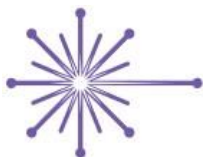


BTEC Applied Science Transition work for Year 12



The Priory Academy LSST, Cross O' Cliff Hill, Lincoln, Lincolnshire, LN5 8PW

BTEC Applied Science Transition work for Year 12

Thank you for showing an Interest in continuing with your science studies through the BTEC Applied science course. To make the transition from GCSE to BTEC smoother, there are specific areas and skills, which are the foundation for all scientific processes. It is recommended that you begin to do some preparation work, which will benefit your learning in year 12 and successful completion would be advantageous to your entry into the course.

The BTEC course is based on assignments, both practical skills and research and also exams. The course also covers all three sciences:

Chemistry

1. Atomic Structure

Atoms are the fundamental building blocks in chemistry

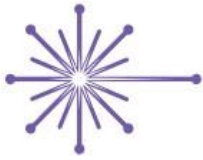
- Which 3 fundamental particles are atoms made from, and what are the properties of each?
- What do the atomic and mass numbers tell us?
- What are isotopes?
- How does the electron configuration of an atom give us information about its position in the periodic table?
- How does the reactivity of group 1 and group 7 elements depend on the electron configuration?

Extension – Show how relative atomic mass is calculated from information about the relative amount of each isotope of an atom. Use a worked example in your answer

2. Bonding

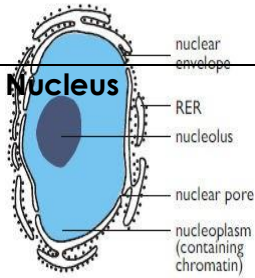
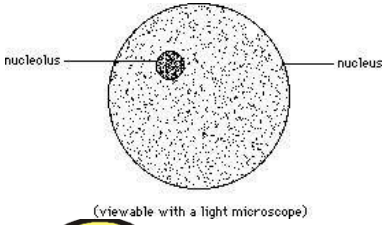
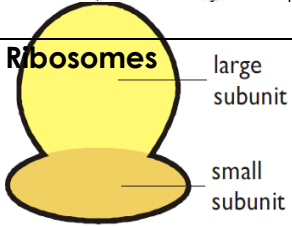
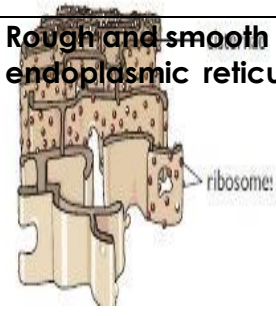
The 4 main types of bonding and structure are ionic, simple covalent molecular, macromolecular covalent and metallic

- Explain why some compounds are ionic, but others are covalent
- Research each type of bonding and structure and detail the physical properties typically associated with each type (melting point, electrical conductivity etc.)
- Explain why the bonding leads to these physical properties and include images of the structures in your answer



Biology

Fill this in and keep as part of your notes for the biology topic. It does help.

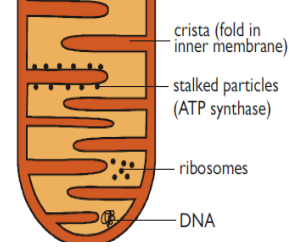
<u>Structure</u>	<u>Description</u>	<u>Role</u>
<p>Cytoplasm</p> 		
<p>Nucleolus</p> 		
<p>Ribosomes</p> 		
<p>Rough and smooth endoplasmic reticulum</p> 		



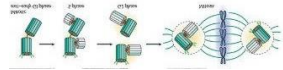
outer membrane
inner membrane

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Mitochondria



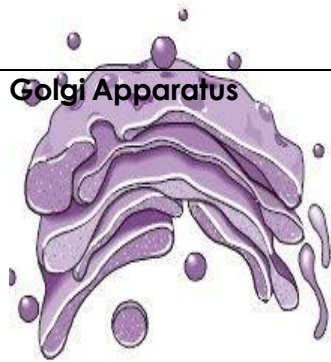
centrioles



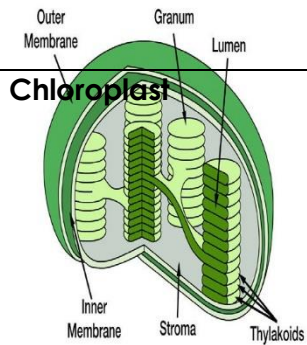
Lysosomes

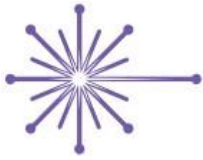


Golgi Apparatus

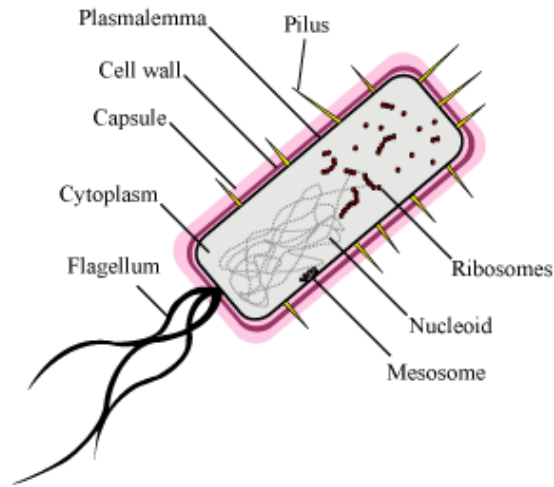


Chloroplast

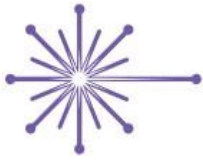




Prokaryotic Cell

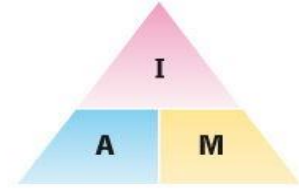


<u>Structure</u>	<u>description</u>	<u>Function</u>
Cell wall		
Capsule		
Plasmid		
flagellum		
ribosomes		
Circular DNA		



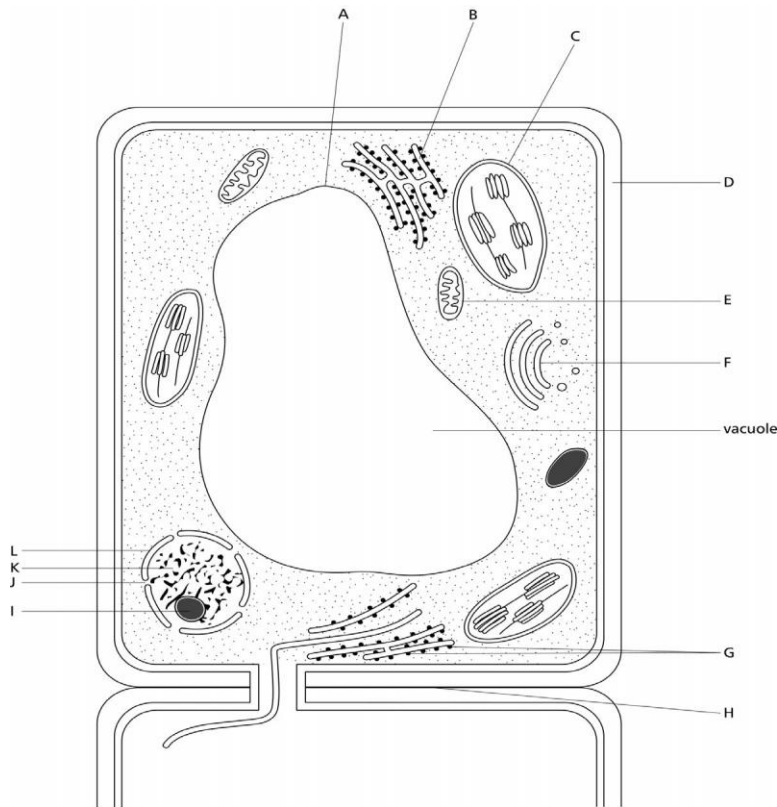
Microscopy

The diagram below shows the general structure of a plant cell when viewed under an electron microscope.



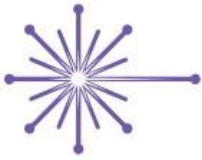
$$\text{Actual size} = \frac{\text{Image size}}{\text{Magnification}}$$

$$\text{Magnification} = \frac{\text{Image size}}{\text{Actual size}}$$



40 μm

- 1) Calculate the magnification factor of the diagram
- 2) Calculate the thickness of the cellulose cell wall.
- 3) Calculate the length of the cell.
- 4) Calculate the length of structure C.
- 5) Calculate the length of the vacuole.

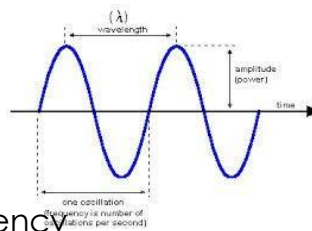


Physics

Waves

Waves

1. What do waves transfer?



2. Define the term Frequency
3. Write down the equation for Frequency
4. What unit is Frequency measured in?
5. What is the period of a wave measured in?
6. What is amplitude, when referring to a wave?
7. What is the wavelength of a wave?
8. What units are amplitude and wavelength measured in?
9. In a transverse wave, what is the wavelength?

To support your studies there are various websites, you tube videos and online books you can access (only use A level standard resources):

1. [Seneca](#)
2. [Khan Academy](#)
3. [BTEC unit 1 specification](#)