29662

S 36A

WARNING

You must return this paper with your answerbook, otherwise marks will be lost.

EXAMINATION NUMBER

AN ROINN OIDEACHAIS AGUS EOLAÍOCHTA

JUNIOR CERTIFICATE EXAMINATION, 1998

SCIENCE – ORDINARY LEVEL

(N.B. Not for Science – Local Studies Candidates)

TUESDAY, JUNE 16 – AFTERNOON, 2.00 to 4.30

SECTION A TO BE ANSWERED BY ALL CANDIDATES
(Sections B, C, D and E are on separate sheets)
Answer the questions in the spaces provided.

SECTION A - CORE (144 MARKS)

Answer any **12 parts** *(a), (b), (c),* etc. from this Section.
Return this Section of the examination paper in your answerbook.

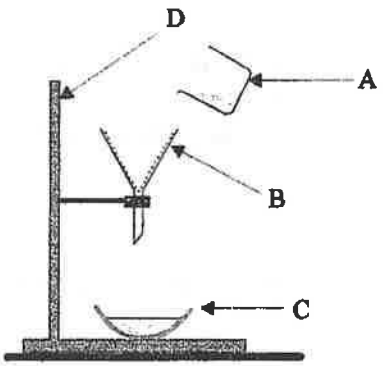
1. *(a)* Name the pieces of apparatus labelled A, B, C and D.

A _____

B _____

C _____

D _____



(b) What is a **galaxy?** _____

_____

The Earth is one of the planets in the Solar System.

How many planets are in the Solar System? _____

Name the planet **nearest** to the Sun. _____

(c) Complete the table below with words from the list on the right.

chemical	petrol
light	
kinetic	
sound	
potential	

petrol
loudspeaker
solar calculator
waterfall
stretched spring

(d) Give **one** use for a magnet in the home. _____

_____

Name a metal that is attracted by a magnet. _____

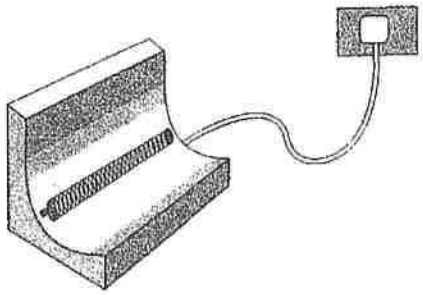
If two magnets are placed together as shown on the right, what would happen?

_____

(e) The E.S.B. charges about 8p for a unit of electricty. (1 unit = 1000 watts used for 1 hour).

How long does it take the 2000 watt electric fire shown on the right to use 1 unit of electricity?
Is it **30 minutes, 1 hour** or **2 hours?**

_____



How much will it cost to run the fire for 10 hours?
Is it **16p, 40p** or **£1.60?**

_____

Why is the wire joining the fire to the plug covered in a plastic material?

_____

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

_____

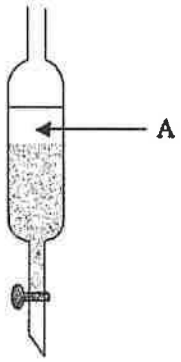
Coal is a FOSSIL FUEL. What are fossil fuels formed from?

_____

Give an example of a fossil fuel other than coal.

_____

(g) A mixture of oil and water was poured into a separating funnel as shown and allowed to settle.
Which liquid would you expect to find at A?



_____

Could alcohol and water be separated in this way?

_____

What is a **solvent?**

_____

(h) Match the elements listed with the correct use in the table below.

GOLD, ALUMINIUM, OXYGEN, CHLORINE

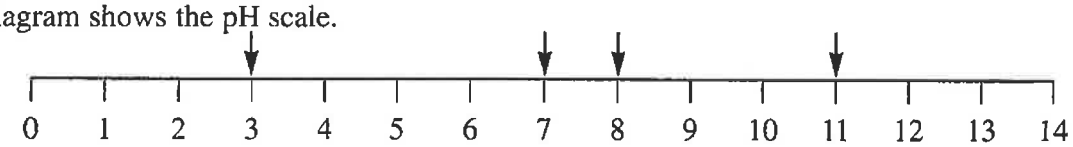
Use	Element
Soft drinks can	
Kills bacteria	
Jewellery	
Welding torch	

(i) Separate the following into PHYSICAL CHANGES and CHEMICAL CHANGES.

BURNING MAGNESIUM, MIXING SALT AND SAND, BOILING WATER, MIXING ACID AND BASE.

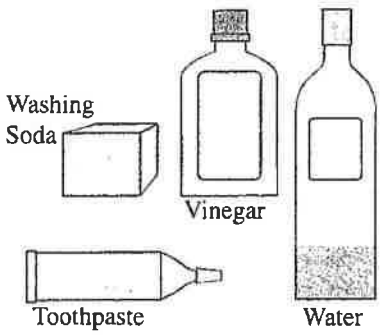
PHYSICAL CHANGES	CHEMICAL CHANGES

(j) The diagram shows the pH scale.



Match each of the pH values indicated by an arrow with one of the substances shown.

Substance	pH
Toothpaste	
Water	
Washing soda	
Vinegar	



[Turn over

(k) The amount of energy in two different meals is shown below.

Meal A	
Sausage	500 kJ
Chips	1000 kJ
Fried Egg	650 kJ
Cup of tea with milk	50 kJ

Meal B	
Salmon	300 kJ
Salad	20 kJ
Yoghurt	5 kJ
Brown bread and butter	400 kJ
Glass of milk	100 kJ

Which meal, **A or B,** gives the more energy? _____

Which meal, **A or B,** is likely to contain the more fibre? _____

Why should a person's diet contain fibre? _____

_____

(l) You have five senses which pick up information about the outside world.
Complete the following table.

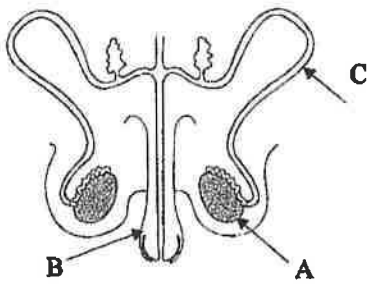
Sense	taste	touch		sight	
Sense Organ	tongue		nose		ear

(m) Name the parts of the male reproductive system labelled **A, B, and C.**

A _____

B _____

C _____



What is produced by **A?** _____

(n) Green plants can make food from CARBON DIOXIDE and WATER.

What gas do plants give out when they make food? _____

Why do plants not make food at night? _____

Why can mushrooms not make their own food? _____

(o) Write a food chain from the habitat you have studied in the spaces below.

Give an example of **one** way in which animals depend on plants in a habitat. _____

_____

AN ROINN OIDEACHAIS AGUS EOLAÍOCHTA

JUNIOR CERTIFICATE EXAMINATION, 1998

SCIENCE – ORDINARY LEVEL

(N.B. Not for Science – Local Studies Candidates)

TUESDAY, 16 JUNE – AFTERNOON, 2.00 to 4.30

Section A is on a separate sheet which provides spaces for your answers.
The completed sheet should be enclosed in your answer book.

SECTIONS B, C, D, E

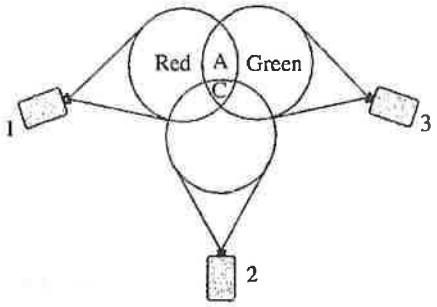
The questions from these sections should be answered in your answer book.

Choose any **three sections** from **B, C, D, E.**
Answer **two** questions from each chosen section. All questions carry equal marks.

SECTION B – PHYSICS (72 marks)

Answer any **two** questions.

2. *(a)* The diagram shows three projectors, each shining a different primary colour of light onto a screen.

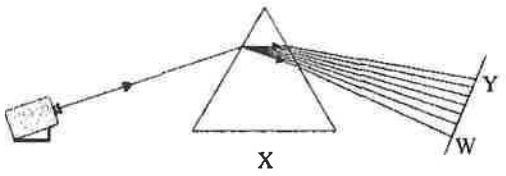


(i) What primary colour of light should be coming from projector 2? (3)

(ii) What secondary colour of light would be found at A? (3)

(iii) Name the colour C. (3)

(b) The diagram shows a beam of white light being passed through X, forming a band of colours on a screen.



(i) Name X. (3)

(ii) Name the colour seen at W. (3)

(iii) What colour is found at Y? (3)

(c) Sound is a form of energy.

(i) What unit is energy measured in? (6)

(ii) Describe a simple experiment to show that sound is a form of energy. (12)

3. *(a)* You are given a 6 V battery, a light bulb, some leads and samples of the materials listed below.

WOOD, IRON, GLASS, COPPER, PAPER

(i) Draw a diagram of the circuit you would set up to find out if the materials are conductors or insulators. (6)

(ii) Describe how you would use the circuit you have drawn to see if the materials are conductors or insulators. (6)

(iii) Name the **two** conductors from the list. (6)

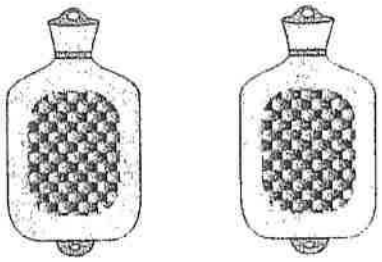
(b) The diagram shows two hot water bottles **A** and **B.**

(i) Explain what is meant by **temperature.** (6)

(ii) Which hot water bottle, **A or B,** has the more **heat?** (3)

(iii) After two hours which hot water bottle, **A or B,** will have the higher **temperature?** (3)

(iv) Suggest a way of keeping the hot water bottles warm for longer. (6)



A. 40 °C
300 cm^3 of Water

B. 40 °C
500 cm^3 of Water

4. *(a)* Sources of energy are either RENEWABLE or NON-RENEWABLE.

(i) What is the **difference** between renewable and non-renewable sources of energy. (6)

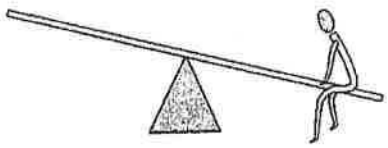
(ii) Give **one** example of a renewable source of energy. (3)

(iii) Give **one** example of a non-renewable source of energy. (3)

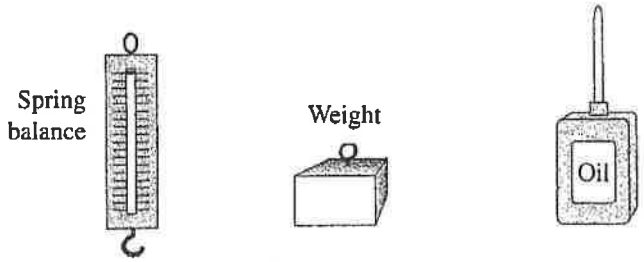
(b) The see-saw on the right is an example of a lever.

(i) What is a **lever?** (6)

(ii) Give **another** example of a lever. (3)



(c) (i) Describe an experiment you could carry out, using the items shown, to show that oil reduces friction. (12)



(ii) What would you use in the experiment if you wanted to increase friction? (3)

SECTION C – CHEMISTRY (72 marks)

Answer any **two** questions.

5. *(a)* Atoms contain PROTONS, NEUTRONS AND ELECTRONS.

(i) What is an **atom?** (6)

(ii) Where in the atom would you find the protons and neutrons? (3)

(iii) What type of charge is on the electron? (3)

(iv) What do you call an atom which has lost or gained electrons? (6)

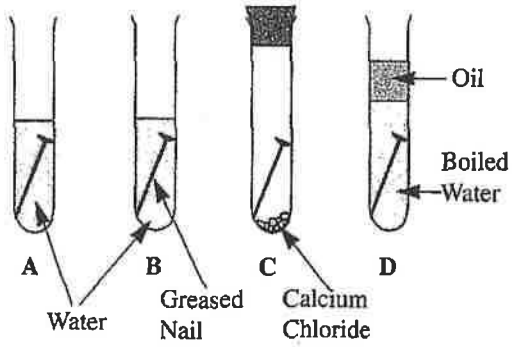
(b) The experiment on the right was set up to find out what causes rusting.

(i) Why was the nail in tube **B** coated with grease? (6)

(ii) Why was the water in tube **D** boiled? (6)

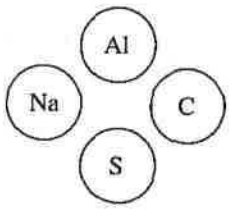
(iii) In which one of the tubes **A, B, C, or D** would the nail rust? (3)

(iv) State one way to prevent iron from rusting. (3)



6. *(a)* (i) Choose **two** metals from the elements shown on the right. (6)

(ii) Metals have **lustre.** Explain the meaning of the word lustre. (3)



(b) (i) What is an **alloy?** (6)

(ii) From the list below choose an **alloy.**

GOLD BRASS BRONZE SILVER (3)

(iii) Give <u>one</u> use for the alloy you have chosen. (3)

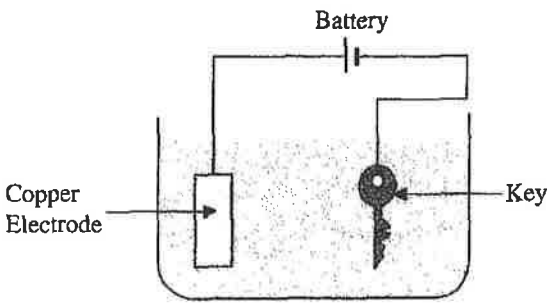
(c) The diagram shows electroplating.

(i) What is meant by **electroplating?** (6)

(ii) Is the key connected to the positive or negative side of the battery? (3)

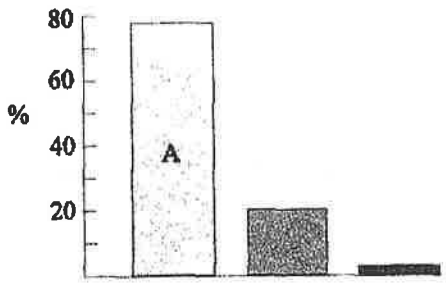
(iii) What happens to the key during the experiment? (3)

(iv) What happens to the copper electrode? (3)



[Turn over

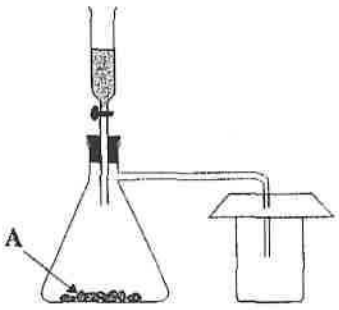
7. *(a)* Air is a mixture of gases. The bar chart shows the percentage of some gases found in air.



(i) Name the gas **A.** (3)

(ii) What is meant by a **mixture?** (6)

(b) The apparatus on the right was set up to prepare and collect carbon dioxide.

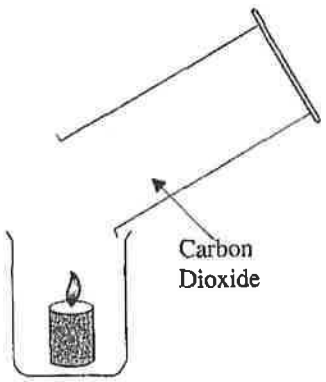


(i) Name the substance **A** used in the flask. (3)

(ii) What test could you carry out to prove that the gas in the jar was carbon dioxide. (6)

(iii) State **two** uses for carbon dioxide. (6)

(c) A jar of carbon dioxide gas is poured into a jar containing a lighted candle as shown in the diagram.



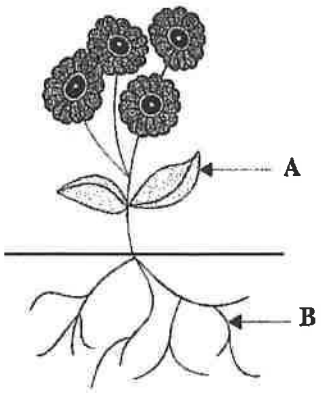
(i) Is carbon dioxide denser or less dense than air? (6)

(ii) What happens to the candle? (6)

SECTION D – BIOLOGY (72 marks)

Answer any **two** questions.

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

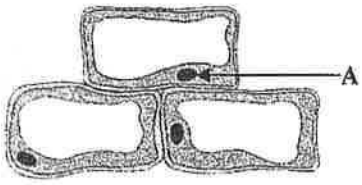


(i) Name the parts labelled **A and B.** (6)

(ii) Give **one** function of the part labelled **A.** (3)

(b) Describe an experiment you would set up to show that seeds need water to germinate. (12)

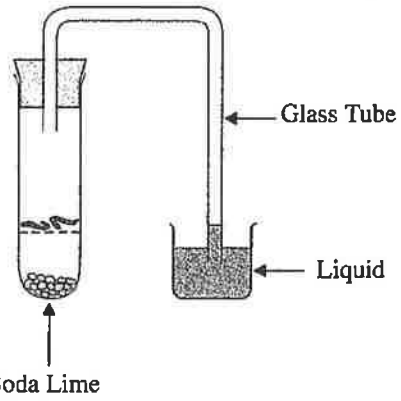
(c) The diagram shows some onion cells as seen under the light microscope.



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

(ii) Describe how you would make a slide of some onion cells and examine it under the microscope. (12)

9. *(a)* The diagram shows an experiment that was set up to show that earthworms use up oxygen during respiration.



(i) What would you expect to happen to the level of the liquid in the glass tube? (6)

(ii) Name the gas which the earthworms breath out. (3)

(iii) What is the reason for placing the **soda lime** in the test tube? (6)

(b) The blood is a transport system of the body.

(i) Name **two** substances that are carried in the blood. (6)

(ii) Which type of blood vessel, artery or vein, carries blood **away** from the heart? (3)

(c) The table on the right shows the parts of the blood.

PART OF THE BLOOD
Red Blood Cell
White Blood Cell
Platelet

(i) Which part helps to **clot** the blood? (3)

(ii) Which part helps to **fight bacteria?** (3)

(iii) State **two** ways of preventing heart disease. (6)

10. *(a)* A habitat is a place where plants and animals live.

(i) Name a **habitat** you have studied. (3)

(ii) Describe how you would use **one** of the items listed below in the study of a habitat.

POOTER, QUADRAT, HAND NET, TULLGREN FUNNEL. (6)

(iii) State **one** way in which plants depend on animals in a habitat. (3)

(b) Bacteria and fungi can be useful or harmful.

(i) Give **one** use for fungi. (3)

(ii) Give **one** harmful effect of bacteria. (3)

(iii) What is an **antibiotic?** (6)

(c) Describe an experiment you would carry out to show the presence of bacteria in water. (12)

SECTION E – APPLIED SCIENCE (72 marks)

Answer any **two** questions.

11. EARTH SCIENCE.

(a) The Earth's Moon is one of the moons in the solar system.

(i) How long does it take the Moon to orbit the Earth? (3)

(ii) What is a satellite? (6)

(iii) Draw a labelled diagram to show the positions of the Earth, Sun and Moon during a lunar eclipse. (6)

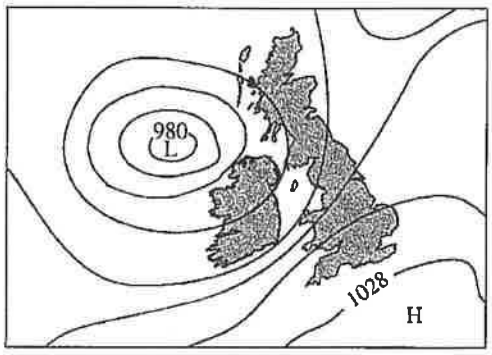
(iv) Give **two** reasons why we are unable to live on the Moon. (6)

(b) If you were keeping a record of the weather in your area,

(i) what would you use to measure **rainfall?** (3)

(ii) what would you measure with an **anemometer?** (3)

(c) The weather map shows an area of high pressure and an area of low pressure.



(i) In which area will the weather be more likely to be wet? (3)

(ii) What would you use to measure air pressure? (3)

(iii) Which of the types of cloud listed below is dark grey and usually brings heavy rain?

CIRRUS, CUMULUS, STRATUS, NIMBOSTRATUS. (3)

12. HORTICULTURE.

(a) Two types of stem cutting are softwood cuttings and hardwood cuttings.

(i) What is meant by the term **softwood cutting?** (6)

(ii) Describe, with the help of labelled diagrams, how you would take and root a softwood cutting. (12)

(b) All plants require water, nutrients, air, light and space for healthy growth.

(i) What happens to a plant if it gets too little water? (3)

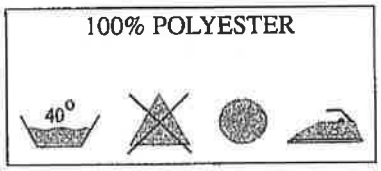
(ii) What would you add to the soil to increase the amount of nutrients in it? (3)

(iii) Why do plants need light? (6)

(iv) State **two** methods you could use to keep cut flowers fresh for longer. (6)

13. MATERIALS SCIENCE.

(a) The symbols on the right were given on a care label inside a T-shirt.



(i) Is the material in the T-shirt **natural** or **man-made?** (3)

(ii) Can you use bleach when washing this T-shirt? (3)

(iii) Which of the **symbols** tells you that the T-shirt can be dry cleaned? (3)

(b) Materials can be used to make lots of different things. Which material from the list on the right

Rat Poison
Cotton
Petrol
Polystyrene

(i) could be used as **packing** in parcels? (3)

(ii) would carry the **symbol**  ? (3)

(iii) is a **hydrocarbon?** (3)

(c) Answer **one** of the following questions, **A, B, C or D.**

A. PLASTICS

(i) Give **one** advantage and **one** disadvantage of using plastic cups. (6)

(ii) Describe an experiment you could carry out to compare the densities of two plastics. (12)

OR

B. TEXTILES

(i) Explain what is meant by **flame-proofing** a fabric. (6)

(ii) You are given some wool and some cotton. Describe how you would find out which is the better insulator. (12)

OR

C. METALS

(i) Explain what is meant by **smelting.** (6)

(ii) You are given pieces of aluminium, copper and iron of the same size. Describe, with the help of a labelled diagram, an experiment you would carry out to compare the flexibility of the three metals. (12)

OR

D. TIMBER

Plywood is made up of sheets of veneer glued together so that the grain of one layer goes in a different direction to the grain of the one below it.

(i) What is a **veneer?** (6)

(ii) Describe an experiment you would carry out to show that grain direction affects the strength of a piece of timber. (12)

14. FOOD.

(a) Many of the foods we buy from the supermarket have been preserved in some way. Choose a food from the list on the right that can be preserved by:

(i) drying;

(ii) canning;

(iii) freezing;

(iv) pasteurisation. (12)

baked beans
cornflakes
milk
fish fingers

(b) Many of the foods we eat are processed before we buy them.

(i) Explain what is meant by **processed** food. (6)

(ii) Choose **two** processed foods from the following:

CHEESE LETTUCE BACON POTATOES (6)

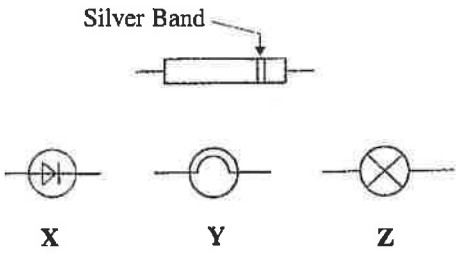
(c) Describe how you would use some freshly cut grass to make silage. (12)

15. ELECTRONICS.

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

(ii) Which of the symbols **X, Y** or **Z** is used for the device? (3)

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



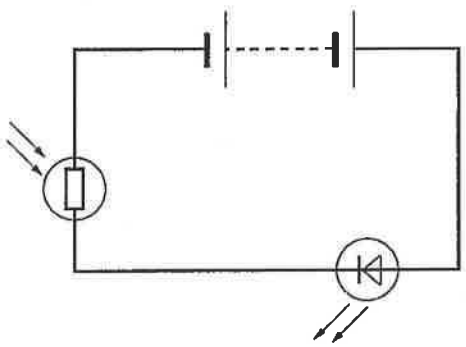
(b) (i) Draw a simple circuit diagram showing a battery, a switch and three bulbs connected in series. (9)

(ii) Does it matter where you connect the switch in the circuit? (3)

(c) The circuit diagram shows a light-emitting diode (LED) which is emitting light and a light-dependent resistor (LDR).

(i) What will happen to the light-emitting diode if you cover the light-dependent resistor? (6)

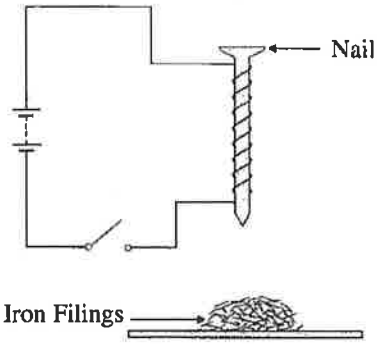
(ii) Give one everyday use for a light-dependent resistor. (3)



[Turn over

16. ENERGY CONVERSIONS.

(a) The diagram shows a simple electromagnet.



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

(ii) State **one** everyday use for an electromagnet. (3)

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

(iv) What **energy change** takes place in an electromagnet? (6)

(b) What is the function of a dynamo? (6)

(c) Describe an experiment you would set up to show that a current-carrying wire in a magnetic field experiences a force. (12)