AN ROINN OIDEACHAIS AGUS EOLAÍOCHTA **S36**

JUNIOR CERTIFICATE EXAMINATION, 2001

SCIENCE – ORDINARY LEVEL

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

THURSDAY, 14 JUNE – AFTERNOON, 2.00 to 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 are pages provided at the back of this booklet.

Centre Number

Examination Number

For examiner use only

1. Total of end of page totals	
2. Aggregate total of all disallowed question(s)	
3. Total marks awarded (1 minus 2)	

For examiner use only

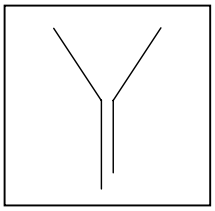
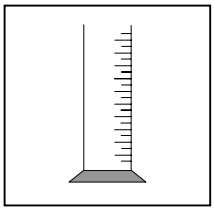
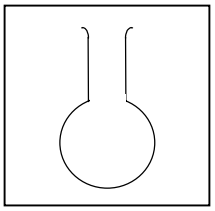
QUESTION		MARK
Section A	**Q.1**	
Section B	**Q.2**	
	Q.3	
	Q.4	
Section C	**Q.5**	
	Q.6	
	Q.7	
Section D	**Q.8**	
	Q.9	
	Q.10	
Section E	**Q.11**	
	Q.12	
	Q.13	
	Q.14	
	Q.15	
	Q.16	
TOTAL		
GRADE		

SECTION A – CORE (144 MARKS)

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

Question 1

(a) **Name** the following pieces of apparatus.

NAME: _____ _____ _____ _____

(b) The **Solar System** consists of the Sun and nine planets.

The Earth is one of the planets in the Solar System. Name **two** others.

1 _____ 2 _____

How long does it take the Earth to orbit the Sun?

_____

Life is **not** found on planets other than the Earth. Give **one** reason for this.

_____

(c) The diagram shows a **bar magnet**.

N	**S**

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

_____

Give **one use** for a magnet in the home.

_____

Complete the sentences:

Like poles of magnets _____ each other.

Unlike poles of magnets _____ each other.

Constriction

(d) The diagram shows a **clinical thermometer**.

What is measured with a clinical thermometer? _____

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

At what temperature does water **freeze**? _____

(e) **Complete the following sentences** by using words from the list on the right.

Boilers have lagging jackets for heat _____

Heat travels through solids by _____

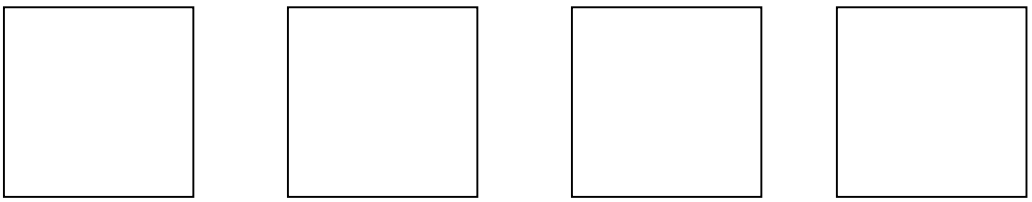
The change of a vapour to a liquid is _____

The Sun heats the Earth by _____

CONDUCTION
CONDENSATION
INSULATION
RADIATION

(f) Match a **hazard** from the list on the right with each of the following **symbols**.

A **B** **C** **D**



A _____

B _____

C _____

D _____

TOXIC
CORROSIVE
FLAMMABLE
HARMFUL

(g) Match an **element** from the list on the right with a correct **use**.

(i) Soft drinks can _____

(ii) Kills germs _____

(iii) Advertising signs _____

(iv) Electric wiring _____

CHLORINE
COPPER
ALUMINIUM
NEON

SECTION A

(h) A **fire triangle** is used to show the **three** things that a fire needs in order to burn.

What is represented by **A**? _____

Name a **substance** that can be used to put out fires.

_____

Give **one** fire safety precaution you could take in the home.

_____

HEAT **A**

OXYGEN

(i) State whether each of the following is a **physical change** or a **chemical change**.

DISSOLVING SUGAR IN TEA
MILK GOING SOUR
COAL BURNING
CANDLE MELTING

PHYSICAL CHANGE	CHEMICAL CHANGE

(j) **Carbon dioxide** is a gas found in air.

Give **one use** for carbon dioxide. _____

What is the **test for carbon dioxide**?

_____

Name **another gas** found in air. _____

(k) The diagram shows the structure of a **tooth**.

Name part **A**. _____

Name part **B**. _____

Name a **mineral** needed for tooth formation. _____

Give **one** way to prevent tooth decay.

_____

A

B

(l) Name the **organ** or **part of the human body** that does each of the following.

Pumps blood around the body. _____

Makes egg cells in the female. _____

Filters blood and makes urine. _____

Pulls on bones and causes them to move. _____

(m) Humans use **five senses** to pick up information about the outside world.

Complete the following table:

SENSE	hearing		taste		smell
SENSE ORGAN		skin	tongue	eye	

Name part **B**. _____

Give **one function** of part **A**.

(o) **Feeding** is a characteristic of living things. Name **two** other characteristics of living things.

1 _____ 2 _____

Name **one way** in which **plants** are important to humans.

_____

Name **one way** in which **animals** are important to humans.

_____

SECTION B – PHYSICS (72 MARKS)

There are THREE questions in this Section. Answer any TWO of these questions.

Ouestion 2

$$\frac{\textbf{mass}}{\textbf{volume}}$$

AREA

(b) **Friction** is a **force** between two objects moving over each other.

(i) Give an example where **friction is useful**. (3)

_____

(ii) Give an example where **friction is not useful**. (3)

_____

(iii) Give **two** other examples of **forces**. (6)

1 _____ 2 _____

(c) Describe, with the aid of a labelled diagram, an experiment to **show that the atmosphere exerts pressure**. (12)

_____

_____

_____

_____

_____

_____

_____

Labelled diagram

Question 3

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

(i) voltage _____ (3)

(ii) current _____ (3)

(iii) power _____ (3)

(iv) ESB unit of electricity _____ (3)

(b) The diagram shows an **electric current** passing through **water** in a beaker.

(i) What **effect** does the current have on the water? (3)

_____

(ii) Name a **household appliance** that uses this effect. (3)

_____

(iii) What is the **cost** of running a 3 kW heater for

(c) Describe, with the aid of a labelled diagram, an experiment to **show that liquids expand when heated**. (12)

_____

_____

_____

_____

_____

_____

_____

_____

Labelled diagram

SECTION B

Question 4

(a) **Light** is a **form of energy**.

(i) What is energy? (6)

_____

(ii) Name **two** other forms of energy. (6)

1 _____ 2 _____

(b) State whether each of the following is a **renewable** or a **non-renewable** source of energy. (12)

COAL WAVE WIND OIL

RENEWABLE SOURCE	NON-RENEWABLE SOURCE

(iii) Name colour **Y**. (3)

_____

Dispersion is the splitting of white light into the seven colours of the spectrum.

(iv) Give an **everyday example** of dispersion. (3)

_____

SECTION C – CHEMISTRY (72 MARKS)

There are THREE questions in this Section. Answer any TWO of these questions.

Question 5

(a) Match the **elements** listed below with the correct **symbol** in the table. (12)

NITROGEN CARBON SODIUM CHLORINE

SYMBOL	C	Na	Cl	N
ELEMENT				

(b) The diagram shows an apparatus that can be used to **separate water and alcohol**.

(i) Name this **separation technique**. (6)

_____

(ii) Name part **A**. (3) **A**

_____

(iii) **Which** of the two liquids collects in the beaker first? (3)

_____

(c) Describe, with the aid of a labelled diagram, an experiment to **separate sand and water**. (12)

_____

_____

_____

_____

_____

_____

_____

_____

Labelled diagram

Question 6

(a) (i) Choose a **gas** from the list on the right which dissolves in rain to form **acid rain**. (3)

HELIUM
SULPHUR DIOXIDE
CHLORINE

_____

(ii) Give **one harmful effect** of acid rain. (3)

_____

(iii) Describe how you would measure the **pH** of a liquid. (6)

_____

_____

(b) Water is a **compound**.

(i) Name the **two elements** that make up water. (6)

1 _____ 2 _____

(ii) What **property** of water allows small insects to walk on its surface? (6)

_____

(c) Two water samples **A** and **B** were tested with a soap solution to compare their **hardness**. The amount of soap solution needed to form a lather was measured and the following results were obtained.

Water sample	**A**	**B**
Soap solution needed in cm^3	5	15

(i) Which sample, **A** or **B**, is the harder water sample? _____ (3)

(ii) How is **temporary hardness removed** from a water sample? (3)

_____

(iii) Give **one advantage** of hard water. (3)

_____

(iv) Give **one disadvantage** of hard water. (3)

_____

Question 7

(a) (i) What is meant by the word **alloy**? (6)

_____

(ii) **Name** an alloy. _____ (3)

(iii) Give a **use** for the alloy you have named. _____ (3)

(i) In **which** of the three test-tubes will the nail rust? _____ (3)

(ii) Why was the water **boiled** in test-tube **C**? (3)

_____

(iii) Give **two** ways to stop iron rusting. (6)

1_____

2_____

(c) The diagram shows an experiment that can be carried out in the laboratory.

(i) What **process** is being investigated? (3)

_____

(ii) What happens to the **key**? (6)

_____

(iii) What happens to the **copper electrode**? (3)

_____

SECTION C

SECTION D – BIOLOGY (72 MARKS)

There are THREE questions in this Section. Answer any TWO of these questions.

Question 8

(a) Choose a **food** from the list on the right that is a good source of:

(i) protein _____ (3)

(ii) starch _____ (3)

(iii) vitamin C _____ (3)

(iv) fibre _____ (3)

LEMON JUICE
BRAN FLAKES
PORK CHOP
BREAD

(b) The diagram shows the **human digestive system**.

(i) Name part **A**. _____ (3)

(ii) Name part **B**. _____ (3)

(iii) What is the **main function** of **B**? (3)

_____

(iv) Name **one** type of **chemical** that helps to break down food in the digestive system. (3)

_____

A

B

(c) Doctors take their patients' **pulse** to **measure the rate of their heartbeat**.

(i) Name a good **place** in the body to find a pulse. (3)

_____

(ii) Which of the following is the **average heartbeat per minute** of an adult at rest? (3)

52 **72** **92** _____

(iii) Name **one** factor that can cause the rate of heartbeat to **increase**. (3)

_____

(iv) Give **one** way to prevent **heart disease**. (3)

_____

Question 9

(a) The diagram shows a **flower**.

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

_____

(ii) What is the **function** of the anther '**B**'? (6)

_____

(iii) Name part **C**. (3)

_____

A
B
C

(b) The diagram shows an experiment set up to see the effect of growing a plant in light from **one** side.

(i) What **result** would you expect to see after a few days? (3)

_____

LIGHT→

(ii) What **name** is given to this response? (6)

_____

(iii) Give **one** way in which this response helps the plant. (3)

_____

(c) The diagram shows an experiment on **photosynthesis**.

(i) What **gas** collects at **S**? (3)

_____

(ii) Name a **part** of the plant in which photosynthesis takes place. (3)

_____

(iii) Name **two** things that a plant needs for photosynthesis. (6)

1 _____

2 _____

SECTION D

Question 10

(a) The diagram shows an **animal cell**.

(i) Name part **A**. _____ (3)

(ii) Name part **B**. _____ (3)

(iii) What is the **function** of part **A**? (3)

_____

(iv) Give **one difference** between an animal cell and a plant cell. (3)

_____

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

(ii) Name a **plant** that is found in that habitat. _____ (3)

(iii) Give **one** example of how an **animal** is **adapted** to survive in that habitat. (3)

_____

(iv) Name **one** substance that causes **water pollution**. (3)

_____

(c) The diagram shows two **pieces of apparatus**, **A** and **B**, which are used in a habitat study.

Gauze

A **B**

(i) Name the piece of apparatus **A**. _____ (3)

(ii) Give a **use** for **A**. _____ (3)

(iii) Name the piece of apparatus **B**. _____ (3)

(iv) Give a **use** for **B**. _____ (3)

SECTION D

SECTION E – APPLIED SCIENCE (72 MARKS)

There are SIX questions in this Section. Answer any TWO of these questions.

Question 11 - Earth Science

(a) Match each **cloud type** listed below with the correct **letter** from the diagram.

Cumulus _____ (3)

Cirrus _____ (3)

Stratus _____ (3)

(b) The **Moon** is a **satellite** of the **Earth**.

(i) What is a satellite? (3)

_____

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

(iii) Draw a labelled diagram to show how a **lunar eclipse** occurs. (9)

(c) Describe an experiment to show **the effect of wind on the rate of evaporation of water**. (12)

_____

_____

_____

_____

_____

_____

Question 12 - Horticulture

(a) (i) Name a **plant** from which we get **cut flowers**. (3)

_____

(ii) What is the **best time of day** to harvest the flowers? (3)

_____

(iii) Give **two** ways to keep cut flowers fresh. (6)

1 _____

2 _____

(b) (i) Name **two** things that a **soil** provides for a plant. (6)

1 _____

2 _____

(ii) Give **one** way in which **earthworms** improve a soil. (3)

_____

(iii) Give **one** advantage of using **compost** to grow plants. (3)

_____

(c) You are given 100 seeds. Describe an experiment you would carry out to find the **percentage germination of the seeds**. (12)

_____

_____

_____

_____

_____

_____

_____

_____

Question 13 - Materials Science

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

(i) a hydrocarbon _____ (3)

(ii) a natural textile _____ (3)

(iii) a timber _____ (3)

(iv) a synthetic textile _____ (3)

COTTON
OAK
NYLON
PETROL

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

(i) What is meant by the following symbol?

_____ (3)

(ii) Draw the symbol you would expect to find on the care label of a shirt which **can be tumble dried**. (3)

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

>>>>>>>>>>>>>>>>>>

SECTION E

A - PLASTICS

(i) Name a plastic. _____ (3)

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

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

_____

_____

_____

_____

_____

_____

_____

_____

Labelled diagram

(i) Complete the sentence by using words from the list below. (6)

FIBRES FABRICS

Yarn is made from ……. and ……. are woven from yarn.

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

_____

_____

_____

_____

_____

_____

_____

_____

Labelled diagram

C - METALS

(i) Name **two** metals that are found **free in nature**. (6)

1 _____ 2 _____

(ii) Describe, with the aid of a diagram, an experiment to **compare the hardness of two metals.** (12)

_____

_____

_____

_____

_____

_____

_____

_____

D - TIMBER

(i) Name a **hardwood**. _____ (3)

(ii) Name a **manufactured timber**. _____ (3)

(iii) Describe, with the aid of a labelled diagram, an experiment to **compare the bending strength of two pieces of timber**. (12)

_____

_____

_____

_____

_____

_____

_____

_____

Labelled diagram

Question 14 - Food

(a) Choose a **food** from the list on the right that is **preserved** by:

(i) curing _____ (3)

(ii) freezing _____ (3)

(iii) canning _____ (3)

(iv) drying _____ (3)

PIZZA
CORN FLAKES
HAM
PINEAPPLE

(b) **Fat** and **reducing sugars** are important nutrients in a balanced diet.

(i) Name **one** food that is a good source of **fat**. (3)

_____

(ii) What is the function of **fat** in the diet? (3)

_____

(iii) Name a chemical used to test food for **reducing sugars**. (3)

_____

(iv) Give **one** reason why **dieting** can be dangerous. (3)

_____

Question 15 - Electronics

(a) Match an **electronic component** from the list on the right with each of the following symbols.

(i) _____ (3)

(ii) _____ (3)

(iii) _____ (3)

(iv) _____ (3)

LED

LDR

VARIABLE RESISTOR

DIODE

(b) The diagram shows an **LED**.

(i) Mark **X** on the diagram to show the position of the cathode. (3)

(ii) Which **terminal** of the battery is the cathode usually connected to? (3)

_____

(iii) Give **one** use for an LED. (3)

_____

(iv) Why is a **resistor** usually placed in series with an LED in electronic circuits? (3)

_____

(c) Draw a circuit diagram to show a **battery**, a **bulb** and **two switches** wired so that the bulb will light when **either** switch is closed. (12)

Circuit diagram

SECTION E

Question 16 - Energy Conversions

(a) Give **one** example of each of the following **energy conversions**.

(i) **Potential** energy to **kinetic** energy (6)

_____

(ii) **Mechanical** energy to **heat** energy (6)

_____

(b) The diagram shows an experiment set up to show the **effect of a magnetic field on a current-carrying conductor**.

(i) What happens to the aluminium strip when the switch is closed? (3)

_____

(ii) What would happen to the aluminium strip if the current direction was reversed? (3)

_____

(iii) Name a **device** that uses the effect seen in this experiment. (6)

_____

(c) Describe, with the aid of a labelled diagram, an experiment to **show the release of energy from food.** (12)

_____

_____

_____

_____

_____

_____

_____

_____

Labelled diagram

EXTRA WORKSPACE

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

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