**2013 Ordinary Level Paper**

**Biology**

**Question 1**

**(a)**

|  |  |
| --- | --- |
|  | Cell wall |
|  | Nucleus |
|  | Cell membrane |
|  | Chloroplast |

[2013 OL]

All plants and animals are composed of cells.   
In the table write the letter **B** beside two cell parts that are found in both animal and plant cells.

[2013]

**(*b*)**

|  |  |
| --- | --- |
|  | Common cold |
|  | Appendicitis |

Micro-organisms such as bacteria and viruses cause infection and disease.

1. In the table write the letter **B** beside the name of the illness caused by bacteria.
2. Write the letter **V** beside the name of the illness caused by a virus.

[2013]

|  |  |  |
| --- | --- | --- |
|  | Ureter |  |
|  | Bladder |
|  | Kidney |
|  |  |
|  | Urine |
|  | Faeces |

**(*c*)**

The diagram shows the urinary system.

1. In the table write the letter **X** beside the name of the part labelled **X**.
2. Write the letter **W** beside the name of the waste stored by **Y**.

[2013]

|  |  |  |
| --- | --- | --- |
|  | Penis |  |
|  | Ovary |
|  | Produces sperm |
|  | Produces eggs |

**(*d*)**

The diagram shows the male reproductive system.

1. In the table write the letter **A** beside the name of the part labelled **A**.
2. Write the letter **F** beside the function of the part labelled **B**.



[2013]

**(*e*)**

The diagram shows the central nervous system.

Sense organs gather information about our surroundings and communicate with the part labelled **X** in the diagram.

Name the part labelled **X**.

|  |  |
| --- | --- |
|  |  |
| Buttercup | Grass |

[2013]

**(*f*)**

Flowers are pollinated in different ways.

1. Name the part of the flower that produces pollen.
2. Write the letter W below the example on the right whose flowers are pollinated by wind.



[2013]

(*g*)

A plant was set up as shown to investigate the transport of water.

1. Which part of the plant takes in water?
2. What would you notice about the level of water in the test tube after a few days?

[2013]

|  |
| --- |
| Bread  Rice  Butter  Chicken  Fish  Water |
|
|
|
|
|

(*h*)

Flour is a good source of carbohydrate.

Answer the questions below using words from the list on the right.

1. Name one other food rich in carbohydrate.
2. Name one food rich in protein.
3. Name one food rich in fat.

**Question 2**

[2013]

|  |  |
| --- | --- |
|  | Incisor |
|  | Molar |
|  | Calcium |
|  | Iron |

**(*a*)**

A tooth is labelled **T** in the diagram.

1. Write the letter **T** beside the type of tooth labelled **T**.
2. Write the letter **M** beside the mineral needed for healthy bones and teeth.

|  |  |  |
| --- | --- | --- |
|  | Intestine |  |
|  | Oesophagus |
|  | Mouth |
|  |  |
|  | Digestion |
|  | Excretion |
|  | Egestion |

[2013]

**(*b*)**

The diagram shows the human digestive system.

1. In the table write the letter **A** beside the name of the part labelled **A**.
2. Write the letter **B** beside the name of the part labelled **B**.
3. Write the letter **F** beside the function of the part labelled **B**.

[2013]

**(*c*)**

A student carried out a number of food tests on two different food samples, Food A and Food B.

Food A, when tested, formed a translucent spot on brown paper.

1. Which food type, protein, fat or (reducing) sugar, is mainly found in food A?
2. Food B, when tested with Benedict’s (Fehling’s) solution, produced a brick red colour.

What colour was Benedict’s (Fehling’s) solution at the beginning of the test?

1. Is heat required for this food test?
2. Which food type, protein, fat or (reducing) sugar, is mainly found in Food B?

[2013]

**(*d*)**

Food (e.g. crisps) is a store of chemical energy.

Describe, with the help of a labelled diagram, an investigation to show the conversion of chemical energy in a food to heat energy.

The headings below may be helpful.

Equipment

Procedure

Result

Labelled diagram

**Question 3**

[2013]

**(*a*)**

The following diagram shows a food chain from a meadow habitat.

1. Name the producer in the food chain above.
2. Name the herbivore in the food chain above.
3. Write the letter E beside the effect that removing all of the foxes would have on the number of rabbits in the habitat.





[2013]

**(*b*)**

The diagrams show two pieces of equipment that can be used in an investigation to study a habitat.

1. Name the piece labelled **A**.
2. Give one use for piece **A**.
3. Name the piece labelled **B**.
4. Give one use for piece **B**.
5. Conservation is very important if we wish to protect the environment for future generations. Name two ways that humans can help protect our natural resources.

[2013]

**(*c*)**

The diagram shows the apparatus used to investigate the growth response of cress seedlings to light.

The cress seeds were left to germinate in the segmented box for one week.

1. In what direction will the seedlings in Section A grow?
2. In what direction will the seedlings in Section B grow?
3. Write the letter G beside the word which describes this growth response of the seedlings.



**Chemistry**

**Question 4**



[2013]

**(*a*)**

1. Name the piece of equipment shown on the right.
2. Give one use for this piece of equipment.

|  |
| --- |
|  |
| Vinegar |
| Distilled water |
| Oven cleaner |

[2013]

**(*b*)**

Litmus is an indicator which is used to test whether a substance is an acid or a base.

1. What colour is litmus in an acid?
2. Choose one common base from the list on the right.

[2013]

(*c*)

The diagram shows an arrangement of apparatus suitable for the separation of sand and water.

1. Name this method of separation.
2. Would you expect to find most of the water in **X** *or* **Y** at the end of the separation?

[2013]

(*d*)

|  |  |
| --- | --- |
|  | Screening |
|  | Fluoridation |
|  | Settling |
|  | Chlorination |

Water must be purified before we can drink it safely.

1. In the table write the letter **R** beside the word which describes the removal of large floating debris from water.
2. Write the letter **A** beside the treatment used to kill bacteria.

|  |
| --- |
| Steel |
| Copper |
| Bronze |
| Silver |
| Brass |

[2013]

(*e*)

Choose an alloy from the list on the right.

Give one use for the alloy you have chosen.

[2013]

(*f*)

The known elements are listed in the Periodic Table. Use words from the list on the right to correctly complete the sentences below.

|  |
| --- |
| Compounds |
| Mixtures |

When elements chemically combine \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_are formed.

When elements physically combine \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_are formed.

[2013]

|  |  |  |  |
| --- | --- | --- | --- |
| **Particle** | **Relative mass** | **Relative charge** | **Location** |
| **Neutron** | 1 | 0 | Inside the nucleus |
| **Electron** | 1/1840 | Negative (-1) |  |
| **Proton** | 1 | Positive (+1) |  |

(*g*)

Complete the table below.

Insert the correct phrase for the location of the electron and the proton, ‘outside the nucleus’ *or* ‘inside the nucleus’.



[2013]

(*h*)

The pieces of equipment drawn on the right are used when reacting sodium hydroxide (NaOH) with hydrochloric acid (HCl) in a titration.

1. Name the pieces of equipment labelled **A** and **B**.
2. When sodium hydroxide and hydrochloric acid react, water and another product are formed.

Name the other product.

**Question 5**

[2013]

|  |  |
| --- | --- |
|  |  |
|  |  |

**(*a*)**

1. In the table below write the letter **C** under the symbol for corrosive.
2. Write the letter **H** below the symbol which represents harmful *or* irritant.

[2013]

**(*b*)**

|  |
| --- |
| Nitrogen |
| Oxygen |
| Carbon dioxide |
| Water vapour |

Air is a mixture of gases.

Some of the gases present in air are given in the table on the right.

1. Which gas is used by plants to make food?
2. Which gas makes up most of the air?
3. Which gas is needed for burning to occur?
4. Which gas can be tested for using anhydrous copper sulfate *or* cobalt chloride paper?

[2013]

(*c*)

The diagram shows the apparatus used to prepare and collect carbon dioxide gas in the laboratory.

1. Write the letter L beside the name of the liquid L used to prepare carbon dioxide.
2. Write the letter S beside the name of the solid S used to prepare carbon dioxide.
3. What would a student observe when liquid L is allowed drop onto solid B?
4. Name the liquid which turns milky white when carbon dioxide is bubbled through it.
5. State one use for carbon dioxide in everyday life.

|  |  |
| --- | --- |
|  | Hydrogen peroxide |
|  | Hydrochloric acid |
|  |  |
|  | Marble chips |
|  | Manganese dioxide |



**Question 6**

[2013]

**(*a*)**

Separation techniques are widely used in industry.

1. A solution of dye can be separated into its constituent colours using the method shown in the diagram. Name this separation technique.
2. Suggest a liquid L that could be used to separate the dye.



[2013]

**(*b*)**

The following diagram shows a separation technique that can be used to separate two substances.

1. Name this separation technique.
2. Name the piece of equipment labelled X in the diagram.
3. Name the piece of equipment labelled Y in the diagram.
4. Name two substances that can be separated using this technique.

[2013]

**(*c*)**

A student investigated the solubility of a salt in water in the school laboratory.

The mass of the salt that dissolved at different temperatures was measured.

The data collected are presented in the table below.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Temperature (0C) | 20 | 40 | 60 | 80 | 100 |
| Solubility (g/ 100 cm3 of water) | 10 | 30 | 50 | 70 | 90 |

1. Use this data to draw a graph of solubility (*y*-axis) against temperature (*x*-axis) using the grid provided below.
2. Use the graph to estimate the solubility at 50 °C.



**Physics**

**Question 7**



[2013]

**(*a*)**

A student set up the equipment shown to measure the volume of an irregular shaped object e.g. a stone.

Container A was filled with 70 cm3 of water.

1. When the stone was carefully dropped into the water arrangement B resulted.

Name container A.

1. Calculate the volume of the stone from the information shown.

[2013]

|  |
| --- |
| 37  0  87  100 |

**(*b*)**

Choose the correct temperature from the list to complete the statements below.

1. Water boils at \_\_\_\_\_\_\_\_\_\_\_\_\_\_ °C.
2. Water freezes at \_\_\_\_\_\_\_\_\_\_\_\_\_\_ °C.

[2013]

**(*c*)**

|  |
| --- |
| Conduction  Convection  Radiation |

In each case choose the method of heat transfer from the list on the right to correctly complete the statements below.

1. Earth is heated by the Sun when heat is transferred by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
2. The end of a spoon sitting in a cup of boiling water becomes hot.

The heat is transferred along the spoon by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

[2013]

**(*d*)**

1. On which of the paths A, B or C will the incoming ray of light travel after striking the mirror?
2. Which of the words on the right describes what happened to the ray of light after it hit the mirror?

[2013]

**(*e*)**

|  |  |
| --- | --- |
|  | kW |
|  | kWh |
|  | €2.00 |
|  | €20.00 |

1. In the table write the letter U beside the unit used when calculating the usage of electrical energy.
2. Write the letter C beside the cost of operating a 5 kW electric heater for 2 hours, if one unit of electricity costs 20 cent.



[2013]

**(*f*)**

The diagram shows a wind turbine which can be used to generate electricity.

Is wind energy renewable *or* non-renewable?

Give one disadvantage of this form of electricity generation.

[2013]

**(*g*)**

The diagram shows two metal cans of equal size.

They contain equal volumes of water at 100°C. Can A is wrapped in cotton wool and can B has no wrapping.

After 20 minutes, which can, A *or* B, would have the higher temperature?

Give a reason for your answer.



[2013]

**(*h*)**

A metal block as shown has a mass of 60 grams.

1. Name the instrument you would use in the laboratory to find the mass of the block.

|  |  |
| --- | --- |
|  | 30 cm3 |
|  | 10 cm3 |
|  |  |
|  | 2 g/cm3 |
|  | 20 g/cm3 |

1. In the table write the letter V beside the volume of the block.
2. Write the letter D beside the density of the block.

**Question 8**

[2013]

**(*a*)**

The diagram shows a three-pin plug with the back removed.

1. Which of the labels A, B or C marks the neutral wire?
2. Name the wire A to which the fuse is connected.
3. What is the function of a fuse in a three-pin plug?

[2013]

**(*b*)**

The diagram shows a bar magnet.

1. What does the letter N on the magnet mean?
2. If a student moved the N of one magnet close to the S of a second magnet what would the student notice?
3. A student wanted to show the pattern of the magnetic field around a bar magnet.

Name a substance or a piece of equipment used in the laboratory to show the pattern of the magnetic field around a magnet.

1. Write the letter P below the pattern you would expect to get if you did this experiment.



1. Name a metal that is attracted by a magnet.

[2013]

**(*c*)**

The diagram shows a ball and ring apparatus.

This piece of equipment was used to examine the effect of heat on a metal.

When the ring and the ball were cold, the ball passed through the ring.

When the ball was heated it no longer passed though the ring.

1. What does this experiment tell you about the effect of heat on the metal?
2. If the hot metal ball was cooled down again, would you expect it to pass through the ring?
3. Give a reason for your answer.

**Question 9**

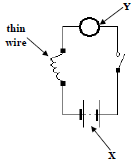
[2013]

**(*a*)**

Match the correct form of energy from the list on the right with each of the statements below.

|  |
| --- |
| Kinetic |
| Potential |
| Heat |
| Chemical |

1. Stored energy in a battery is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_ energy.
2. Energy released from burning coal is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_ energy.
3. The energy in a stretched elastic band is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_ energy.
4. Energy in a moving object is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_ energy.

[2013]

**(*b*)**

The simple circuit shown was set up to investigate the heating effect of an electric current.

When the switch is closed a current flows.

1. Name the component labelled X.
2. What happens to the thin wire when a current flows?
3. Name a device that the student could put at Y to show that a current is flowing through the circuit.
4. Name two household appliances that use the heating effect of an electric current.

[2013]

(*c*)

A diode, as shown in the diagram, is an example of an electrical component with many everyday applications.

|  |
| --- |
| More |
| Less |
| Amp |
| Ohm |

Choose the correct word from the list given to complete each of the statements below.

1. A light-emitting diode (LED) requires \_\_\_\_\_\_\_\_\_\_\_\_\_\_ current than a regular (filament) bulb.
2. A resistor is placed in a circuit to protect the diode.

The unit of resistance is the \_\_\_\_\_\_\_\_\_.