BTEC Applied Science (Biology Aspect)

Essential Bridging Work

If you intend to enrol on this course you must complete the following bridging work.

In addition to this task you should also complete the Chemistry & Physics Aspect tasks below.

You will need this work for your first lesson. Make sure you bring it with you.

Topic	CELL SPECIALISATION (How the structure of cells enables its function)
Task	In the form of a table you are going to research the structure and function of the following specialised cells:- • Palisade Mesophyll Cell • Sperm cell • Egg Cell • Root Hair cell • White Blood Cell • Red Blood Cell • One cell of your choice (make sure it is named) In order to do this you should have a column for each of the following:- • Draw a labelled diagram of the cell • Describe the function of each cell • List all of the specialised features that each cell contains within its structure • Describe the purpose of each of the specialised features that it contains • Explain how the structure of each of these cells enables the cell to carry out its function Give a definition in your own words to describe what 'Cell Specialisation' means
Resources	the following videos will be useful:- https://www.youtube.com/watch?v=neFfUk0NXgY https://www.youtube.com/watch?v=9mvJ6GmMn1k https://www.youtube.com/watch?v=7z6W2xv4upc https://www.youtube.com/watch?v=A5sqWNO4lgA The following websites will be useful http://www.passmyexams.co.uk/GCSE/biology/cell-specialisation.html http://alevelnotes.com/cell-specialisation-and-organism-organisation/150 You will have to use other sources of information in order to complete the task, please cite all of the sources that you used in a reference section attached to the table on a separate sheet
Presentation	In the form of a handwritten table on A4 paper with an appropriate title Please bring it to your first lesson to be handed in.

BTEC Applied Science (Chemistry Aspect)

Essential Bridging Work

Topic	Btec National in Applied Science – Structures and bonding in applications in Science.
Task	Our expectation is that you write your **own** notes related to the following instructions. Research, read **and** write about: Understanding Ionic bonding: • **Describe** the Strong electrostatic forces between oppositely charged ions – how does this bond come about? • **Explain** the formation of ions (positive and negative) – some examples • **Show** the electronic configuration of both Cations and Anions e.g. Cl^-,H^+ • **Explain** the effect ionic radius and ionic charge have on the strength of ionic bonding Understanding Covalent bonding: • **Describe** the strong electrostatic attraction between two nuclei and the shared pair of electrons – how does this bond come about? • **Draw** Dot and cross diagrams to show electrons in simple covalent molecules (CH_4 PLUS ANOTHER OF YOUR CHOICE), including those with multiple bonds (O_2, CO_2, C_2H_4) and dative (coordinate) bonds such as NH_4^+ • **Explain** the relationship between bond strength and bond length in the covalent bond • **State** what is meant by the Tetrahedral basis of organic chemistry **Write** down the definitions of these keywords: Cation Anion Ion Bonding Covalent Ionic
Resources	The following videos may be useful: https://www.youtube.com/watch?v=HJ5yoJi6WPI – General Ionic bonding https://www.youtube.com/watch?v=uovOPdYEx7k – General Covalent bonding The following websites may be useful: http://www.bbc.co.uk/education/guides/zt9887h/revision/1 - GCSE bitesize http://alevelchem.com/aqa_a_level_chemistry/unit3.1/sub313/01.htm - A level Chemistry http://www.chemguideforcie.co.uk/2016section3/learning3p3c.html - bond length and strength http://chemistry.elmhurst.edu/vchembook/204tetrahedral.html - Organic chemistry You will have to use other sources of information in order to complete the task, please cite all of the sources that you used in a reference section.
Presentation	Your notes should be **handwritten** on A4 paper with clearly labelled pencil diagrams and tables.

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BTEC Applied Science (Physics Aspect)

Essential Bridging Work

Topic	Waves in communication: Working with waves
Task	Give an overview of the electromagnetic spectrum, You should make it clear how the electromagnetic spectrum is grouped according to the frequency. Finally you need to explain how the application of electromagnetic waves in communications are related to frequency, including: satellite communication, mobile phones, Bluetooth, infrared and Wi-Fi. Criteria A written report including: A diagram showing the electromagnetic spectrum and the typical wavelengths and frequencies for each region of the spectrum. Describe some general properties of these waves, such as their speed. At least two ways that each part of the spectrum can be used (e.g. microwaves are used for cooking, and also in mobile phones). Explain the possible dangers to the human body for each region of the spectrum.
Resources	Videos https://www.youtube.com/watch?v=RVyHkV3wIyk https://www.youtube.com/watch?v=jjy-eqWM38g https://www.youtube.com/watch?v=IRBfpBPELmE https://www.youtube.com/watch?v=QZhXzgw-Qf0 Websites http://www.cyberphysics.co.uk/topics/light/emspect.htm http://www.chemguide.co.uk/analysis/uvvisible/radiation.html https://www.boundless.com/physics/textbooks/boundless-physics-textbook/electromagnetic-waves-23/the-electromagnetic-spectrum-165/
Presentation	In the form of a handwritten table on A4 paper with an appropriate title Please bring it to your first lesson to be handed in.