# 2nd YEAR REVISION SHEET FOR SUMMER EXAM

## BIOLOGY

### Aerobic respiration

- Define respiration
- Write the word equation for respiration.
- What does the word aerobic mean?
- Describe an experiment to compare the carbon dioxide levels of inhaled and exhaled air
- What energy conversion happens in respiration?
- Give two things that effect the human breathing rate
- Describe how oxygen is taken into the bloodstream from the lungs and how carbon dioxide is taken into the lungs from the bloodstream during gaseous exchange.
- How is gas exchange effected by smoking?

### Excretion

- Draw a diagram of the excretory system and label: the bladder, renal artery, renal vein, ureter, urethra and kidney
- What do each of the following parts of the excretory system do? the bladder, renal artery, renal vein, ureter, urethra and kidney
- Name three things excreted by the human body. Which organs excrete them?
- Explain how the kidneys work – what do they do to the blood?

### Skeletal system

- Identify the main parts of the human skeleton.
- What are the three roles of the skeleton?
- Locate the major bones in the human body including the skull, ribs, vertebrae, collarbone, shoulder blade, humerus, radius, ulna, pelvis, femur, tibia and fibula, using a diagram.
- What do bones do?
- How do muscles cause movement?
- Give an example on an antagonist pair
- What do ligaments do?
- What do tendons do?
- Name three types of joints. Give an example of each.

### Plant structure

- Draw a diagram showing the root, stem, leaf and flower. Give the function of each.
- What is the name of the vessels (tiny tubes) that transport water around the plant?
- What is the name of the vessels (tiny tubes) that transport food around the plant?
- Describe an experiment to show that water travels through a plant.

### Circulatory System

- Circulatory system
    - describe the function and composition of blood, and know that blood contains white blood cells, red blood cells and platelets in a liquid called plasma
    - understand the structure and function of the heart, identify the four chambers of the heart, and explain the difference between the left and right ventricles
    - describe the passage of blood through the heart and lungs via arteries and veins, identify the pulmonary artery and vein, aorta and vena cava, and distinguish between arteries, veins and capillaries
    - understand that the products of digestion are absorbed into the bloodstream and are thus circulated around the body
    - demonstrate the effect of exercise and rest on pulse and breathing rate and understand that a balance of each promotes good health
    - recall that the average pulse rate for an adult at rest is 70 b.p.m., and explain why exercise results in increased pulse and breathing rates

- recall that the normal temperature of the human body is 37 °C, and understand that illness may cause a change in body temperature

# CHEMISTRY

## Metals

- Give the symbols of the following metals: copper, zinc, aluminium, iron, silver and gold
- Give three uses of metals.
- List the physical properties (state and colour only) of two examples of metallic and two examples of non-metallic elements
- Are metals good or poor conductors of heat and electricity?
- What does lustrous mean?
- What does malleable mean?
- What does ductile mean?
- Give the symbols of carbon, oxygen, sulfur, hydrogen and nitrogen

## Acids and bases

- Describe an experiment to use universal indicator to test a variety of solutions, and classify these as acidic, basic or neutral
- What is the pH scale?
- Give three examples of acids you'd find in your home
- Give two examples of acids you find in a school laboratory
- Give three examples of bases you'd find in your home
- Give two examples of bases you'd find in a school laboratory.
- Describe an experiment to show the neutralisation of an acid with a base using an indicator
- Complete the statement: Acid + base → _____ + water.
- Write the equation for a neutralisation reaction
- Give three examples of neutralisation in every day life

## Air and oxygen

- What gases make up the mixture that is the air?
- What % of the air does each gas make up?
- Describe an experiment to show that approximately one fifth of the air is oxygen.
- Describe an experiment to show that there is $CO_2$ and water vapour in air
- Describe an experiment to prepare a sample of oxygen by decomposing $H_2O_2$ using $MnO_2$ as a catalyst
- Write the word equation for the reaction to make oxygen
- Write the chemical equation for the reaction to make oxygen.
- How do you test for the presence of oxygen?
- Give two uses of oxygen.
- If you burn carbon in oxygen what is made?
- How would you test the pH of the product?
- What is made if you burn magnesium in oxygen?
- What is the pH of the product?

## Carbon dioxide

- How do you prepare carbon dioxide in the laboratory?
- Write the word equation for the reaction
- Write the chemical equation for the reaction.
- Is Carbon dioxide more or less dense than air?
- Give two uses of Carbon Dioxide?
- How do you test for carbon dioxide
- What is the equation for that reaction?

## Basic atomic structure

- Describe the structure of the atom.
- State the location, relative charge, and atomic mass of the sub-atomic particles,
- Define atomic number
- Define an isotope
- Draw the Bohr structure of Carbon and of Sodium

## Bonding

- Define a molecule
- Define a covalent bonds
- Draw a molecule of $CH_4$ to show the bonding.
- Define an ionic bond.
- Draw the bonding in NaCl to show the bonding.
- Can ionic or covalent substances conduct electricity.

## Rusting and corrosion

- Define rusting
- What are the conditions necessary for rusting?
- List three ways that you can prevent rust from building up.

## Metals

- Describe the general properties of the alkali
- describe the reactions of the alkali metals with air and water (word equations for reaction with water)
- Write the following metals Cu, Mg, Ca and Zn in order of reactivity from most reactive to least reactive.
- Which group on the periodic table is called the alkali earth metals?

## Fuels and Plastics

- What do fossil fuels make when they burn (what are the products of combustion of a fossil fuel?)
- Give two examples of fossil fuels
- Describe how burning fossil fuels that has sulphur in it can make acid rain.
- Describe the effects of acid rain.
- What is natural gas made from?
- Where do plastics come from?
- What are plastics used for?
- What are the properties of plastics that make them useful?
- describe and discuss the impact of nonbiodegradable plastics on the environment
- Describe the role of chemistry in pharmacy, medicine and the food industry.

# PHYSICS

## Force and moments

- forces, effects of forces
  - Define force
  - What is the unit of force
  - State Hooke's law
  - Describe an experiment to prove Hook's law
  - Define friction
  - How can friction be reduced?
  - What is the difference between mass and weight?
  - What is the unit of mass?
  - What is the unit of weight?
  - How do you calculate the weight if you know the mass?

## Pressure

- Define pressure
- What is the formula for calculating pressure?
- What happens to the pressure as you go down deeper and deeper under water?
- How would you show that air has mass and occupies space?
- What would the weather like when there is low pressure conditions?

## Work and power

- Define work
- Write a formula for the calculation of work
- Give the unit of work?
- Define power
- Write a formula for the calculation of power
- Give the unit of power?

## Light

- How would you show that light travels in straight lines
- Explain how shadows are formed
- What is the difference between a luminous object and a non-luminous object.
- What colours make up the visible spectrum of light?
- What is reflection
- What is refraction

## Sound

- Explain the time lag between seeing and hearing the same event.
- What is an echo?
- Why do you sometimes need to wear ear protection?

## Density

- Define density
- How do you calculate density?
- Why do things float?
- What is the density of water?