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.

<table>
<thead>
<tr>
<th>QUESTION</th>
<th>MARK</th>
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</thead>
<tbody>
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<td>Section A</td>
<td>Q.1</td>
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<td>Q.16</td>
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1. Total of end of page totals
2. Aggregate total of all disallowed question(s)
3. Total marks awarded (1 minus 2)
SECTION A – CORE (144 MARKS)
Answer any 12 parts (a), (b), (c), etc. from this Section.

Question 1

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

NAME ___________  ___________  ___________  ___________

(b) Our **solar system** consists of the Sun and **nine planets**. The Earth is one of the planets.

Name **two others**. 1 ________________________ 2 _________________________

The diagram shows Crooke’s radiometer.

What **happens** to the vanes when light shines on a
Crooke’s radiometer? ___________________________
_________________________________________________________________

What does this tell us about **light**? ________________
_________________________________________________________________

(c) **Name** the piece of equipment shown. ____________________

What is the piece of equipment **used for**?
_________________________________________________________________

Name a **liquid** that could be placed in the bulb.
_________________________________________________________________

What happens to the liquid when the bulb is **heated**?
_________________________________________________________________
(d) The diagram shows how white light forms a **spectrum of colours**.

Name the process shown. ________________________

Name the piece of equipment A. ________________

Name the colour X. ________________

Name the colour Y. ________________

(e) A **bar magnet** was hung freely as shown in the diagram.
What happens if the **North** pole of another magnet is brought close to the **North** pole of the hanging magnet? ________________________

What happens if a **North** pole is brought close to the **South** pole of the hanging magnet? ____________________________

Why is a **wooden stand** used? ________________________

Give one everyday use of a magnet. ______________________

(f) Choose a word from the list on the right to complete the sentences below.

All the __________________ of an element are the **same chemically**.

The __________________ and __________________ are located in the **nucleus** of the atom.

The __________________ are located **outside the nucleus**.

<table>
<thead>
<tr>
<th>NEUTRONS</th>
<th>ATOMS</th>
<th>ELECTRONS</th>
<th>PROTONS</th>
</tr>
</thead>
</table>

(g) A mixture of **sand and water** can be separated using the method shown in the diagram.

Name the method of separation shown. ________________________

The **filter paper** will not allow ________________ to pass into the beaker underneath.

Name the piece of equipment labelled A. ________________________

Name one other way to separate sand and water.
(i) State whether each of the following is a **solid**, a **liquid** or a **gas** at room temperature.

<table>
<thead>
<tr>
<th>SUBSTANCE</th>
<th>STATE AT ROOM TEMPERATURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Helium</td>
<td></td>
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<tr>
<td>Sulphur</td>
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<tr>
<td>Alcohol</td>
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<tr>
<td>Mercury</td>
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</table>

(j) The **fire triangle** on the right is used to show the three things that a fire needs in order to burn.

What is needed at X to keep a fire burning? ________________

Name one type of fire extinguisher. ______________________

Give two ways of reducing the risk of fire in the home.

1 __________________

2 __________________

(k) **Ecology** is the study of plants, animals and the habitat they live in.

Name a habitat you have studied. ____________________________

Name one plant found growing in this habitat. __________________

Name one animal found living in this habitat. __________________

Name one substance that causes pollution in this habitat. __________________
(l) Choose an organ or part of the human body from the list on the right, which

- makes human sperm cells ____________________
- releases female egg cells ____________________
- makes us aware of sounds ____________________
- produces urine. ____________________

- OVARY
- EAR
- KIDNEY
- TESTES

(m) Milk is a good source of protein and minerals.

Name one important mineral found in milk. ____________________

Give one use for this mineral in the human body. ____________________

Name one other food rich in protein. ____________________

State one way in which humans use protein in the body. ____________________

(n) The diagram shows a flowering plant.

Name the part labelled A. ____________________

Name the part labelled B. ____________________

Give one function of part A. ____________________

Give one function of part B. ____________________

(o) We use many products that come from plants and animals. Choose products from the list on the right to complete the table below.

<table>
<thead>
<tr>
<th>ANIMAL PRODUCT</th>
<th>PLANT PRODUCT</th>
</tr>
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<tbody>
<tr>
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</table>

- WOOL
- PAPER
- MAHOGANY
- HONEY
SECTION B – PHYSICS  (72 MARKS)

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

**Question 2**

(a) Choose a word from the list on the right to complete the sentences below.

- **Gaps** between railway tracks allow for ___________________. (3)
- **Heat** travels along a **metal rod** by ___________________. (3)
- **Aeroboard** is used in building for ___________________. (3)
- **Heat** travels through a **liquid** by ___________________. (3)

(b) The spanner shown in the diagram acts as a **lever** to apply a turning force to the nut.

Give two other everyday **examples** of levers.

1. __________________________ (3)
2. __________________________ (3)

If the same force is used at **A** and **B**, which will give the greatest turning effect? _______ (3)

Name the **force** that pulls objects towards the centre of the earth. ___________________ (3)

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

__________________________
__________________________
__________________________
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__________________________
__________________________

Labelled diagram
Question 3

(a) Choose a **word** from the list on the right to complete the sentences below.

Sound is a **form** of ____________________.  \(\text{[3]}\)

Sound needs a __________________ to **travel** through.  \(\text{[3]}\)

An __________________ is a **reflected** sound.  \(\text{[3]}\)

Sound is **produced** by ______________________________.  \(\text{[3]}\)

(b) The instrument shown in the diagram is a **periscope**.

**Name** the pieces of equipment labelled **A** used to make the periscope.

____________________________  \(\text{[3]}\)

What happens to a **light ray** when it shines on **A**?

____________________________  \(\text{[3]}\)

**Give one everyday use** for a periscope.

____________________________  \(\text{[3]}\)

A _______________________ is formed when an object **blocks** a ray of light.  \(\text{[3]}\)

(c) The diagram shows a piece of equipment **A** containing water.

**Name** the piece of equipment, **A**, containing the water.

____________________________  \(\text{[3]}\)

What is the **volume** of **water** in **A**?

___________________________ cm\(^3\).  \(\text{[3]}\)

A stone was then added.

What is the **volume** of the **stone and the water** in **B**? _________________ cm\(^3\).  \(\text{[3]}\)

What is the **volume** of the **stone**? _________________ cm\(^3\).  \(\text{[3]}\)
Question 4

(a) Choose a word from the list on the right to complete the sentences below.

The ESB supply a.c. electricity at 230 ___________________. (3)

The unit of electricity used by the ESB for costing is the ___________________. (3)

The unit of electrical current is the ___________________. (3)

The unit of power you would find stamped on a light bulb is the ________________. (3)

(b) The diagram shows the inside of a three-pin plug.

Name the brown wire labelled A. ________________ (3)

Name the blue wire labelled B. ________________ (3)

Name the green & yellow wire labelled C. ________________ (3)

Name the device labelled D. _____________________ (3)

(c) A 1.5 kilowatt (kW) heater is used to heat a room for four hours.

How many units of electricity are used? _______________________________ (3)

How much does it cost to heat the room if one unit of electricity costs 11 cent? _______________________________ (3)

Give one reason why such a heater should be earthed. _______________________________ (3)

Give one other electrical safety precaution in the home. _______________________________ (3)
SECTION C – CHEMISTRY  (72 MARKS)

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

Question 5

(a) Fossil fuels are used for heating our homes. Choose a term from the list on the right to complete the sentences below.

___________________ is an everyday example of a fossil fuel. (3)

Fossil fuels are used as a source of ______________________. (3)

There is a limited supply of ___________________________ energy sources. (3)

Water and _______________________ are formed when a fossil fuel burns. (3)

(b) There are two types of water hardness. Name both types.

1 ____________________________  2 ______________________________ (6)

Which type of hardness can be removed by boiling? ____________________________ (3)

Give one advantage of hard water. ___________________________________________ (3)

(c) The diagram shows how oxygen gas can be made in the laboratory.

What colour is the manganese dioxide? ________________ (3)

Name the liquid X used to prepare oxygen. ____________________________ (3)

What is the test for oxygen gas? ____________________________ (3)

Give one use for oxygen gas. ____________________________ (3)
Question 6

(a) Choose a word from the list on the right to complete the sentences below.

An example of an acid is _______________________. (3)

An example of a base is _______________________. (3)

An example of an indicator is ___________________. (3)

Hydrochloric acid and sodium hydroxide react to form water and _______________________. (3)

(b) Choose a word from the list on the right to complete the sentences below.

The elements in Group 1 are called the _______________ metals. (3)

Na is the chemical symbol for ________________. (3)

The Group 1 metals are all _________________. (3)

Sodium reacts with oxygen in the air to form sodium _____________. (3)

(c) The diagram shows an apparatus that may be used to separate water and alcohol.

Name this separation technique.

____________________________  (3)

Name the part labelled A.

____________________________ (3)

Which part, X or Y, is connected to the tap?

____________________________ (3)

Which of the two liquids collects in the beaker first? ____________________________ (3)
Question 7

(a) Choose a term from the list on the right to complete the sentences below.

Burning is an example of a ______________ change. (3)  
Making a magnet is an example of a ______________ change. (3)  
Air is an example of a ______________. (3)  
Table salt is an example of a ______________. (3)

(b) Rusting causes damage to iron.

Give two conditions necessary for an iron nail to rust.

1 __________________________________________________________ (3)

2 __________________________________________________________ (3)

Give one way to stop iron rusting. ______________________________________ (3)

A mixture of metals is called an ______________. (3)

(c) Describe, with the aid of a labelled diagram, a laboratory experiment to obtain a pure sample of salt from a solution of salt and water. (12)

_________________________________

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Labelled diagram
SECTION D – BIOLOGY  (72 MARKS)
There are THREE questions in this Section. Answer any TWO of these questions.

Question 8

(a) The human body has a **skeleton** made of bone. Give **two functions** of the skeleton.

1 _____________________________ 2 ______________________________ (6)

The experiment on the right was set up and left for a few days. One bone was placed in acid and the second in water as shown.

What happens to the bone in A?

__________________________ (3)

What happens to the bone in B?

__________________________ (3)

(b) Choose a **word** from the list on the right to complete the sentences below.

The **40 weeks** of growth and development of the human foetus is called ______________________ .   (3)

The foetus develops into a **baby** in the ________________. (3)

The _____________________ cycle lasts about **28 days**. (3)

The **shedding** of the **lining** of the womb from the human body is known as ____________________.   (3)

(c) A student breathes out into limewater in a test-tube. The limewater changes colour.

What **colour change** occurs to the limewater? _______________________________ (3)

**Name** the **gas** which causes this colour change. _______________________________ (3)

**Name** the **organ** used by humans for breathing. _______________________________ (3)

Our breathing system carries _____________________ **gas** into the body for respiration. (3)
Question 9

(a) Bacteria, fungi and viruses are types of micro-organism. Choose a word from the list on the right to complete the sentences below.

Bacteria help change milk into _________________. (3)
A disease caused by a fungus is _________________. (3)
A fungus we can eat is a _________________. (3)
A disease caused by a virus is _________________. (3)

(b) The diagram shows the structure of a flower. Use the labels from the diagram to complete the following sentences.

The _____________ attracts insects. (3)
The female reproductive part of the flower is called the__________________________. (3)
The male reproductive part of the flower is called the__________________________. (3)
The ___________________ protects the flower before it blooms. (3)

(c) Plants make food by photosynthesis. Answer the following questions about photosynthesis.

Which part of the plant makes the most food? ___________________________ (3)
Name the type of food made by plants. ________________________________ (3)
What gas is taken in by plants and is used to make food? ________________ (3)
Why do plants not make food at night?
_____________________________________________________________ (3)
Question 10

(a) Choose an organ or part of the body from the list on the right, which
removes waste from the blood _____________________ (3)
pumps blood around the body _____________________ (3)
breaks down the food we eat for absorption
______________________________________________ (3)
releases sweat from the body. _____________________ (3)

(b) Blood is made up of different blood cells floating in a liquid.
Name two types of blood cell.
1 _________________________  2 ___________________________ (6)
Name the liquid part of blood. ______________________________________ (3)
Name one substance carried by the blood. ______________________________ (3)

(c) Describe, with the aid of a labelled diagram, an experiment to show the flow of water upward through a plant. (12)

Labelled diagram
Question 11 - Earth Science

(a) Choose a number from the list on the right to complete the sentences below.

The earth rotates on its axis once every ___________ hours. (3)  365\(\frac{1}{4}\)  24  4  28
A leap year occurs once every ___________ years. (3)
The earth travels around the sun once every ___________ days. (3)
The moon travels around the earth once every ___________ days. (3)

(b) A rain-guage is used to measure ___________________________. (3)

An anemometer is used to measure ___________________________. (3)
Humidity is the amount of ___________________________ in the air. (3)
Humidity can be measured using a ___________________________. (3)

(c) Describe, with the aid of a labelled diagram, an experiment to show the effect of temperature on the rate of evaporation of water. (12)

Labelled diagram
Question 12 - Horticulture

(a) Choose a word from the list on the right to complete the sentences below.

The growth of a seed into a plant is ___________________________. (3)

The time between seed production and when it grows into a plant is called ___________________________. (3)

Growth of plants in water containing nutrients is called ___________________________. (3)

A __________________________ produces a plant identical to the parent plant. (3)

(b) Soil is commonly used in the growing of plants in horticulture.

Name one non-living part of a fertile soil. ___________________________. (3)

Give one way in which earthworms improve soil structure. ___________________________. (3)

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

Give one way to keep cut flowers fresh. ___________________________. (3)

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

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

Copper ___________________________ (3)  
Polythene ___________________________ (3)  
Cotton ___________________________ (3)  
Teak ___________________________ (3)  

(b) Safety symbols are displayed on containers to give information about their contents.

(i) What is meant by the safety symbol shown?

_____________________________ (3)

(ii) Draw the safety symbol you would expect to find on the label of a bottle that contains a toxic or poisonous liquid. (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) Give one use for polystyrene in the home. ________________________________ (3)

(ii) Most plastics are made from _________________________________. (3)

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

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B - TEXTILES

(i) Choose the correct term from the list on the right to complete the sentences below

Yarn is made from __________________. (3)

Yarn is used to make __________________. (3)

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

___________________________________________________________________________
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___________________________________________________________________________
C - METALS

(i) Name one metal that is found free in nature. _____________________________ (3)

(ii) Give one use for the metal you have named. _____________________________ (3)

(iii) Describe, with the aid of a labelled diagram, an experiment to compare the flexibility of two metals. _____________________________

________________________________
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D - TIMBER

(i) Choose the correct term from the list on the right to complete the sentences below.

Trees with broad leaves form _______________ wood. (3)

Trees with needle-like leaves form _______________ wood. (3)

(ii) Describe, with the aid of a labelled diagram, an experiment to show that grain direction affects the bending strength of timber. _____________________________ (12)

________________________________
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SOFT

HARD
Question 14 - Food

(a) Choose a **food** from the list on the right that

- has a large amount of **fat**
- turns **Benedict's** or **Fehling's** solutions brick-red when heated
- is rich in **vitamin C**
- is a good source of **fibre**.

(b) **Food additives** are used in many foods.

- Give one use of additives, other than preservation.

- Give one harmful effect of a food additive.

- Name a method used to preserve meat.

- Name a food that is preserved by **pasteurisation**.

(c) Describe, with the aid of a labelled diagram, a laboratory experiment to **make yoghurt**. (12)
(a) The diagram shows a circuit.

Name the device labelled X. ___________________ (3)

Give one use for this device. ___________________ (3)

Will the lamp light if the switch is closed?

__________________________________________ (3)

The device X is connected in ________________ bias. (3)

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

__________________________________________ (3)

Will the LED light in the circuit as shown?

__________________________________________ (3)

Name the type of switch shown in the circuit.

__________________________________________ (3)

Where in a house might you find this type of switch?

__________________________________________ (3)

(c) Draw a circuit diagram showing two switches, a battery and a buzzer connected so that closing either switch sounds the buzzer. (12)
(a) Match an energy change from the list with that occurring in each of the following.

<table>
<thead>
<tr>
<th>CHEMICAL TO LIGHT</th>
<th>KINETIC TO HEAT</th>
<th>CHEMICAL TO HEAT</th>
<th>POTENTIAL TO KINETIC</th>
<th>LIGHT TO CHEMICAL</th>
<th>KINETIC TO SOUND</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rubbing your hands together</td>
<td>____________________ (3)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A guitar string vibrating</td>
<td>____________________ (3)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>A battery torchlight</td>
<td>____________________ (3)</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>A plant making food by photosynthesis</td>
<td>____________________ (3)</td>
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<tr>
<td>Water falling from the top of a dam</td>
<td>____________________ (3)</td>
<td></td>
<td></td>
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<tr>
<td>A fuel being burned</td>
<td>____________________ (3)</td>
<td></td>
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</table>

(b) Name the device shown in the diagram. ____________________ (3)

Name parts A, B, and C of the device.

A ____________________ (3)
B ____________________ (3)
C ____________________ (3)

What happens to part B when the electric current flows?

________________________ (3)

Name one piece of equipment in the home that uses this type of a device.

________________________ (3)
EXTRA WORKSPACE

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

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

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