AN ROINN OIDEACHAIS AGUS EOLAÍOCHTA
JUNIOR CERTIFICATE EXAMINATION, 2000

S36

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.

Centre Number

Examination Number

For examiner use only

QUESTION		MARK
Section A	Q.1	
Section B	Q.2	
	Q.3	
	Q.4	
Section C	Q.5	
	Q.6	
	Q.7	
Section D	Q.8	
	Q.9	
	Q.10	
Section E	Q.11	
	Q.12	
	Q.13	
	Q.14	
	Q.15	
	Q.16	
TOTAL		
GRADE		

SECTION A – CORE (144 MARKS)

Answer any 12 parts (a), (b), (c), etc. from this Section.

Question 1

(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 _____

cm^2
litre
mm
km

(c) Choose the **radioactive substance** from the list on the right.

_____

Give **one use** for radioactive substances.

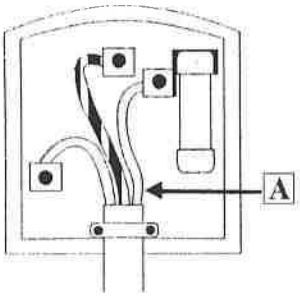
_____

Give **one harmful effect** of radioactive substances.

_____

OXYGEN
URANIUM
HYDROGEN

(d) The diagram shows the **inside of an electric plug**.



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

_____

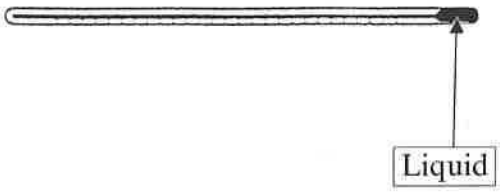
Name the wire labelled **A**.

_____

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** _____

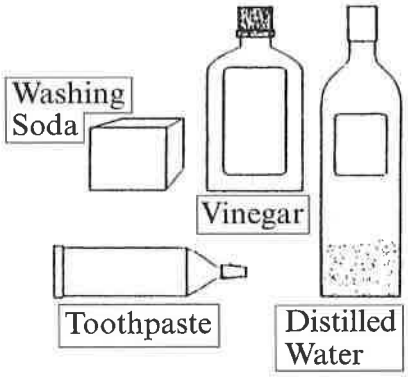
(h) Name a substance shown on the right which is:

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.

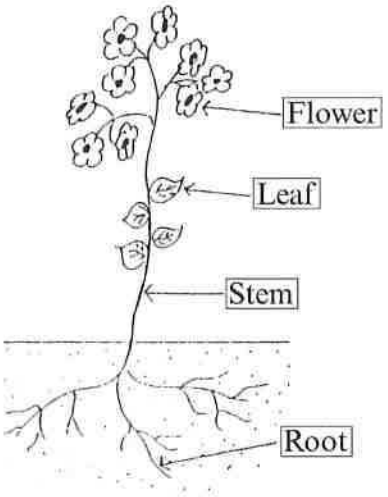
Give **one use** for bacteria. _____

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)

Circuit diagram

(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 _____ (3)

(c) Describe, with the aid of a labelled diagram, an experiment to show that **light travels in straight lines**. (12)

Labelled diagram

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)

CHEMICAL
HEAT
KINETIC
POTENTIAL

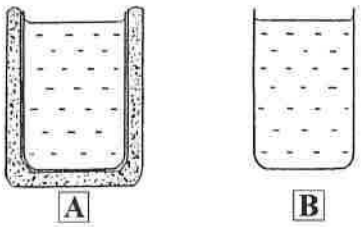
(b) Two metal cans of equal size were filled with water at 100 °C. Can **A** was wrapped with cotton wool and can **B** was not.

(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**? (6)

(ii) A cyclist travels 100 metres in 20 seconds. What is the average speed of the cyclist? (6)

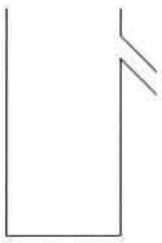
(b) The crowbar on the right is an example of a **lever**.

(i) What is meant by the term lever? (6)

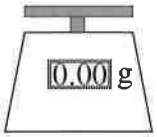
(ii) Give **two other** examples of levers. (6)

1 _____ 2 _____

(c) You are given the items shown. Describe how you would use them to **find the density of a stone**. (12)



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)

SILVER
CHLORINE
SILICON
HELIUM

(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**. (12)

Labelled diagram

Question 6

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

(i) carbon dioxide _____ (3)

(ii) pH _____ (3)

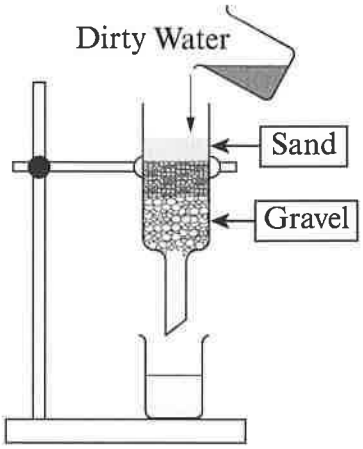
(iii) water _____ (3)

COBALT CHLORIDE
LIME WATER
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)

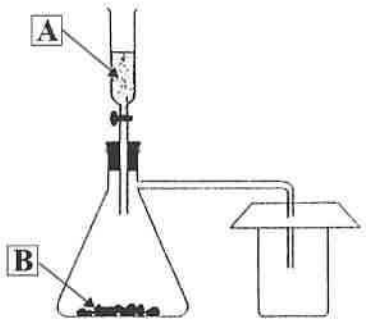
(ii) What stage of treatment is shown in the diagram? (3)



(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)

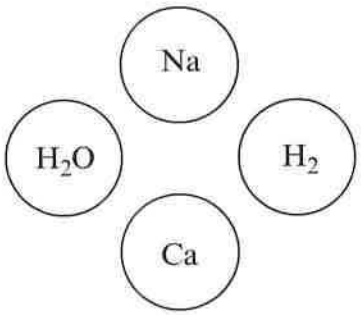
(iii) Give **two uses** for carbon dioxide: (6)

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.

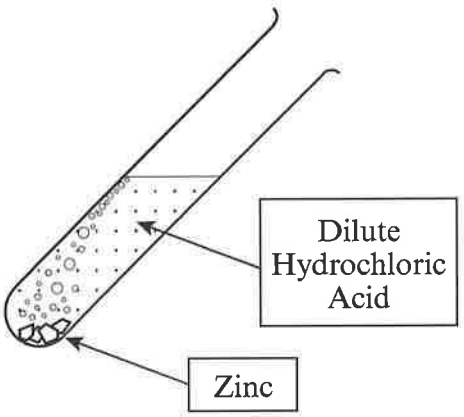
(i) Name the **gas** that is given off. (3)

_____

(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 _____

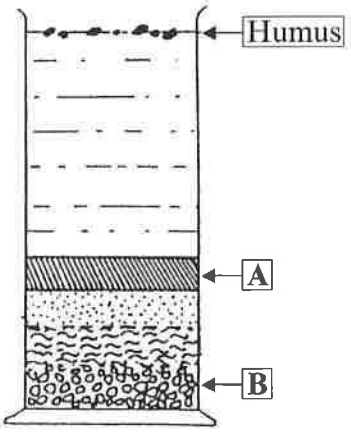
2 _____

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)

_____

Question 9

(a) Choose a plant from the list on the right that **scatters its seeds** using:

(i) the wind _____ (3)

(ii) animals _____ (3)

(iii) self-dispersal _____ (3)

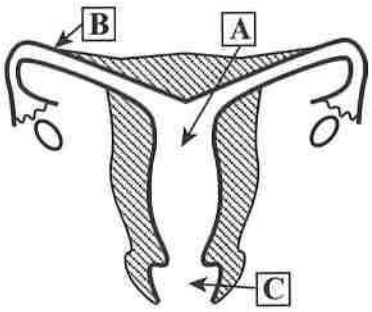
(iv) water _____ (3)

DANDELION
PEA
WATER LILY
BLACKBERRY

(b) Describe, with the aid of a labelled diagram, an experiment to show that **seeds need water to germinate**. (12)

Labelled diagram

(c) The diagram shows the **female reproductive system**.



(i) Name the part labelled **A**. (3)

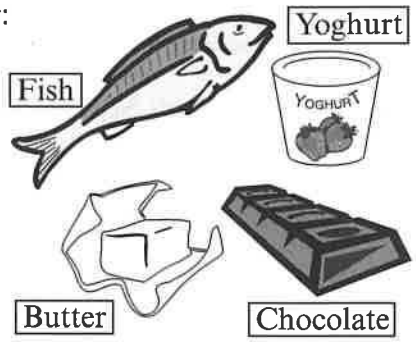
(ii) What is the function of **A**? (3)

(iii) On which day of the menstrual cycle is the egg released? _____ (3)

(iv) In which part (**A**, **B** or **C**) does fertilisation take place? _____ (3)

Question 10

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



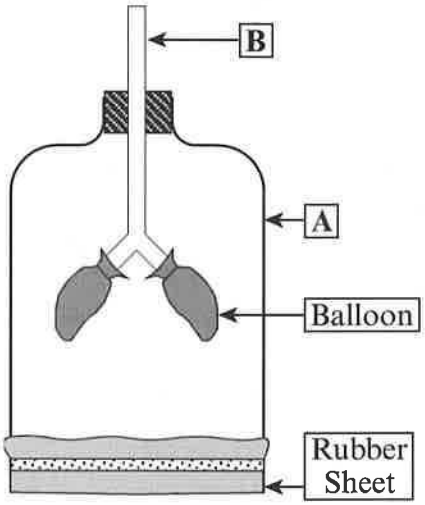
(i) healthy bones _____ (3)

(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)

_____

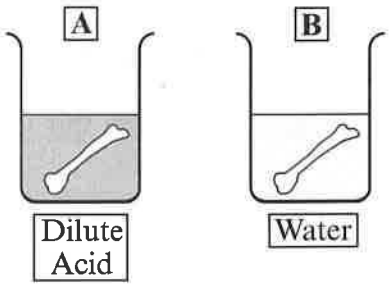
(iii) What happens to the balloons when the rubber sheet is pulled downwards? (3)

_____

(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)

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

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

365.25 days
28 days
24 hours

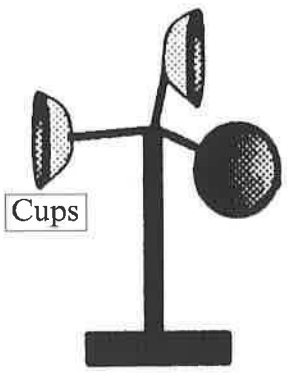
(b) (i) Name the planet **nearest** to the Sun. _____ (3)

(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)

Labelled diagram

Question 13 – Materials Science

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

(i) aluminium _____ (3)

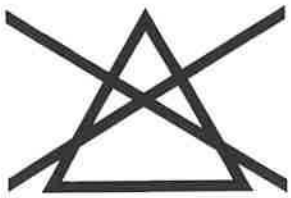
(ii) timber _____ (3)

(iii) plastic _____ (3)

(iv) cotton _____ (3)

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

State what is meant by each of the following symbols.



_____ (3)

_____ (3)

(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.** (3)

(ii) Name a metal which is found as an **ore.** (3)

(iii) Describe, with the aid of a labelled diagram, how you would **extract a metal from its ore.** (12)

Labelled diagram

D – TIMBER

(i) Name a **softwood.** (3)

(ii) Give one **use** for the softwood you have named. (3)

(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.** (12)

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)

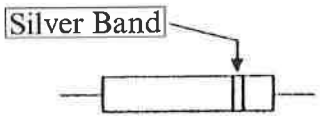
(ii) What **colour** does the chemical turn if the food contains starch? (3)

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

(c) Describe an experiment to make **cheese**. (12)

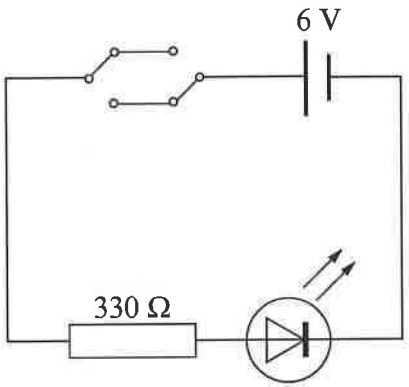
Question 15 – Electronics

(a) (i) The device shown on the right is a **diode**. What is it used for? (6)



(ii) What is the reason for the silver band on the device? (6)

(b) (i) What is the function of the **resistor** in the circuit? (3)



(ii) Will the **LED** light in the circuit as shown? (3)

(iii) Name the type of **switch** shown in the circuit. (3)

(iv) Where in a house or school might you find this type of switch? (3)

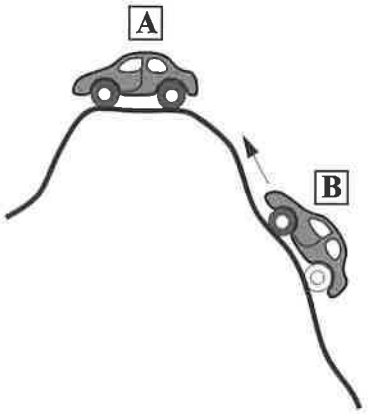
(c) (i) Are the lights in a house wired **in series** or **in parallel**? (3)

(ii) Draw a circuit diagram showing a battery, a switch and two bulbs connected in parallel. (9)

Circuit diagram

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.



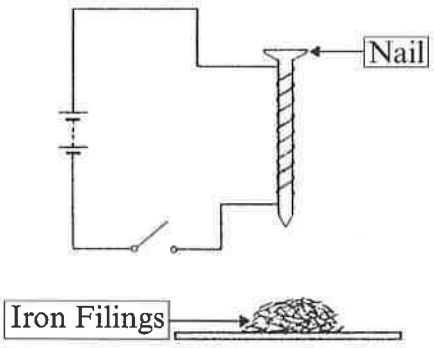
(i) What form of energy does Car **A** have? (3)

(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.