FOR EXAMINER

S36A

WARNING

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

Write your Examination Number here

29338

AN ROINN OIDEACHAIS

JUNIOR CERTIFICATE EXAMINATION, 1995

SCIENCE – ORDINARY LEVEL

TUESDAY, 13 JUNE – AFTERNOON, 2.00 to 4.30

SECTION A to be answered by all candidates.
(**SECTIONS B, C, D, E** are on separate sheets.)
Answer the questions in the spaces provided.

SECTION A – CORE (144 marks)

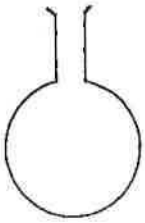
Answer any **12 parts** (*a*), (*b*), (*c*), etc. from this Section.
Return this Section of the examination paper in your answer book.

1. (*a*) Give **one use** for each of the pieces of apparatus shown in the drawings.

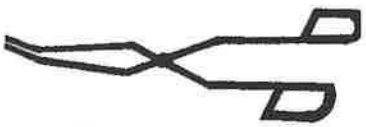
A: _____

B: _____

C: _____



D: _____



(*b*) The Earth travels around the Sun.

Name **two other** planets in the solar system.

_____

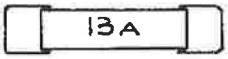
Name **one planet** in the solar system which is larger than the Earth.

_____

How **long** does it take the **Earth** to travel once around the **Sun**?

_____

(*c*) The drawing shows a **fuse** which is used in an electric plug.



Why is a fuse used?

_____

Explain how a fuse works.

_____

(*d*) Some materials are **heat insulators**.

What is an **insulator**?

_____

Give **two** examples of **heat insulation** in your home.

(i) _____

(ii) _____

What is the **TOG value** of the best insulator from the list below:

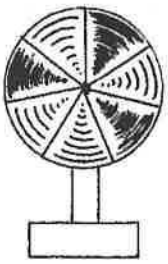
4.5 9.5 13.5? _____

(*e*) Name the apparatus **A** shown in the drawing which is used to investigate light.

_____

What is seen when the disc is rotated quickly?

_____



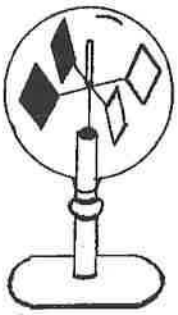
A

Name the apparatus **B** shown in the drawing.

_____

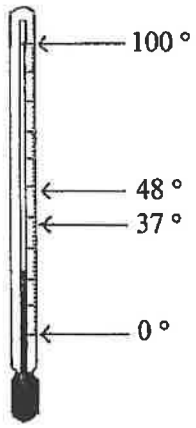
What can the apparatus be used to show?

_____



B

(*f*) The drawing shows a thermometer. Four points are marked.



Which point is:

(i) normal body temperature? _____

(ii) the boiling point of water? _____

(iii) the freezing point of water? _____

What are the units of temperature? _____

(*g*) From the list below name **one element, one compound** and **one mixture**:

OXYGEN WATER AIR COPPER SOIL CARBON DIOXIDE

ELEMENT: _____

COMPOUND: _____

MIXTURE: _____

Give **one difference** between a **compound** and a **mixture.**

_____

_____

(*h*) What is an **atom**?

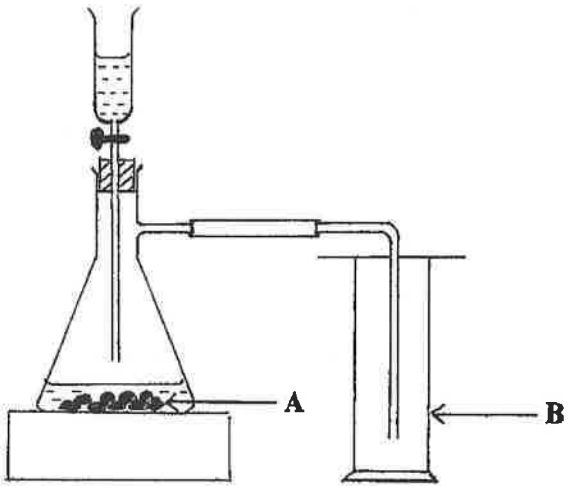
_____

Atoms are made up of tiny particles called **sub-atomic particles.**

Name **two** types of sub-atomic particles.

_____ _____

(*i*) The drawing shows how **carbon dioxide** can be made in the laboratory.



Name the solid **chemical A** in the flask.

_____

How could you show that the gas in the jar **B** was carbon dioxide?

_____

_____

Give **one use** of carbon dioxide.

_____

(*j*) The water you use in your home may have been **treated** to make it safe to drink.

Name a suitable **method** of treatment.

_____

Explain why the method of water treatment you have named is used.

_____

Water may be either **soft** or **hard**.

Give **one advantage** of **soft** water.

_____

Give **one advantage** of **hard** water.

_____

(*k*) Give **one characteristic** of living things.

_____

Give **one difference** between animals and plants.

_____

Give **one** example of how animals are important to man.

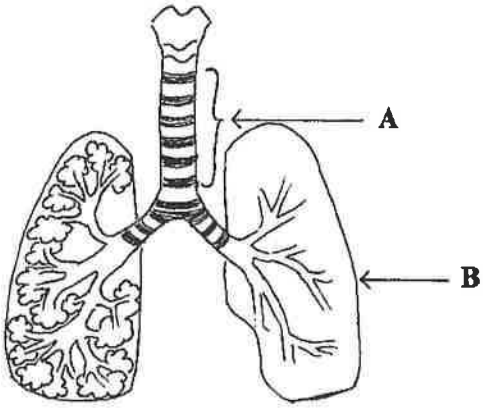
_____

[Turn over

Give **one** example of how plants are important to man.

_____

(*l*) Name the parts of the **breathing system** marked **A** and **B** in the drawing.



A _____

B _____

Name the **gas** which is **taken in** during breathing and **used** by the body.

_____

Name **one gas**, which is a **waste product**, which the body gets rid of by breathing.

_____

(*m*) Give **one function** of **blood** in the body.

_____

Name the **organ** which keeps blood moving around the body.

_____

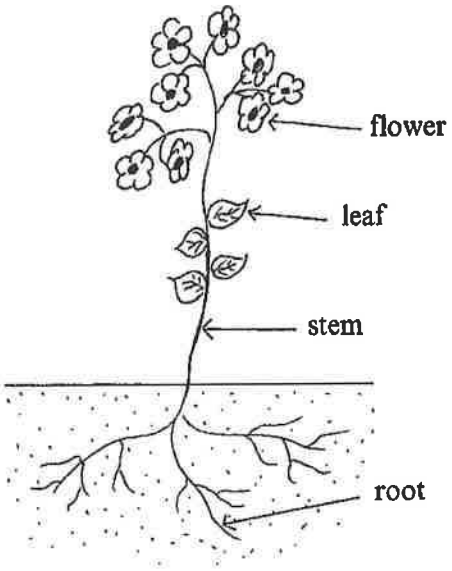
Name the **mineral** which makes bones hard.

_____

Give **one function** of bones in the body.

_____

(*n*) The drawing shows a flowering plant.



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

_____

Name the **green chemical** in the plant which helps it to make food.

_____

Name the **gas** the plant uses to make food.

_____

The plant also uses **water** to make food.

Where does the **water** enter the plant?

_____

(*o*) Living things are either **producers** or **consumers.**

What is a **producer?**

_____

Name **one producer:**

_____

Name **one consumer:**

_____

(12 × 12 marks)

JUNIOR CERTIFICATE EXAMINATION, 1995

28323

SCIENCE – ORDINARY LEVEL

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

TUESDAY, 13 JUNE

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.

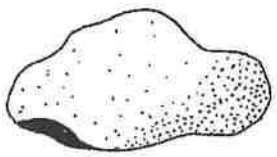
The questions from these sections should be answered in your answer book.

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 drawing shows a stone.



(i) Name the laboratory apparatus you would use to find the **mass** of the stone. (3)

(ii) Name the **units** used to measure **mass.** (3)

(iii) What is **mass**? (6)

(*b*) Using a diagram, describe a simple experiment to measure the **volume** of the stone. (12)

(*c*) (i) What is **density**? (6)

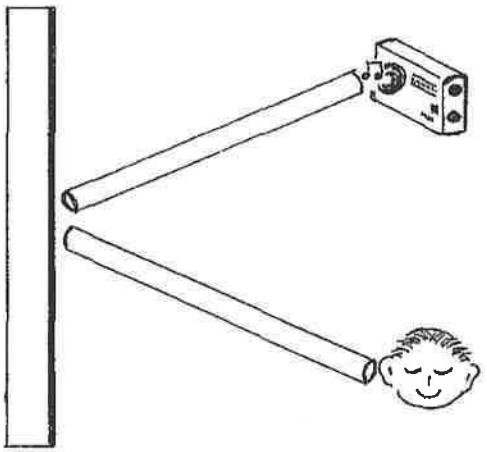
(ii) When a stone is put into a beaker of water it **sinks**. Explain why the stone sinks. (6)

3. (*a*) (i) **Light** and **sound** are both forms of **energy**.

Give **one difference** between them. (6)

(ii) *In the experiment shown in the drawing the* student hears an **echo**. What is an **echo**? (3)

(iii) Give **one use** of echoes. (3)

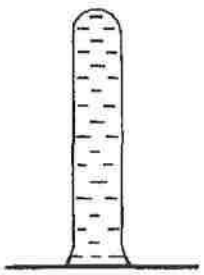


(*b*) Using a diagram, describe a simple experiment to show that **sound** cannot travel in a **vacuum**. (12)

(*c*) (i) Explain, using a diagram, how **shadows** are caused. (6)

(ii) Show, using a diagram, the reflection of a ray of light by a mirror. (6)

4. (*a*) (i) The drawing shows an inverted container of water with a card underneath. What keeps the water from falling out? (6)

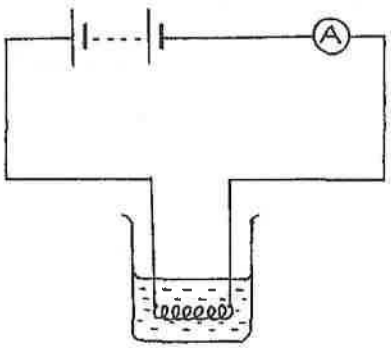


(ii) What is the **force** which prevents you from slipping while walking on a floor? (3)

(iii) Give **one way** in which this force could be **reduced**. (3)

(*b*) Using a diagram, describe a simple experiment to show that heat may be transferred by **radiation**. (12)

(*c*) The drawing shows an **electric current** passing through **water** in a beaker.



(i) What **effect** does the electric current have on the water? (6)

(ii) Give **one everyday** example of the use of this effect in your home. (6)

SECTION C – CHEMISTRY (72 marks)

Answer any **two** questions.

5. (*a*) (i) **Salt** is **soluble** in water. What does this mean? (3)

(ii) **Sand** is **insoluble** in water. What does this mean? (3)

(iii) What is **formed** when **salt** is put into the **water**? (3)

(iv) What **word** is used to describe a liquid in which a salt is soluble? (3)

(*b*) Describe, using a diagram, a simple experiment to separate salt and water. (12)

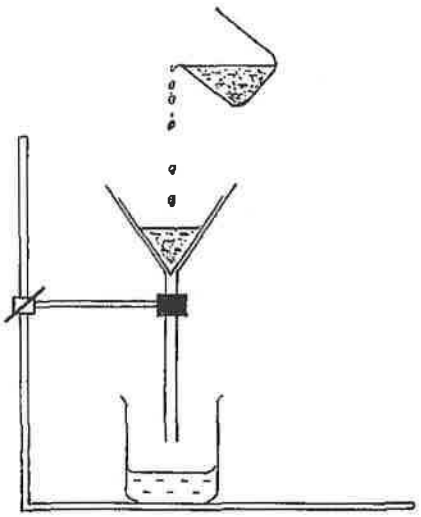
(*c*) The drawing shows the separation of water and sand.

(i) What **name** is used to describe this type of **separation**? (3)

(ii) Where is the **water** at the end of the experiment? (3)

(iii) Where is the **sand** at the end of the experiment? (3)

(iv) Name a different method which could be used to separate the water and sand. (3)



6. (*a*) **Litmus** is used to test for **acids** and **bases**.

(i) What is the **colour** of **litmus** in an **acid**? (3)

(ii) What is the **colour** of **litmus** in a **base**? (3)

(iii) Name **one acid** often found in **food**. (3)

(iv) Name **one base** you have used in the school **laboratory**. (3)

(*b*) (i) What is the **pH scale** used to measure? (6)

(ii) If you were given a colourless liquid, describe a simple experiment you could carry out to measure its pH. (9)

(*c*) The drawing shows **magnesium** reacting with an **acid**.

(i) Name the **gas** that is formed. (3)

(ii) What happens when equal amounts of sodium hydroxide and hydrochloric acid are mixed together. (6)

[Turn over

7. (*a*) (i) From the list of **metals** below choose **two** and give **one** use for each of the two. (6)

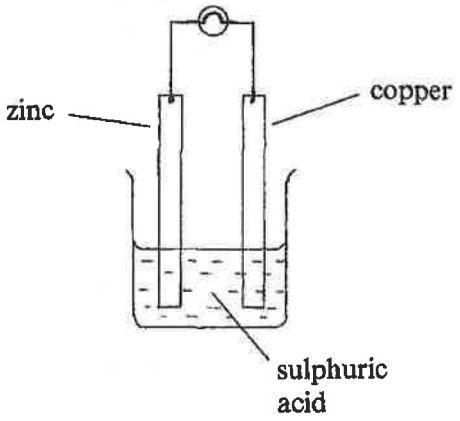
ALUMINIUM GOLD IRON LEAD MERCURY

(ii) Give **two properties** of metals. (6)

(*b*) (i) **Electroplating** can be used to prevent metals from rusting or corrosion. Using a diagram, describe a simple experiment to show how you could electroplate a piece of metal. (12)

(ii) Name **one** other **method** which can be used to prevent rusting. (3)

(*c*) Study the drawing.



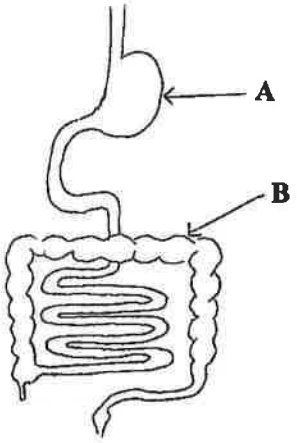
(i) How would you know if there was an **electric current** flowing? (3)

(ii) The sulphuric acid is called an **electrolyte**. What is an **electrolyte**? (6)

SECTION D – BIOLOGY (72 marks)

Answer any **two** questions.

8. (*a*) (i) Name the parts marked **A** and **B** in the drawing of the **digestive system.** (6)

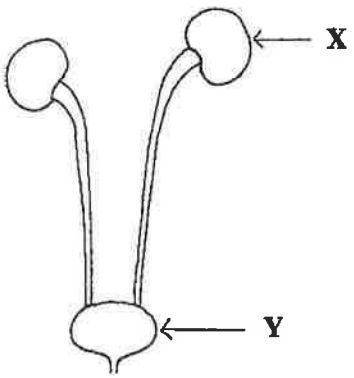


(ii) Give **one function** of the **liver.** (6)

(*b*) (i) Name one **type** of **chemical** which helps to break down food in the digestive system. (6)

(ii) Where does the digested food go when it leaves the digestive system? (6)

(*c*) (i) The drawing shows part of the **urinary system.** Name the parts marked **X** and **Y.** (6)



(ii) What is the **function** of the part marked **X**? (3)

(iii) Name **one waste chemical** excreted by this system. (3)

9. (*a*) A plant forms **seeds** as part of reproduction.

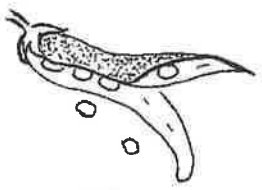
(i) Where are **seeds** formed? (3)

(ii) Name the **male** and **female cells** in the plant which join together to form **seeds.** (6)

(*b*) (i) Explain how the seeds of the fruits shown in the diagram are **dispersed.** (6)

(ii) Why is it important that seeds are dispersed **away** from the **parent plant**? (6)

strawberry



pea

(*c*) After seeds are dispersed they may **germinate.**

(i) What is **germination**? (3)

(ii) Using a diagram, describe a simple experiment to show that seeds need **oxygen** for germination. (12)

10. (*a*) **Bacteria** can be beneficial (useful) or harmful.

(i) Give **one** example of the beneficial use of bacteria. (3)

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

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

(*b*) Using a diagram, describe a simple experiment to show that there are **bacteria** in either **air** or **soil**. (12)

(*c*) The following may be used in a **habitat study**:

POOTER, SIEVE, NET, BEATING TRAY, PITFALL TRAP.

Choose **two** of the above and explain **why** and **how** you would use each of the two. (12)

SECTION E – APPLIED SCIENCE (72 marks)

Answer any **two** questions.

11. EARTH SCIENCE.

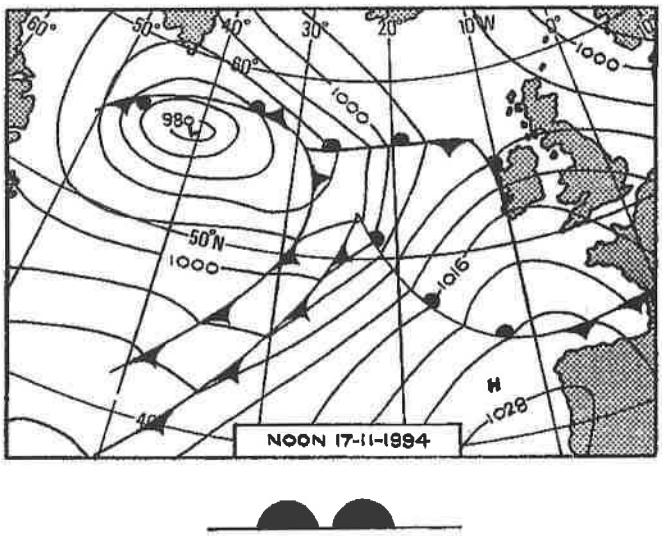
(*a*) The Earth is the only **planet** in the **solar system** where **living things** have been found.

(i) Suggest **two reasons** for this. (6)

(ii) The **Earth** is a **satellite** of the **Sun**. What is a **satellite**? (3)

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

(*b*) The **weather forecast** map shows Ireland and part of the Atlantic Ocean.



(i) Comment on the pressure forecast for Ireland and the weather you would expect. (6)

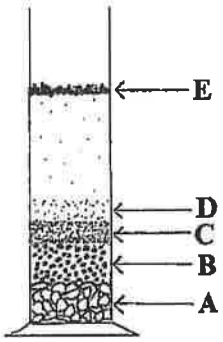
(ii) What does the symbol shown below the map represent (stand for)? (3)

(iii) For what is the **anemometer** used? (3)

(*c*) Using a diagram, describe an experiment to show the effect of **wind** (air movement) on the **rate** of **evaporation** of **water**. (12)

12. HORTICULTURE.

(*a*) The drawing shows the layers formed when soil is shaken with water and left to settle.



(i) Name the layers **A** and **C**. (6)

(ii) What is a compost? (3)

(iii) Give an example of a compost which contains **no** soil. (3)

(*b*) Describe a simple experiment to measure the **percentage** of **water**, by mass, in the soil. (12)

(*c*) Name a **vegetable** grown in Ireland. Describe briefly how you would grow and care for this vegetable starting from seed. (12)

[Turn over

13. MATERIALS SCIENCE.

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

(ii) Give one example of a natural source of **hydrocarbons**. (3)

(iii) What is the origin of this source? (3)

(iv) What chemical compounds are made when a hydrocarbon burns? (6)

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

A. PLASTICS

(i) Name **one** plastic used in home electrical insulation. (3)

(ii) Name **one** plastic used to make "plastic" bags. (3)

(iii) Using a diagram, describe a simple experiment to compare the flexibility of two plastics. (12)

OR

B. TEXTILES

Study the list of materials below:

DIESEL LEATHER LIMESTONE LINEN PVC

(i) From the list name one natural material and one synthetic (manmade) material. (6)

(ii) Using a diagram, describe a simple experiment to compare the **absorbency** of two textiles. (12)

OR

C. METALS

(i) Name a metal commonly used to carry electric current. (3)

(ii) Name a metal which reacts with cold water. (3)

(iii) Using a diagram, describe a simple experiment to compare the **hardness** of two metals. (12)

OR

D. TIMBER

(i) Name **two conifers** grown in Irish forests. (6)

(ii) Using a diagram, describe an experiment to compare the **hardness** of two woods. (12)

14. FOOD

(*a*) (i) Name a type of food which is rich in **protein**. (3)

(ii) Give **one use** of **fat** in our bodies. (3)

(iii) When a piece of food was **heated** with some **Benedict's solution**, a red/orange colour was seen. What information does this give you about the food? (3)

(*b*) Different methods of **food preservation** are given in the list below.

FREEZING, PASTEURISATION, DEHYDRATION, CANNING, CHEMICAL

(i) Give **one reason** why there is a need to **preserve food**. (3)

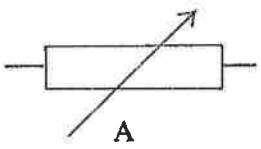
(ii) Name **one** food which is preserved by **one** of the above methods. (6)

(iii) State a method used to **preserve** the food you have named in (ii). (3)

(iv) Explain why/how this method of **food preservation** works. (3)

(*c*) Using a diagram, describe a simple experiment to make **cheese.** (12)

15. ELECTRONICS

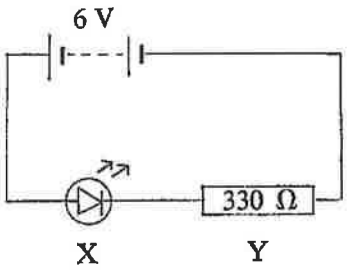


(*a*) (i) What is device **A**? (3)

(ii) Give an everyday use of **A**. (3)

(iii) Draw a useful simple circuit containing device **A**. (6)

(*b*) Study the **circuit** shown in the drawing.

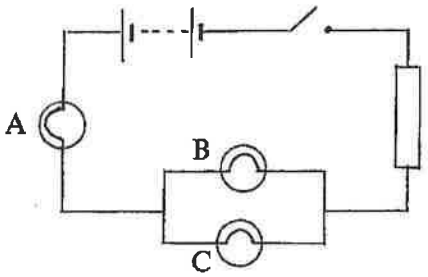


(i) Name device **X**. (3)

(ii) What is the function of **Y** in the circuit? (3)

(iii) **X** is **forward biased**. Explain what this means and why it matters. (6)

(*c*) The circuit diagram shows **three bulbs A, B** and **C**.

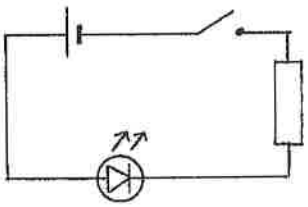


(i) Which bulb(s) would you expect to be the brightest? (3)

(ii) Which bulb would you remove to prevent the others from lighting? (3)

Draw a simple circuit which contains two switches in parallel with each other. Your circuit should contain a battery and a resistor. (6)

16. ENERGY CONVERSIONS



(*a*) (i) When **electrical energy** flows through the circuit shown in the drawing **two other forms** of **energy** are produced. Name the **two forms** of **energy**. (6)

(ii) What is **potential energy**? (3)

(iii) Give **one** example of the change of **potential energy** to kinetic energy. (3)

(*b*) Using a diagram, describe how you would make a simple **DC electric motor**. (12)

(*c*) (i) What **is the** main **energy change** brought about by an **electric motor**? (6)

(ii) What is **nuclear energy**? (6)