Applied Science

Pre Course Task

Part 1:

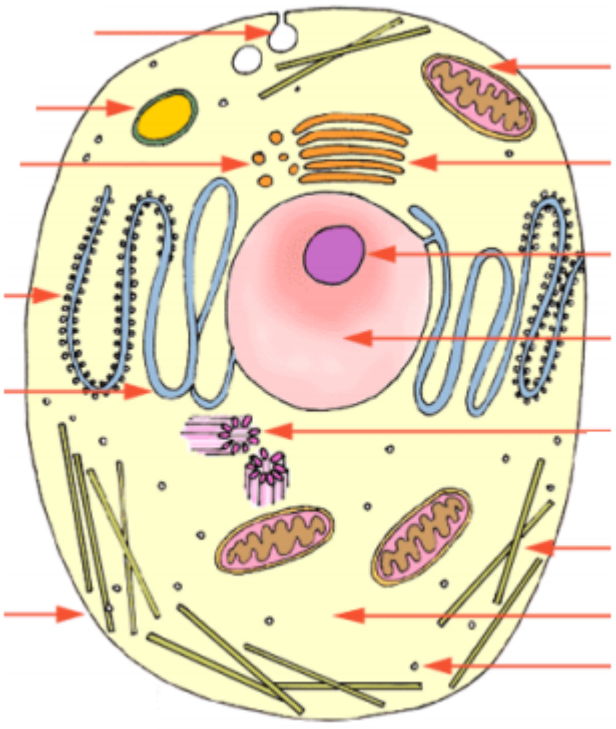
Applied Science Pre-course task – Unit 1

Part A: Structure and function of cells and tissue

1. Outline the similarities and differences between eukaryotic and prokaryotic cells.

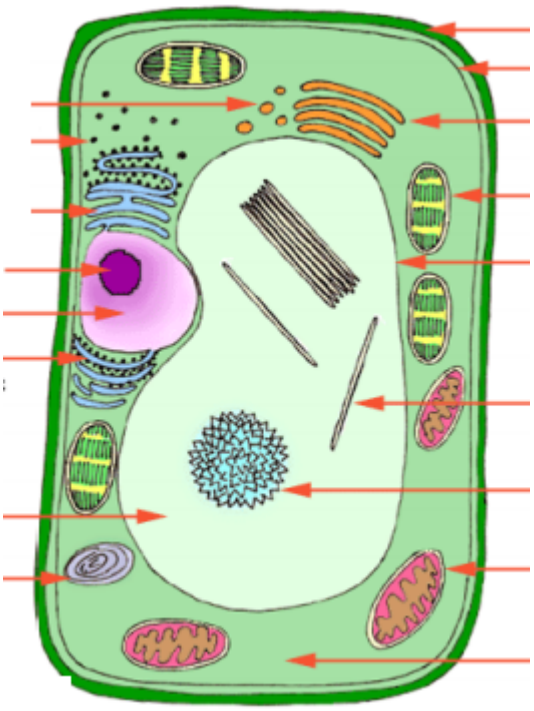
Animal Cell

1. Label a diagram of an animal cell.
2. Outline the functions of each cell component.
3. State two functions of the Golgi apparatus.



Plant Cell

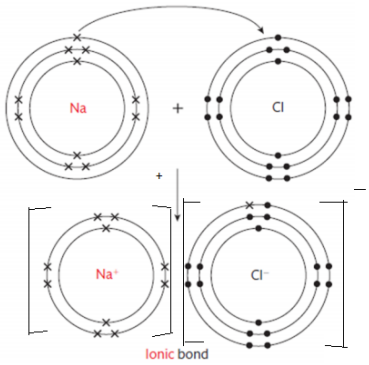
1. Label a diagram of a plant cell.
2. Outline the functions of each cell component.
3. Which organelles are found in a plant cell but not animal



Part B: Periodicity and Properties of Elements

Ionic Bonding

Ionic bonding occurs when an atom of an element loses one or more electron and donates it to an atom of a different element. The atom that loses electrons becomes positively charged and the atom that gains electron(s) become negatively charged because of the imbalance of protons and electrons. The opposite charges on the ions are what hold them together. This is an electrostatic attraction.



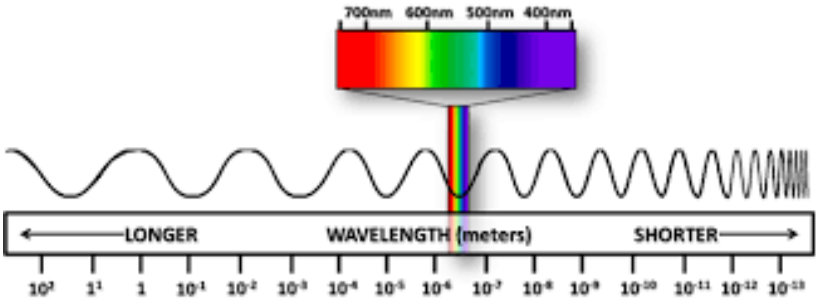
Ionic bond in NaCl – Sodium chloride

Draw dot and cross diagrams to show ionic bonds between – NaF, MgO, Li_2O and $CaCl_2$

Explain the properties of ionic compounds (m.p and b.p, solubility, conductivity and state

Part C: Waves in communication

Electromagnetic Waves



Name and label on the diagram the seven electromagnetic waves. For each wave describe its uses and any dangers associated with the waves.

Which waves are used in communications? Explain how they are used in different communications (try and think of an advantage and disadvantage for each)

Part 2 Unit 4: Laboratory Techniques and their Applications

Name…….

2020 Applied Science Pre- Course Task

Unit 4: Learning aim A: Laboratory techniques and their application

1. Outline main points of the health and safety work act 1974

2. Scenario

   You are a health and safety inspector asked to provide a report on 2 science laboratories. You can use school as one. (Other may include, pharmaceutical, pathology lab, toxicology, plastics, cosmetics, forensic)

- Produce a risk assessment of your school lab. Include an outline of the lab with specific safety feature and risks/ potential hazards
- Produce a risk assessment of your chosen lab (google image) inc. safety feature of the lab

3. Compare and contrast the potential hazards of each lab

4. How does each lab keep its employees safe (explain each of the following for you lab)

- H&S audits
- Risk assessments
- Storing/handling chemicals
- PPE- personal protective equipment
- Heavy lifting
- Standard operating procedure
- Dealing with certain types of waste

5. Discussion/ Conclusion

-Explain how each procedure improves the health of employees

-Evaluate advantages and disadvantages of each procedure for potential benefits of the organisation and employee.

Need to expand on the following points

Health and safety at work legislation, including

Management of health and safety

Personal protective equipment (PPE)

Use and control of hazardous substances

Manual handling operations

Display screen, classification, labelling and packaging regulations

Reporting of injuries, diseases and dangerous occurrences.

Health and safety policy or health, safety and environmental policy – scrutiny of examples from the workplace

Consequences of not complying with health and safety legislation.

Hazards in a scientific organisation

Control of Major Accident Hazards (COMAH) sites

Explosive atmospheres

Electrical hazards.

Working at height.

Lone working.

Vehicles.

Sensitisers

Noise.

Working environments in scientific settings

Laboratories

Educational settings.