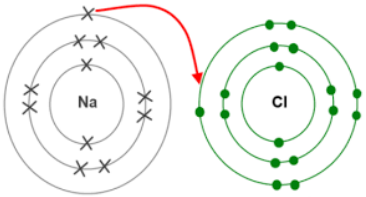
Kemnal Technology College

Year 9 – Kemnal Keys

ambitious minds

<table>
<tr><th colspan="2">Biology</th><th colspan="2">Chemistry</th><th>Physics</th></tr>
<tr><td>1</td><td rowspan="2"><u>Pathogens</u> are microorganisms that enter the body and cause disease.
• Bacteria are very small cells, which can reproduce rapidly inside your body.
• Viruses are not cells or living, much smaller than bacteria, they live inside your cells and can reproduce rapidly.
• Protist's are single cell eukaryotes. Often transferred by a vector like malaria.
• Fungi (unicellular or multicellular) can grow and penetrate human skin and plant surfaces causing disease.</td><td colspan="2"><table><tr><th>Type of bonding</th><th>Elements involved</th></tr><tr><td>Ionic</td><td>Metal + Non-metal</td></tr><tr><td>Covalent</td><td>Non-metal + Non-metal</td></tr><tr><td>Metallic</td><td>Metal + metal</td></tr></table></td><td rowspan="2"><u>Equations</u>
$E_k = 1/2mv^2$
$E_p = mgh$
$E_e = 1/2ke^2$
$\Delta E = m \times c \times \Delta O$
$P = E / t$
$P = W / t$</td></tr>
<tr><td>2</td><td colspan="2"><u>Ionic bonding</u> occurs in compounds formed from metals combined with non-metals. The particles in an ionic bond are oppositely charged.
When metals and non-metals react electrons are transferred from the metal to the non-metal to form ions. The ions formed have full outer shells.</td></tr>
<tr><td>3</td><td>Viral diseases – Measles, HIV and TMV.

Bacterial diseases – Salmonella and Gonorrhea</td><td colspan="2"><u>Ionic compounds</u> are held together by strong electrostatic forces of attraction between oppositely charged ions. Ionic compounds form giant lattices.</td><td>Hooke's law, law of elasticity discovered by the English scientist Robert Hooke in 1660, which states that, for relatively small deformations of an object,
the displacement or size of the deformation is directly proportional to the deforming force or load</td></tr>
<tr><td>4</td><td>Protist disease – Malaria

Fungi disease – Rose Black spot</td><td colspan="2">Properties of Ionic Compounds
• High melting points
• Ability to conduct electricity when molten or dissolved in water</td><td><u>Work done</u>
Work done is another way of saying energy transferred.
Work can be done when current flows, or by a force moving an object.</td></tr>
<tr><td>5</td><td><u>Body's defences</u>
Skin acts as a physical barrier to pathogens
Hairs and mucus trap particles that could contain pathogens.
Trachea & Bronchi use mucus and cilia (small hair-like structure) to trap pathogens
Stomach produces hydrochloric acid to kill pathogens.</td><td colspan="2"> 
</td><td><u>Power</u>
Is the rate of doing work: How much per second.
Power is measured in Watts. 1 Watt = 1 joule of energy transferred per second.
Power = Energy transferred / Time</td></tr>
</table>

Quiz Time

Week 1 Quiz

1. What are the 4 types of pathogen?
2. What are the 3 types of bonding?
3. What is the equation for kinetic energy?
4. Describe the differences between bacterial and viral infections
5. What is the equation for Gravitational Potential Energy?

Week 2 Quiz

1. What happens to the electrons in ionic bonding?
2. Describe a protest
3. Describe the term dissipated energy?
4. Write 2 equations from the energy topic.
5. What is a pathogen?

Week 3 Quiz

1. Give an example of viral disease
2. Give an example of a bacterial disease
3. Describe a of feature ionic compounds
4. Describe Hookes law in your own words.
5. Describe a fungal disease

Week 4 Quiz

1. Give an example of a protest disease
2. Give an example of a fungal disease
3. Identify 2 properties of ionic compounds
4. Describe the term work done
5. Describe ionic bonding

Week 5 Quiz

1. Identify the 3 of the bodies barriers to prevent pathogens entering the body.
2. Draw a diagram of ionic bonding, showing electrons.
3. What is the Unit for Power?
4. What is the Unit for Energy?
5. What is the equation for Power?

Week 6 Quiz