**2012 Ordinary Level Paper**

**Biology**

**Question 1**

**(a)**

[2012 OL]

The diagram shows a flowering plant.

Name the parts of the plant labelled A and B.

**Answer**

A is a flower

B is a root

**(b)**

[2012 OL]

Animals can be classed as vertebrates or invertebrates.

Complete the sentence:

1. Vertebrates are animals with a \_\_\_\_\_\_\_\_\_\_\_\_\_.
2. Which of these animals is a vertebrate?

**Answer**

1. Backbone
2. The mouse

**(c)**

[2012 OL]

All living organisms have common characteristics e.g. respiration.

Give two other characteristics of living organisms.

**Answer**

Nutrition (feeding)// excretion// reproduction// growth// movement//response (sensitivity)

**(d)**

[2012 OL]

The diagram shows part of the human skeleton.

1. Name the bones labelled A in the diagram.
2. Give one function of the skeleton in the human body.

**Answer**

1. A – Backbone (spine, vertebrae)
2. Protection / support / movement / blood cell production / shape (structure)

**(e)**

[2012 OL]

Human characteristics can be inheritable or non-inheritable.

Complete the following statements.

1. Inheritable characteristics are controlled by \_\_\_\_\_\_\_\_\_\_\_\_\_
2. An example of a non-inheritable characteristic is \_\_\_\_\_\_\_\_\_\_\_\_\_

**Answer**

1. Genes
2. Eyecolour

**(f)**

[2012 OL]

Blood is part of the circulatory system.

Complete the following statements:

1. The liquid part of blood is known as \_\_\_\_\_\_\_\_\_\_\_
2. Oxygen gas is carried around the body by the \_\_\_\_\_\_\_\_\_\_\_\_\_

**Answer**

1. Plasma
2. Blood

**(g)**

[2012 OL]

Respiration is the release of energy from digested food e.g. glucose.

Complete the word equation given below.

Glucose + \_\_\_\_\_\_\_\_\_\_\_\_ → Energy + Carbon dioxide + \_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Answer**

Oxygen

Water

**(h)**

[2012 OL]

Answer the following questions on human reproduction.

1. The fusion (joining) of the egg with the sperm is called \_\_\_\_\_\_\_\_\_
2. There are many methods of contraception. Name one method.
3. The menstrual cycle lasts about \_\_\_\_\_\_\_ days.

**Answer**

1. Fertilisation
2. Pill / coil / IUD (intra uterine device) / condom / diaphragm / spermicides or any correct example
3. 28 days

**Question 2**

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**(a)**

[20121 OL]

The diagram shows a microscope.

Examine the diagram and answer the questions below.

1. What is the name of the part labelled A?
2. What is the name of the part labelled B?
3. What is the name of the part labelled C?
4. What is the function of the part labelled D?
5. Name the part of the microscope that you would place the slide on for viewing.

**(b)**

[2012 OL]

The diagram shows a plant cell.

1. Name the part of the cell labelled A in the diagram.
2. Name the part of the cell labelled B in the diagram
3. Name one part found in a plant cell which you would not expect to see in an animal cell.
4. Iodine stain is sometimes added to a piece of onion skin when preparing a slide of plant cells.  
   Why is iodine used?

**(c)**

[2012 OL]



1. Name the producer in the food chain shown above.
2. Give one example of competition between animals in the habitat that you have studied.

**Question 3**

**(a)**

[2012 OL]

Humans have five six organs. Complete the table below so that senses and organs are matched.

One pair has been completed as an example (sight and eyes).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Sense | Sight | Hearing |  | Touch |  |
| Organ | Eyes |  | Nose |  | Tongue |



**(b)**

[2012 OL]

The diagram shows the human eye.

Answer the following questions about the eye.

1. Name the parts labelled A and B in the diagram.
2. What is the function of the part labelled C in the diagram?
3. Name the coloured part of the eye which controls the amount of light entering the eye.

**(c)**

[2012 OL]

Exercise and rest are good for the health of a person.

Exercise has an effect on pulse rates.

Answer the following questions about exercise and pulse rates.

1. What is the average pulse rate for an adult at rest in beats per minute (bpm)?
2. Complete the statement below:

Exercise causes a person’s pulse to \_\_\_\_\_\_\_\_\_\_\_\_\_

**(d)**

[2012 OL]

The diagram shows a human heart. Study the diagram and answer the questions below.

1. What is the name of the chamber labelled A in the diagram?
2. Why is the wall of the left side of the heart thicker than the right side?
3. In Ireland today heart disease is a major problem.   
   State one way in which heart disease can be prevented.

**Chemistry**

**Question 4**

|  |
| --- |
| Copper |
| Nitrogen |
| Sulfur |
| Magnesium |

**(a)**

[2012 OL]

Some elements are non-metals.

Write down the name of two non-metals from the list.

**(b)**

[2012 OL]

Water is composed of two elements. Name these two elements.

**(c)**

|  |
| --- |
| Sodium |
| Calcium |
| Potassium |

[2012 OL]

1. Choose an element from the list on the right whose compounds dissolve in water to cause hardness in water.
2. How can hardness be removed from water?



**(d)**

[2012 OL]

When hydrochloric acid (HCl) and sodium hydroxide (NaOH) react in a neutralisation reaction, a salt and one other substance are formed.

1. Name the salt formed.
2. Name the other substance formed.



**(e)**

[2012 OL]

A student recorded that 30 g of a salt dissolved in 100 cm3 of water at 40 0C.

Complete the following statement about solubility.

At 80 0C the solubility of salt would \_\_\_\_\_\_\_\_\_\_,

**(f)**

[2012 OL]

Air is a mixture of gases.

Name two gases which are present in unpolluted air.

**(g)**

[2012 OL]

Complete the statements below about bonding.

1. Ionic bonding involves an attraction between positive and negative \_\_\_\_\_\_\_\_\_.
2. Covalent bonding involves the sharing of pairs of \_\_\_\_\_\_\_.

**(h)**

[2012 OL]

The diagram shows an arrangement of apparatus suitable for the preparation of carbon dioxide gas in a school laboratory.

1. Name a suitable substance for liquid X and solid Y from which carbon dioxide can be made.
2. Limewater is used to test for the presence of carbon dioxide gas. What happens to limewater when carbon dioxide gas is bubbled through it?

**Question 5**

**(a)**

[2012 OL]

Substances can be classed as elements, compounds and mixtures.

|  |
| --- |
| Ink |
| Carbon Dioxide |
| Iron |

Which of these substances is a compound?

Which of these substances is a mixture?

Which of these substances is an element?

**(b)**

[2012 OL]

The diagram shows a separation technique used in the laboratory to separate a mixture of water and a dissolved dye.

1. Examine the diagram. Complete the table correctly matching the labels A – D in the diagram with the words in the table.
2. Name the separation technique shown in the diagram.
3. In which labelled part would you expect to find most of the dye at the end of the experiment?

**(c)**

[2012 OL]

Describe, with the aid of a labelled diagram, how you would separate a mixture of sand and water.

**Question 6**

**(a)**

[2012 OL]

Fossil fuels are sources of hydrocarbons and can be burned in air.

1. List two examples of fossil fuels.
2. Name the two products formed when fossil fuels are burned.

**(b)**

[2012 OL]

Plastics have many uses in today’s world.

1. What are plastics made from?
2. Most plastic are non-biodegradable. What is meant by non-biodegradable?



**(c)**

[2012 OL]

Calcium is a member of the Group II elements in the Periodic Table.

What name is given to the Group II elements?

The diagram shows zinc metal reacting with hydrochloric acid, HCl.

Bubbles of gas are given off. Answer the following questions about this reaction.

1. Name the gas given off.
2. Give the test for this gas.

**(d)**

[2012 OL]

The diagram shows an apparatus set up by a student to investigate the rusting of iron nails. Nails were placed in the test tubes as shown.

After a number of days the nails in test tube A only, had a coating of rust.

Answer the following questions about rusting.

1. Name two conditions necessary for rusting to occur.
2. Name one method that can be used to prevent the rusting of iron.

**Physics**

**Question 7**

**(a)**

[2012 OL]

1. What temperature does water freeze at?
2. What temperature does water boil at?

**(b)**

[2012 OL]

1. When a firework is set off at a distance, which is detected first, the sound of the explosion or the burst of coloured light from the fireworks?
2. Give a reason for your answer.

**(c)**

[2012 OL]

Find the area of the rectangular shape shown.

Give the unit that is used to measure the area.

**(d)**

[2012 OL]

Sources of energy are either renewable or non-renewable.

1. What is meant by renewable energy?
2. Give an example of a renewable energy source.

**(e)**

[2012 OL]

A student brings the South Pole of a magnet close to the South Pole of a freely suspended magnet.

What happens to the freely suspended magnet?

Name a metal which is attracted by a magnet.

**(f)**

[2012 OL]

State the two main energy conversions which take place when a battery-powered torch is in use.

**(g)**

[2012 OL]

The picture shows a piece of equipment used in the laboratory for measurement.

1. Name the piece of equipment shown.
2. What is it used to measure?

**(h)**

[2012 OL]

1. Give the formula for Pressure.
2. Is the atmospheric pressure at the top of Mount Everest higher or lower than the pressure at the bottom?
3. Name the instrument used to measure pressure.

**Question 8**

**(a)**

[2012 OL]

The diagram shows a plug with its cover removed. Study the diagram and answer the questions which follow.

1. Which labelled wire, A, B or C is the earth wire?
2. Why is there a plastic coating covering each of the wires A, B and C?
3. Name the wire to which the fuse should be connected.

**(b)**

[2012 OL]

Complete the following statements.

1. Current which flows from a battery is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ current.
2. Current from the mains supply to homes is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ current.

**(c)**

[2012 OL]

A students set up a simple electric circuit as shown.

1. Name the parts of the circuit labelled A and B.
2. The student was then given a piece of wood and a piece of copper metal.

Which piece, copper or wood, should be connected between X and Y so that the bulb will light in the circuit when B is closed?

1. Give a reason for your answer.

**(d)**

[2012 OL]

A student carried out an investigation of the relationship between current flowing through a wire resistor and the voltage across it.

The data collected is presented in the table below.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Current (A) | 0 | 0.2 | 0.4 | 0.6 | 0.8 | 1.0 |
| Voltage (V) | 0 | 1 | 2 | 3 | 4 | 5 |

The student then used this data to draw a graph of voltage (y-axis) against current (x-axis)

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1. Use the graph to estimate the current at 2.5 V.
2. Name the instrument used by the student to measure voltage.
3. What is the relationship between the current and the voltage in this investigation?**Question 9**

**(a)**

[2012 OL]

A student carried out an investigation to show that white light is composed of different colours. A beam of white light was passed through a prism as shown below.

Name the colours labelled A and B in the band of colours formed.

**(b)**

[2012 OL]

A student then carried out another experiment on light as shown in the diagram.

Answer the questions that follow.

1. What would the student see if the card in the middle is moved sideways?
2. What does this experiment tell us about light?

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**(c)**

[2012 OL]

A student set up a flask full of coloured water as shown.

The student heated the flask gently with a hairdryer.

Answer the questions that follow.

1. What would you expect to notice if the flask is heated gently?
2. Why is coloured water used in this investigation?
3. A measuring instrument used in this laboratory is based on this behaviour of liquids.

Name this instrument.

**(d)**

[2012 OL]

An investigation was carried out on the relationship between the extension of a spring and the force applied to it.

The data collected is presented in the table below.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Force (N) | 0 | 2 | 4 | 6 | 8 |
| Extension (cm) | 0 | 4 | 8 | 12 | 16 |





1. Use the date in the table to draw a graph of Extension (y-axis) against Force (x-axis) using the grid above.
2. Use the graph to estimate what force results in a 14 cm extension of the spring.
3. Name the instrument shown on the right that can be used to measure force.