\_\_\_. It is the combination of these bases that makes every organism different from another. However, the base pairs of DNA will only pair in a certain way; A \_\_\_\_\_ will only pair with T \_\_\_\_\_ and C \_\_\_\_\_ will only pair with G \_\_\_\_\_. Each half of the double helix structure runs in the O \_\_\_\_\_ direction and the base pairs are held together by H \_\_\_\_\_ bonds.

(8 marks)

### CHEMISTRY

4a

- Write the chemical formula of carbon dioxide .....
- Write the chemical formula of hydrochloric acid ..... (1 mark)

4b. How many elements are there in a molecule of carbon dioxide? ..... (1 mark)

5a. What do you understand by the term 'redox'? .....  
..... (1 mark)

5b. Is this equation balanced?  $\text{H}_2\text{SO}_4 + \text{NaOH} \rightarrow \text{Na}_2\text{SO}_4 + \text{H}_2\text{O}$  ..... (1 mark)

5c. Hydrochloric acid reacts with sodium hydroxide to produce a salt and water. Write a balanced equation for this reaction and write the name of the salt. ....  
..... (1 mark)

5d. Define the Chemistry term 'mole' .....  
..... (1 mark)

5e. What are the two main greenhouse gases that are causing global warming and describe how they are contributing to the warming of the Earth's atmosphere (6 marks) .....  
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..... (12 marks)

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### PHYSICS

The first topic for Physics in unit 1 is about waves. It is important to know the main terms that will be used.

5 Define the following key terms and draw some diagrams to help explain the definition:

Frequency .....

.....

Amplitude .....

.....

Wavelength .....

.....

Displacement .....

.....

Longitudinal Wave .....

.....

Transverse Wave .....

.....

(6 marks)