Y10 Science Revision

www.deepscience.com T.Mander 13/11/12

v1.1

- Two hours
- Use blue or black pen or pencil even for diagrams. NEVER use a red pen.
- Use a ruler for any straight lines
- Do not give up!
- Test will be given one of four possible grades
    - Not Achieved (<30% if marked normally)
    - Achieved (30-60%)
    - Merit (60-85%)
    - Excellence (the top 5-10% of students)

Bio- Variation
Bio- Living Together
Physics- Forces and Motion
Physics- Electricity
Physics- Earth the Active Planet
Chem- Atoms, Molecules, and Ions
Chem- Acids and Bases

Variation

Living things and MRS GREND
Sexual vs. asexual reproduction
Seed dispersal
Family trees, genotype, phenotype
Fertilisation:
    Where does it happen
    What is happening
    Why does it happen
Label our bodies bits!
Metamorphosis
From Zygotes to puberty
Menstral Cycle
Placenta
Twins

Living Together

Food chains (note arrow direction) vs. Food Webs
Definitions: *Habitat*, niche, producer, consumer, carnivore, herbivore, omnivore, decomposer, prey, predator, transect, quadrat
Adaptations: behavioural vs functional
Traits (continuous vs discrete) and variation that help survival
Understand how you can survey a community:

Take several small random samples.
Biotic factors: parasites, pathogens, predators, competitors, human influence
Abiotic factors: temperature, light, altitude, weather
Carbon Cycle

Forces and Motion
d/t graphs
Acceleration = change in velocity / change in time
Force types and vectors, eg. friction, weight
Gravity = $10ms^{-2}$
Magnetism
Change 26km/hr into m/s.
26 / 3.6 = 7.2 m/s
kilometres per hour / 3.6 = meters per second

Electricity
Safety
Circuits and Symbols
Voltmeters and ammeters
V=IR
P=IV
Series and Parallel, advantages and disadvantages

- Water conducts electricity. So don't mix electricity and water
- Don't stick things, especially metal, into power sockets or toasters.
- Turn power off and remove plug before cleaning toaster

Earth the Active Planet
Definitions: weathering, erosion, folding, faulting
Rock types: sedimentary, igneous, metamorphic
Volcanoes in NZ (shield, cone, dome, caldera)
Plate Tectonics
Earth structure
Earthquakes
Weathering and erosion

Atoms, Molecules, and Ions
Properties and uses of solids
State changes
Atoms, elements, and their symbols
Ionic compounds
Formulas
Equations

Acids and Bases
Litmus paper: blue in base, red in acid

Universal Indicator: green in neutral
pH scale: 1-14
1 acid
7 neutral
14 base
Common names and formulas
Antacids and how they work
Antacid is a base that you mix with an acid to become neutral. This is neutralisation.
HCl acid
HNO_3 acid
H_2SO_4 acid

$Al(OH)_3$ base
NaOH base

$2HCl + MgCO_3 \rightarrow MgCl_2 + CO_2 + H_2O$
$2HCl + CaCO_3 \rightarrow CaCl_2 + CO_2 + H_2O$

Toothpaste is basic so it neutralises acids in our mouth that are made from bacteria.

Excellence Level questions involve discussions and full sentences

Practise questions (one example from each topic):
Describe what happens when magnesium burns in air.
Magnesium metal reacts with Oxygen gas and burns to leave a white powder. The magnesium metal loses 2 electrons from its outer shell to become a 2+ ion. The Oxygen gains 2 electrons to become a 2- ion. The two ions join to produce an ionic compound MgO (the white powder).

Discuss the advantages and disadvantages of parallel or series circuits for Christmas lights.
In series you need less wire and its easier to connect up. But if one bulb blows then all the bulbs will stop working.
In parallel the other bulbs will keep working if one blows. The current draw from the supply will be greater in parallel. Each bulb in parallel will get the full voltage from the supply which should make them brighter.

Discuss how metamorphic rocks are formed.
An existing sedimentary or igneous rock is changed in form due to pressure and high temperature without melting. This occurs deep underground, eg. in a subduction zone between tectonic plates.

Discuss how a permanent magnet can be made stronger or weaker with respect to *domains*.

Stroking it with another strong magnet will align the domains and magnetise it. Hitting the magnet with a hammer or dropping it will misalign the domains and weaken the magnet.

Discuss metamorphosis of a frog.
This is complete metamorphosis. Each stage of its life allows the frog to live in a certain habitat. Each stage offers specific benefits. Adult frog can use the larger food source of insects to support its size and can reproduce. As a tadpole it has gills to enable it to stay underwater.

Discuss how you survey an area. Include the words "counting, transect, quadrat, samples, random."
Instead of counting every individual in a large area, random samples are taken across the area. A transect line is laid across the area and the quadrat is placed at random points along it. The individuals under the quadrat are counted and their location in the grid is also recorded.

Discuss how an antacid works.