SCIENCE – ORDINARY LEVEL

[N.B. Not for Science – Local Studies Candidates]

THURSDAY, JUNE 15 – AFTERNOON, 2.00 – 4.30

INSTRUCTIONS

1. Write your **examination number** in the box provided on this page.
2. Answer **SECTION A**.
3. Answer **ANY THREE SECTIONS** from **SECTIONS B, C, D, E**.
4. Answer **all questions** in the spaces provided. If you require extra space, there is a page provided at the back of this booklet.

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<td>QUESTION</td>
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(a) Write one use for each of the following pieces of apparatus.

**TRIPOD**

**BEAKER**

**TONGS**

**FUNNEL**

TRIPOD USE: 

BEAKER USE: 

TONGS USE: 

FUNNEL USE: 

(b) Match a unit from the list on the right with each of the following:

- volume of milk in a carton
- distance from Cork to Donegal
- diameter of a penny
- area of your hand

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<th>cm²</th>
<th>litre</th>
<th>mm</th>
<th>km</th>
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(c) Choose the radioactive substance from the list on the right.

Give one use for radioactive substances.

Give one harmful effect of radioactive substances.
(d) The diagram shows the **inside of an electric plug**.

What is the purpose of the **fuse**?

Name the wire labelled A.

What is the standard **colour** of the wire labelled A?


(e) The diagram shows a **thermometer**.

What does a thermometer **measure**?

Name a **liquid** that is used in a thermometer.

**Complete the sentence:** Water boils at ________ °C and ice melts at ________ °C.


(f) What is meant by the word **fuel**?

Use the list on the right to name:

- a **solid fuel**
- a **liquid fuel**


| OIL | NATURAL GAS | TURF |


(g) Air contains the gases **NITROGEN, OXYGEN** and **CARBON DIOXIDE**.

Is air a mixture or a compound?

Name a **gas found in air** which:

- is needed for **burning**
- is approximately **four fifths of air**
- can be used in **fire extinguishers**
(h) Name a substance shown on the right which is:

an acid

a base

neutral

What colour is litmus in an acid?

(i) Fill in the spaces A, B, C and D using the following words.

FREEZING MELTING CONDENSATION EVAPORATION

SOLID  A          LIQUID  B          GAS
         ⟷         ⟷         ⟷         ⟷

GAS    C          LIQUID  D          SOLID
         ⟷         ⟷         ⟷         ⟷

(j) What is meant by a chemical change? ...

Use the list on the right to give one example of:

a physical change

a chemical change

BURNING COAL
CHOPPING ONIONS
TOASTING BREAD
TEARING PAPER

(k) Name two substances carried by the blood.

1  

2  

Name two types of blood vessel.

1  

2  
(l) **BACTERIA, FUNGI** and **VIRUSES** are micro-organisms which can be useful and harmful.

Give **one use** for bacteria.

Give **one use** for fungi.

Give **one harmful effect** of bacteria.

Name a disease caused by a **virus**.

(m) The diagram shows a **flowering plant**.

Name the part of the plant that **takes in water and minerals**.

Name the part of the plant that **makes** most of its **food**.

Name the part of the plant that **produces seeds**.

Name the substance that gives the leaf its **green colour**.

(n) The following is an example of a **FOOD CHAIN**.

```
GRASS → RABBIT → FOX
```

Using a **different plant** and **different animals** write a food chain from a habitat you have studied.

```
__________________ → __________________ → __________________
```

Name a substance that causes **water pollution**.

(o) Name **two ways** in which **plants** are important to humans.

1 __________________

2 __________________

Name **two ways** in which **animals** are important to humans.

1 __________________

2 __________________
SECTION B – PHYSICS (72 MARKS)

Answer any TWO questions from 2, 3, 4 in this Section.

Question 2

(a) You are given a battery, a bulb, some wires and a strip of aluminium.

(i) Draw a diagram of a circuit you would set up to show that aluminium conducts electricity. (6)

(ii) Name another conductor of electricity. (3)

(iii) Name a substance that does not conduct electricity. (3)

(b) Echoes have many uses.

(i) What is an echo? (6)

(ii) Give one use of echoes. (3)

(iii) Complete the following sentence:
Sound cannot travel through a
(c) Describe, with the aid of a labelled diagram, an experiment to show that light travels in straight lines.
Question 3

(a) Match the form of energy from the list on the right with each of the following:

(i) the energy in a stretched spring .......................... (3)
(ii) the energy stored in food ............................... (3)
(iii) the energy released from a fire ......................... (3)
(iv) the energy of a moving car ............................ (3)

CHIEICAL
HEAT
KINETIC
POTENTIAL

(b) Two metal cans of equal size were filled with water at 100 °C. Can A was wrapped with cotton wool and can B was not.

(i) After ten minutes which can had the lower temperature? .................................................. (6)

(ii) Why did the temperature fall more quickly in this can? ..................................................... (6)

(c) Explain each of the following:

(i) electric wires are covered with plastic. .......................................................... (3)

(ii) oil is used on the moving parts in engines. ......................................................... (3)

(iii) concrete roads have gaps in them filled with tar. ..................................................... (3)

(iv) a clinical thermometer is shaken before being used. ............................................... (3)
Question 4

(a) (i) What is meant by the term speed?

(ii) A cyclist travels 100 metres in 20 seconds. What is the average speed of the cyclist?

(b) The crowbar on the right is an example of a lever.

(i) What is meant by the term lever?

(ii) Give two other examples of levers.

1 ____________________________ 2 ____________________________

(c) You are given the items shown. Describe how you would use them to find the density of a stone.

OVERFLOW CAN  BALANCE  GRADUATED CYLINDER
SECTION C – CHEMISTRY (72 MARKS)
Answer any TWO questions from 5, 6, 7 in this Section.

Question 5

(a) Match an element from the list on the right with a correct use:
   (i) computer chip  (3)
   (ii) fills balloons  (3)
   (iii) kills bacteria  (3)
   (iv) jewellery  (3)

(b) When iron filings and sulphur are mixed together a mixture is formed.
   (i) What is meant by the word mixture? (6)

   (ii) How would you separate the iron filings from the sulphur? (3)

   (iii) How would you change the mixture of iron and sulphur into the compound iron sulphide? (3)

(c) Describe, with the aid of a labelled diagram, an experiment to separate oil from water.

   Labelled diagram (12)
Question 6

(a) Match a substance from the list on the right that tests for:

(i) carbon dioxide (3) COBALT CHLORIDE
(ii) pH (3) LIME WATER
(iii) water (3) UNIVERSAL INDICATOR

(b) Water should be purified before it is used for drinking. One stage of treatment is screening.

(i) Explain what is meant by screening. (6)

(ii) What stage of treatment is shown in the diagram? (3)

(iii) Name another stage in the treatment of water. (3)

(iv) Why is fluoride added to drinking water? (3)

(c) The diagram shows the apparatus for the preparation of carbon dioxide.

(i) Name the liquid A. (3)

(ii) Name the solid B. (3)

(iii) Give two uses for carbon dioxide: (6)

1

2
Question 7

(a) Choose a substance from the right which is:
   (i) a compound (3)
   (ii) an element (3)
   (iii) a molecule (3)
   (iv) an alkali metal (3)

(b) Protons, neutrons and electrons are tiny particles found in atoms.
   (i) Where in the atom would you find a neutron? (3)
   (ii) Where in the atom would you find an electron? (3)
   (iii) What is the charge on a proton? (3)
   (iv) Which particle is the lightest? (3)

(c) Zinc was added to dilute hydrochloric acid in a test tube as shown.
   (i) Name the gas that is given off. (3)

   (ii) Hydrochloric acid is a corrosive substance. What is meant by the word corrosive? (3)

   (iii) Give two safety precautions you should take when carrying out this experiment. (6)
   1
   2
SECTION D – BIOLOGY (72 MARKS)

Answer any TWO questions from 8, 9, 10 in this Section.

Question 8

(a) A sample of soil was shaken with water and allowed to settle. The result is shown on the right.

(i) Name layer A. ___________________________ (3)
(ii) Name layer B. ___________________________ (3)
(iii) What is humus formed from? ______________ (3)
(iv) Give one reason why humus is important in the soil. ________________________________ (3)

(b) Describe an experiment to measure the amount of air in a sample of soil. (12)

__________________________
__________________________
__________________________
__________________________
__________________________

(c) (i) Name a habitat you have studied. ___________________________ (3)
(ii) Name a carnivore that is found in that habitat. ___________________________ (3)
(iii) Give one example of competition between animals in that habitat. ___________________________ (3)

(iv) Name one piece of apparatus you used in your habitat study. ___________________________ (3)
(a) Choose a plant from the list on the right that scatters its seeds using:

(i) the wind  
(ii) animals  
(iii) self-dispersal  
(iv) water  

DANDELION  
PEA  
WATER LILY  
BLACKBERRY

(b) Describe, with the aid of a labelled diagram, an experiment to show that seeds need water to germinate.  

Labelled diagram

(c) The diagram shows the female reproductive system.

(i) Name the part labelled A.  

(ii) What is the function of A?  

(iii) On which day of the menstrual cycle is the egg released?  

(iv) In which part (A, B or C) does fertilisation take place?
Question 10

(a) Choose a food shown on the right which is needed for:

(i) healthy bones (3)
(ii) body insulation (3)
(iii) growth and repair of cells (3)
(iv) energy (3)

(b) The diagram shows a model of the breathing system.

(i) Which part of the body is represented by A? (3)

(ii) Which part of the body is represented by B? (3)

(iii) What happens to the balloons when the rubber sheet is pulled downwards? (3)

(iv) Give one example of how smoking affects your health. (3)

(c) The experiment on the right was set up and left for a few days.

(i) What happens to the bone in A? (3)

(ii) What happens to the bone in B? (3)

(iii) Give two functions of the skeleton. (6)

1

2
SECTION E – APPLIED SCIENCE (72 MARKS)

Answer any TWO questions from 11, 12, 13, 14, 15, 16 in this Section.

Question 11 – Earth Science

(a) Match a number from the list on the right with each of the following:

(i) the length of time it takes the Moon to orbit the Earth. (3) 365.25 days

(ii) the length of time it takes the Earth to rotate on its own axis (3) 28 days

(iii) the length of time it takes the Earth to orbit the Sun (3) 24 hours

(b) (i) Name the planet nearest to the Sun. (3)

(ii) Name the galaxy to which the Sun belongs. (3)

(iii) Draw a labelled diagram to show how an eclipse of the Sun occurs. (9)

Labelled diagram

(c) The diagram shows an instrument used in weather recording.

(i) Name the instrument. (3)

(ii) What does this instrument measure? (3)

(iii) What does a barometer measure? (3)

(iv) Name one other measurement you would take if you were weather recording. (3)
Question 12 – Horticulture

(a) (i) Name a **hardwood** plant. (3)
(ii) Describe how you would take and root a hardwood cutting. (9)

(b) (i) What is a **compost**? (3)
(ii) Give one advantage of using a compost. (3)
(iii) What is **hydroponics**? (6)

(c) (i) Name a common garden **pest**. (3)
(ii) Draw a labelled diagram to show the **life cycle** of the pest you have named. (9)
Question 13 – Materials Science

(a) Give one use for each of the following materials:

(i) aluminium  
(ii) timber  
(iii) plastic  
(iv) cotton  

(b) Care labels carry symbols which tell us how to look after clothes.

State what is meant by each of the following symbols.

(c) Answer ANY ONE of the questions A (PLASTICS), B (TEXTILES), C (METALS), D (TIMBER), which are on the following two pages.
A – PLASTICS

(i) Name a plastic. (3)

(ii) What are most plastics made from? (3)

(iii) Describe, with the aid of a labelled diagram, an experiment to **compare the flexibility of two plastics.** (12)

Labelled diagram

B – TEXTILES

(i) Name a natural fibre. (3)

(ii) Name a synthetic fibre. (3)

(iii) Describe, with the aid of a labelled diagram, an experiment to **compare the resistance to wear of two textiles.** (12)

Labelled diagram
**C – METALS**

(i) Name a metal which is found free in nature. 

(ii) Name a metal which is found as an ore. 

(iii) Describe, with the aid of a labelled diagram, how you would extract a metal from its ore. 

**Labelled diagram**

**D – TIMBER**

(i) Name a softwood. 

(ii) Give one use for the softwood you have named. 

(iii) Describe, with the aid of a labelled diagram, an experiment to show that grain direction affects the bending strength of a piece of timber. 

**Labelled diagram**
Question 14 – Food

(a) (i) Give one reason why we need to preserve food. (3)

(ii) Name a method used to preserve peas. (3)

(iii) Name a food that is preserved by pasteurising. (3)

(iv) Name a food that is preserved by smoking. (3)

(b) (i) Name a chemical used to test food for starch. (3)

(ii) What colour does the chemical turn if the food contains starch? (3)

(iii) Describe how you would test food for fat. (6)

(c) Describe an experiment to make cheese. (12)
Question 15 – Electronics

(a) (i) The device shown on the right is a diode. What is it used for? 

(ii) What is the reason for the silver band on the device?

(b) (i) What is the function of the resistor in the circuit?

(ii) Will the LED light in the circuit as shown?

(iii) Name the type of switch shown in the circuit.

(iv) Where in a house or school might you find this type of switch?

(c) (i) Are the lights in a house wired in series or in parallel?

(ii) Draw a circuit diagram showing a battery, a switch and two bulbs connected in parallel.
Question 16 – Energy Conversions

(a) In the diagram, Car A is stopped at the top of the hill and Car B is moving up the hill.

(i) What form of energy does Car A have? (3)

(ii) What form of energy does Car B have? (3)

(iii) What form of energy is contained in petrol? (3)

(iv) What form of energy is given out by the Sun? (3)

(b) The diagram shows a simple electromagnet.

(i) What happens to the iron filings when the switch is closed? (3)

(ii) Give one everyday use for an electromagnet. (3)

(iii) Give one advantage of an electromagnet over a permanent bar magnet. (6)

(c) What energy conversion takes place in each of the following?

(i) a solar powered calculator. (6)

(ii) a burning match. (6)
EXTRA WORKSPACE

Indicate clearly the number of the question(s) you are answering.