

ANSWER SCHEME



Anglo-Chinese School
(Barker Road)

END-OF-YEAR EXAMINATION 2025

SECONDARY TWO G3

LOWER SECONDARY SCIENCE

Total Duration for All Sections: 2 hours

SECTION A

READ THESE INSTRUCTIONS FIRST

Read the instructions on the OTAS answer sheet carefully.

Write your index number, subject code and paper number clearly on the OTAS answer sheet provided for you.

There are **thirty** questions on this paper. Answer **all** questions. For each question there are four possible answers **A, B, C** and **D**.

Choose the **one** you consider correct and record your choice in **soft pencil** on the separate OTAS answer sheet.

INFORMATION FOR CANDIDATES

Each correct answer will score one mark. A mark will not be deducted for a wrong answer.

Any rough working should be done in this booklet.

A copy of the Periodic Table is printed on page 16.

The use of an approved scientific calculator is expected, where appropriate.

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[Turn over

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SECTION A (30 marks)

Select the best answer and shade it on the OTAS provided.

A1 Which row shows correct examples of random and systematic errors?

	random error	systematic error
A	parallax error	human error
B	parallax error	zero error
C	zero error	human error
D	zero error	parallax error

A2 Which combination of properties would make copper most appropriate for carrying electricity in wires?

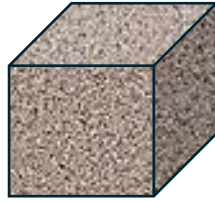
- A** High electrical conductivity, high flexibility
- B** High electrical conductivity, high thermal conductivity
- C** High thermal conductivity, low flexibility
- D** Low electrical conductivity, high strength

A3 A student measures the mass and volume of four different materials.

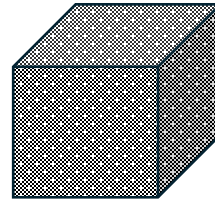
Which material has the highest density?

	mass / g	volume / cm ³
A	40	40
B	50	25
C	60	30
D	80	20

- A4** The diagram shows two building materials with similar insulation properties.



material X: wood insulation



material Y: plastic insulation

What makes material X more environmentally sustainable than material Y?

- A** Material X is easier to install than material Y.
 - B** Material X is made from renewable plant sources while material Y is petroleum-based.
 - C** Material X is more cost-effective than material Y.
 - D** Material X provides better insulation than material Y.
- A5** Stainless steel is a mixture of iron and chromium metal.
- Which statement shows the property of stainless steel?
- A** It can be attracted by a magnet.
 - B** It contains iron and chromium that are chemically combined.
 - C** It does not conduct electricity.
 - D** It has the same melting point as chromium.

- A6** When magnesium powder is added to a colourless liquid H, a colourless gas K is formed which extinguishes a lighted splint with a “pop” sound.

What statement is correct?

- A** Both H and K are compounds.
- B** H is a compound while K is an element.
- C** H is a mixture while K is an element.
- D** H is an element while K is a compound.

- A7** Study the list of substances given.

water sodium chloride sugar carbon dioxide

Which description about these substances is correct?

- A** They are formed by diffusion.
- B** They are gases at room temperature.
- C** They can be separated by simple distillation.
- D** They have properties that are different from the elements they are made up of.

- A8** A worker used liquid turpentine rather than water to remove paint from his hand.

What information can be obtained from the above statement?

- A** Liquid turpentine has a higher density than paint.
- B** Liquid turpentine is the only solvent for paint.
- C** Paint solubility depends on the type of solvent used.
- D** Residue is seen after paint is placed in turpentine.

A9 Which processes enable NEWater to be obtained from wastewater?

- 1 distillation
- 2 evaporation
- 3 microfiltration
- 4 reverse osmosis

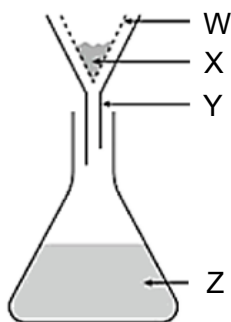
A 1 and 2

B 2 and 3

C 2 and 4

D 3 and 4

A10 The diagram shows a method used to separate an insoluble solid from a mixture.



Which row correctly identifies W, X, Y and Z?

	W	X	Y	Z
A	filter funnel	salt solution	conical flask	beans
B	filter funnel	sulfur	filter paper	water
C	filter paper	sand	filter funnel	seawater
D	filter paper	tea leaves	filter funnel	water

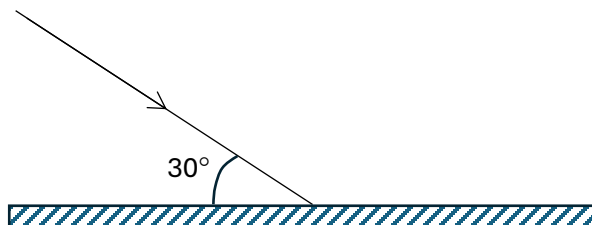
A11 Which statement about paper chromatography is correct?

- A** The dyes to be separated must have colour.
- B** The dyes to be separated must have different boiling points.
- C** The dyes to be separated must have different solubility in the solvent.
- D** The dyes to be separated must have the same density.

A12 Why is water considered a precious resource that requires careful conservation?

- A** Fresh water is very limited on Earth, and growing populations and climate change make water shortage worse.
- B** Water conservation is only necessary in desert regions where rainfall is completely absent.
- C** Water is expensive to produce and only available in luxury locations around the world.
- D** Water is primarily used for recreational activities and swimming pools, making it a luxury item.

A13 The diagram shows a light ray hitting a plane mirror.



What is the angle of reflection?

- A** 30°
- B** 60°
- C** 90°
- D** 120°

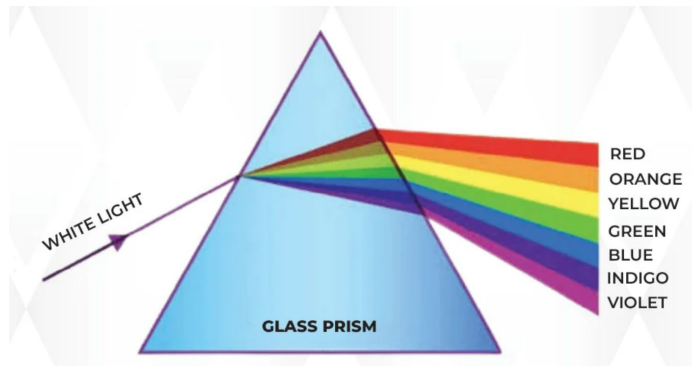
A14 Blind-corner mirrors are placed at traffic junctions for safety.



Which type of mirror and its property would be most suitable for this purpose?

- A** concave mirror as it has a large field of vision
- B** concave mirror as it has a small field of vision
- C** convex mirror as it has a large field of vision
- D** convex mirror as it has a small field of vision

A15 The diagram shows white light passing through a prism.



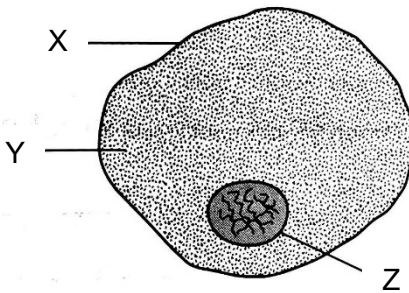
What is this behaviour of light known as?

- A** absorption and dispersion
- B** absorption and refraction
- C** dispersion and reflection
- D** dispersion and refraction

A16 Which region of the electromagnetic spectrum is responsible for causing sunburn?

- A** infrared radiation
- B** radio waves
- C** ultraviolet radiation
- D** visible light

A17 The diagram below shows a typical animal cell.



Which row correctly identifies X, Y and Z?

	X	Y	Z
A	cell membrane	cytoplasm	nucleus
B	cell wall	cytoplasm	nucleus
C	cytoplasm	cell membrane	nucleus
D	vacuole	cytoplasm	nucleus

- A18** Haemophilia is a genetic disorder that is passed down from one generation to the next. The blood of people with haemophilia does not clot normally.

How is this disorder passed down from the parents to the child?

- A** The chloroplasts that contain genes for haemophilia are passed down from the parents to the child.
- B** The chromosomes that contain genes for haemophilia are passed down from the parents to the child.
- C** The cytoplasm that contains genes for haemophilia is passed down from the parents to the child.
- D** The vacuoles that contain genes for haemophilia are passed down from the parents to the child.

- A19** What is the function of the cell membrane?

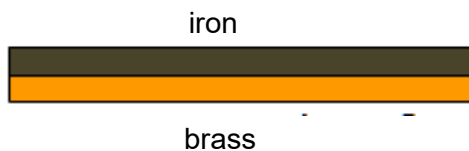
- A** It is fully permeable to allow any substances to move in and out of a cell.
- B** It is partially permeable to allow small-sized substances to move in and out of a cell.
- C** It is the site of chemical reactions.
- D** It stores liquid, food and waste materials.

- A20** Which statement best describes why the heart is an organ?

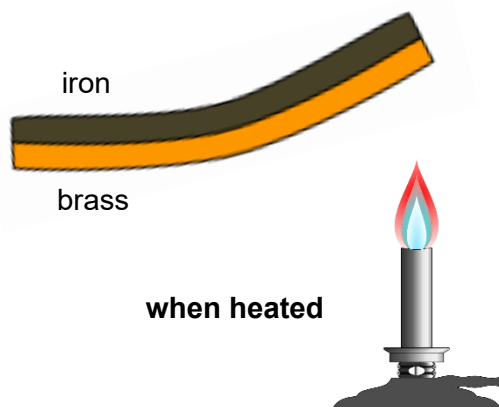
- A** It is made up of different types of cells working together to perform a specific function.
- B** It is made up of different types of tissues working together to perform a specific function.
- C** It is made up of same type of cells working together to perform a specific function.
- D** It is made up of same type of tissues working together to perform a specific function.

- A21** Which statement best explains why a balloon shrinks when placed in a freezer, using the particle model?
- A** Some air particles escape through the balloon.
 - B** The air particles move slower and get closer together.
 - C** The cold temperature destroys some air particles.
 - D** The particles get smaller.
- A22** Which statement best demonstrates how atomic knowledge has created significant social and ethical issues in modern society?
- A** Atomic research has made laboratory equipment more expensive for schools to purchase.
 - B** Learning about atoms has helped scientists create new materials for everyday products.
 - C** Nuclear power is clean energy but produces dangerous waste and could cause accidents that hurt a lot of people.
 - D** Understanding atoms has led to better medical scans that help doctors detect diseases earlier.
- A23** Which pair are non-contact forces?
- A** elastic force and friction force
 - B** elastic force and magnetic force
 - C** weight and friction force
 - D** weight and magnetic force

A24 The diagram shows a bimetallic strip being heated.



before heating



when heated

Why does the strip bend?

- A** Brass expands more than iron.
- B** Brass is heavier than iron.
- C** Brass melts before iron.
- D** Iron conducts heat better.

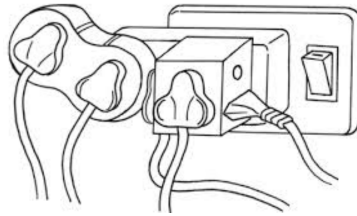
A25 Which of the following about pH scale is **not** correct?

- A** A salt solution has a pH of 7.
- B** A strong acid has a pH of 6.9.
- C** It measures how acidic or alkaline a solution is.
- D** The pH scale ranges from pH 1 to pH 14.

A26 Which option is **not** a reason to conserve the environment?

- A** It allows us to have resources to use freely.
- B** It helps Earth's resources to last long enough for future needs.
- C** It improves the current effects of climate change.
- D** It reduces the greenhouse gas emissions.

A27 The diagram shows multiple plugs connected to an electrical socket.



What is the most likely result of this electrical arrangement?

- A** It may cause overheating and lead to electrical fires.
- B** It may cause overheating and lead to electric shocks.
- C** It may cause wires to be exposed and lead to electrical fires.
- D** It may cause wires to be exposed and lead to electric shocks.

A28 Which increases the risk of diabetes?

- A** Avoid smoking and drinking alcohol.
- B** Exercise regularly for at least 30 minutes a day and for five days a week.
- C** Have a diet high in salt, sugar and saturated fats.
- D** Have regular health screenings.

A29 What is the function of an artery?

- A** It acts as a site for exchange of substances.
- B** It carries blood away from the heart to the rest of the body.
- C** It carries blood towards the heart from the rest of the body.
- D** It pumps blood around the body.

A30 What is the function of the ovaries in a female reproductive system?

- A** The ovaries are where fertilisation takes place.
- B** The ovaries are where sperms are deposited.
- C** The ovaries connect the uterus to the vagina.
- D** The ovaries release mature eggs and female sex hormones.

[illegible]

lanthanoids

actinoids

The volume of one mole of any gas is 24 dm^3 at room temperature and pressure (r.t.p.).
The Avogadro constant, $L = 6.02 \times 10^{23} \text{ mol}^{-1}$

Full Name	Index No.	Class
ANSWER SCHEME		
Circle Teacher's Name: Mdm Alice Wang / Mr Dalvin Ho / Mr Han W.K. / Mr Timothy Wong		



**Anglo-Chinese School
(Barker Road)**

END-OF-YEAR EXAMINATION 2025

SECONDARY TWO G3

LOWER SECONDARY SCIENCE

Total Duration for All Sections: 2 HOURS

SECTIONS B AND C

READ THESE INSTRUCTIONS FIRST

Write your name, index number and class in the spaces at the top of this page.

For **Sections B & C**, answer **all** questions in the spaces provided in **dark blue or black pen**. You may use an HB pencil for any diagrams or graphs.

Do not use staples, paper clips, glue, correction fluid or highlighters.

INFORMATION FOR CANDIDATES

The number of marks is given in brackets [] at the end of each question or part question.

A copy of the Periodic Table is printed on Page 16 in Section A.

The use of an approved scientific calculator is expected, where appropriate.

FOR EXAMINER'S USE ONLY	
Section A	/ 30
Section B	/ 40
Section C	/ 30
Total Score	/ 100

*This document consists of **15** printed pages and **1** blank page.*

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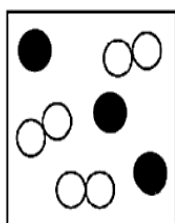
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SECTION B (40 marks)

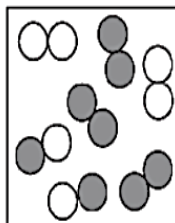
Answer **all** the questions in the spaces provided.

- B1** Diagrams W, X, Y and Z illustrate how particles are arranged in different substances. These substances are either elements, mixtures or compounds.

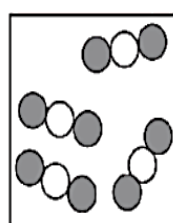
The atoms of each type of element are represented by circles of different colours.



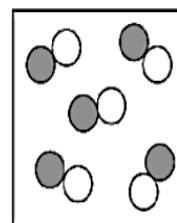
W



X



Y



Z

State the diagram(s) that represent(s)

- (a) a mixture of elements.

W [1]

..... [1]

- (b) water molecules, H_2O .

Y [1]

..... [1]

- (c) a mixture of elements and compound.

X [1]

..... [1]

- (d) substances with constant boiling point.

Y and Z [1]

..... [1]

[Total: 4]

B2 Table 2 shows information of three particles R, S and T.

Table 2

particle	number of protons	number of electrons	number of neutrons
R	12	12	12
S	12	10	13
T	12	12	14

(a) Describe the structure of an atom.

- **An atom has the same number of protons and electrons / has the same number of positive and negative charges. [1]**
- **Has positively charged protons, negatively charged electrons and neutral neutrons / neutrons with no charge. [1]**
- **Atom has sub-atomic particles which are protons, neutrons and electrons. [1]**
- **Protons and neutrons are in the nucleus and electrons are around the nucleus / in the shells / in the orbit. [1]**

[2]

***Any two of the answers above = [2]**

***Reject: Mass of an atom is (made up of) the mass of the nucleus because electrons have negligible mass.**

***Reject: An atom is electrically neutral.**

(b) State the relationship of particles R, S and T.

- **They are the same element. OR**
- **They are Group II elements. OR**
- **They are isotopes of the same element. OR**
- **They have the same number of protons OR**
- **They have the same atomic number OR**
- **R and T are atoms while S is not an atom / S is an ion. OR**
- **R and T are neutrally charged while S is not.**

[1]

***Any one of the answers above = [1]**

(c) State and explain which particle is **not** a neutral atom.

- **S [1]**

.....
 • It has two more protons than electrons. OR

.....
 • It has two less electrons than protons. OR

.....
 • It has a positive charge of 2. [1]

..... [2]

(d) Element T melts at 650 °C.

(i) Describe the arrangement and motion of the atoms in element T at room temperature.

.....
Atoms are closely packed in an orderly / regular
 arrangement:
arrangement (manner). [1]

.....
Atoms vibrate about fixed position / place / spot. [1]
 motion:

***B.O.D: for any words apart from 'position'**

..... [2]

(ii) Using the Periodic Table, suggest a physical property of element T.

- **good heat (thermal) conductor**
- **conducts electricity / good electrical conductor**
- **high density**
- **high melting point**
- **high boiling point**
- **solid**
- **shiny / silvery**
- **malleable**
- **ductile**
- **high tensile strength**
- **sonorous**
- **flexible**

***Any one of the answers above = [1]**

***Reject: It is a magnesium/ metal / strong / durable / hard / metallic / magnetic**

..... [1]

[Total: 8]

- B3** A meteorite in space travelling at a high speed enters Earth's atmosphere. Upon impact on Earth, it produces a crater as shown in Fig. 3.

The meteorite has a mass of 5 kg and a weight of 50 N while on Earth.



Fig. 3

- (a) State the mass and weight of the meteorite while in space.

5 [1]

mass of meteorite: kg

Any value between 0 and 50, not including 50 [1]

weight of meteorite: N [2]

- (b) Describe how the following forces changed the meteorite's motion:

- (i) air resistance upon entering Earth's atmosphere,

Slows down / Decreases in speed [1]

..... [1]

- (ii) force upon impact on Earth.

Changes direction [1]

***B.O.D. for 'Slows down' or 'Stops'**

..... [1]

- (c) The contact area of the meteorite with the ground is 12 cm².

Calculate the pressure exerted by the meteorite on the ground.

Leave your answer in 2 decimal places.

Pressure = Force / Area

= 50 / 12 [1]

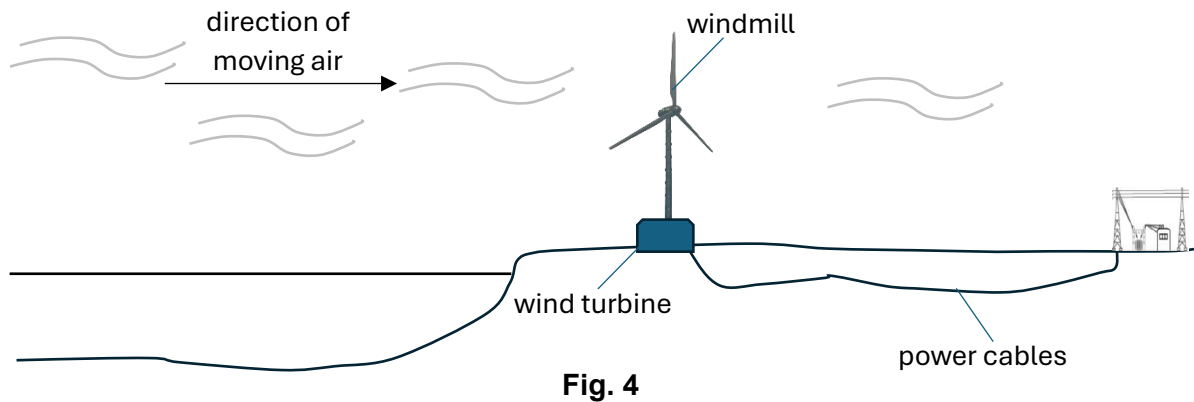
= 4.17 (to 2 decimal places) [1]

4.17

pressure = N/cm² [2]

[Total: 6]

B4 Fig. 4 illustrates a wind farm station that is designed for use in coastal regions.



A wind farm uses the energy from moving air to generate electricity. As wind blows through the windmills and moves its fins, this drives turbines that rotate generators to generate electricity.

The engine room of the wind turbine is noisy and warm. Technicians who enter the engine room for regular servicing often need to wear earplugs and light-coloured clothing.

- (a) Complete the flowchart below to illustrate the energy conversions in the wind farm.
- Kinetic** **Kinetic / Electrical** ***B.O.D. for 'electric'**
 energy of moving wind → energy from turbines
Sound / Heat / Thermal **Heat / Thermal / Sound**
 → and energy released in room
- [2]

***4 correct = [2]**

***2 to 3 correct = [1]**

***0 to 1 correct = [0]**

- (b) Explain why technicians need to wear light-coloured clothing in the warm environment.
- **Light-colour is a poor absorber of radiation so he stays cool. [1] OR**
 - **Light-colour is a poor absorber of heat via radiation so he stays cool. [1]**
- [1]

- (c) Air conditioners are installed near the ceiling to cool the engine room.

Name the heat transfer process by which the air conditioner eventually cools the room.

Explain how the process works.

- **Convection [1] *Spelling mistake = [0]**

- **Cool / colder air is denser so it sinks. [1]**

- **Warmer air is less dense so it rises. [1]**

[3]

[Total: 6]

B5 Fig. 5 shows a food web in a river.

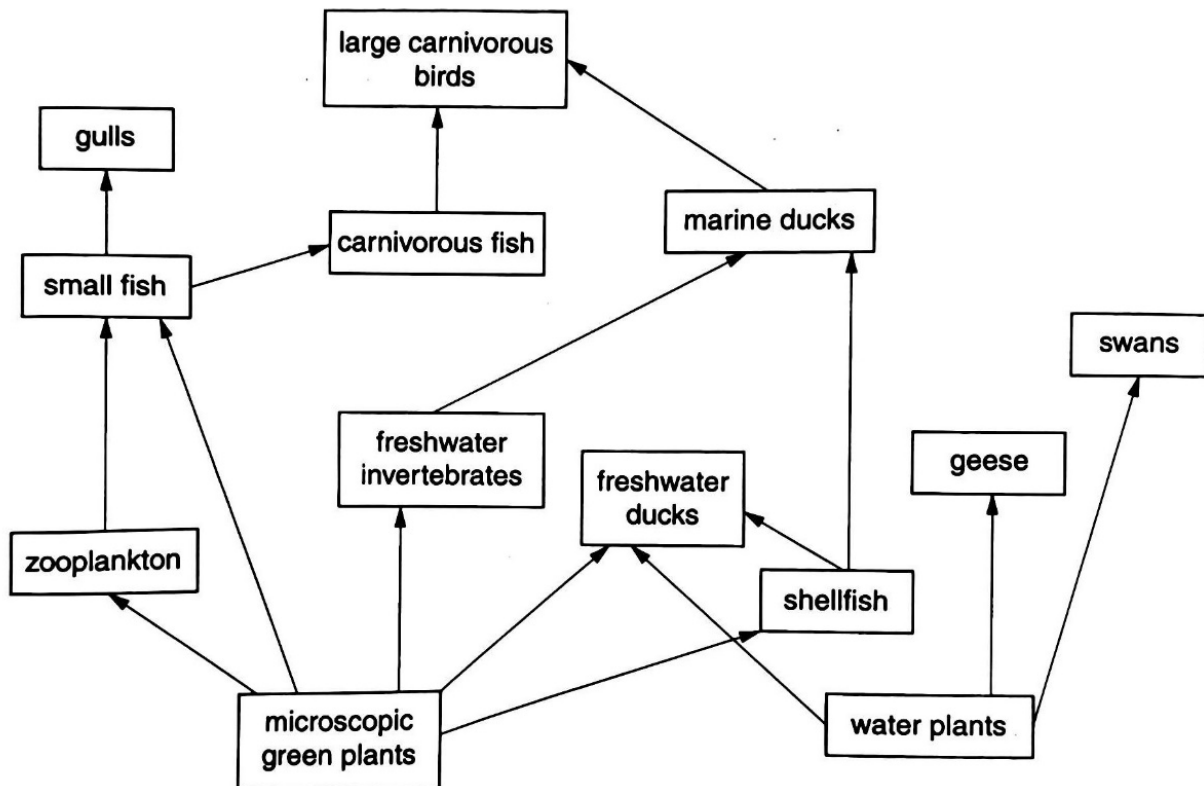


Fig. 5

- (a) Identify a food chain that has five organisms and write it in the space below.
Microscopic green plants → Zooplankton → Small fish → Carnivorous fish →
Large carnivorous birds [1]
 [1]
***B.O.D. if no arrows but correct sequence of organisms is written**
- (b) Name the producers in the food web shown in Fig. 5.
Microscopic green plants [1] and Water plants [1]
 [2]
- (c) Swans receive a much larger amount of energy as compared to gulls.

Explain why this is so.

- **The food chain for swans is shorter than the food chain for gulls. OR**
- **There are only two trophic levels (reject: organisms) for swans while there are three / four trophic levels (reject: organisms) for gulls. OR**
- **Swan is a primary consumer while the gull is a secondary / tertiary consumer.**

***Any one answer from above = [1]**

- There is lesser energy lost to the environment / by respiration / uneaten body parts / faeces in the food chain with swans as compared to in the food chain with gulls. OR
- The swan will get 10% of energy while the gull will get 1% / 0.1% of energy.
*Reject: swan gets larger / more energy than gull

*Any one answer from above = [1]

[2]

[Total: 5]

- B6** Fig. 6.1 shows a sunflower being placed in a beaker of red dye solution, exposed to sunlight and radioactive carbon dioxide for a day. Radioactive carbon dioxide will react with water to produce radioactive sugars through process of photosynthesis.

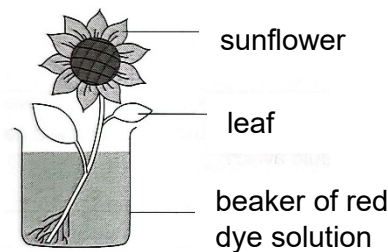


Fig. 6.1

At the end of the day, the sunflower stem was cut. Fig. 6.2 shows the cross-section of the sunflower stem.

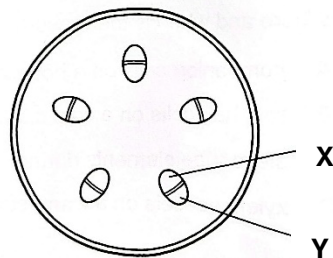


Fig. 6.2

- (a) With reference to Fig. 6.2, state and explain where the red dye solution would be found in.

- X is the xylem [1] *Spelling mistake of xylem = [0]
- where water and mineral (salts) are transported / carried in. [1]

*Independent marking of the two points.

[2]

(b) With reference to Fig. 6.2, state and explain where radioactive sugars would be found in.

- Y is the phloem [1] *Spelling mistake of phloem = [0]

- where sugars / glucose / sucrose are transported / carried in. [1]

*Reject: food

*Independent marking of the two points.

[2]

(c) Name the process that allowed the red dye solution to enter the cells in the plant's roots.

- Diffusion [1] *Spelling mistake = [0]

[1]

[Total: 5]

B7 A study was carried out on the success rate of different birth control methods in preventing pregnancy. The results are shown in Fig. 7.

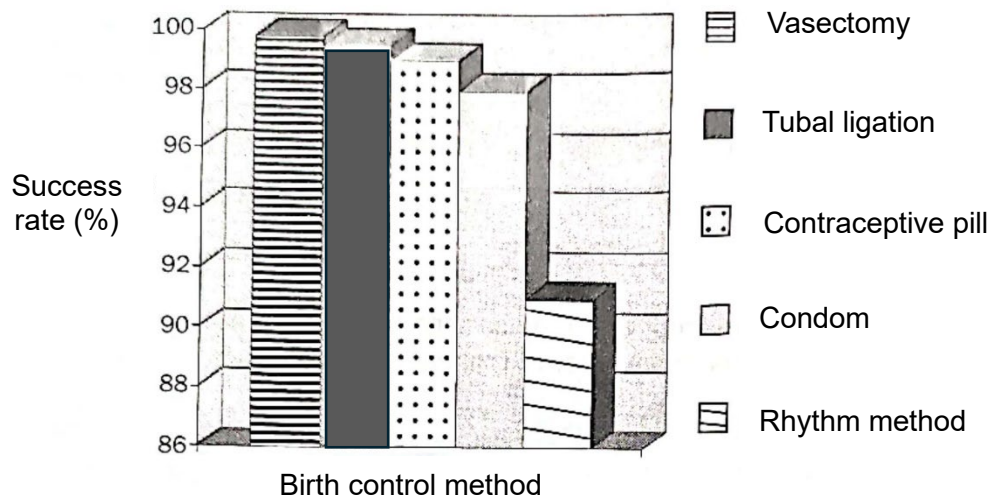


Fig. 7

(a) Identify the birth control method which is the most effective and explain why it is the most effective.

- Vasectomy [1] *Spelling mistake = [0]

- Sperm ducts are cut and tied so no sperms are released out of the male body / penis. [1]

[2]

- (b) Explain why the most effective method of birth control in part (a) may **not** be suitable for every married couple.

• It is a permanent birth control method. [1] OR

• Its effects are irreversible. [1]

[1]

- (c) Using Fig. 7, name a birth control method which can reduce the transmission of Sexually Transmitted Infections.

Condom [1] *Spelling mistake = [0]

[1]

- (d) (i) Name one Sexually Transmitted Infection (STI) that can be treated with antibiotics.

Syphilis OR Gonorrhoea [1] *Spelling mistake = [0]

[1]

- (ii) State one long-term effect of the STI named in (d)(i).

For Syphilis

- **Blindness**
- **Paralysis / Inability to move some parts of the body**
- **Major brain damage / Insanity** *Reject: brain problem
- **Major heart damage / Heart failure** *Reject: heart problem
- **Infertility**
- **Death**
- **Immune system is weakened / damaged**

*Any one answer from above = [1]

OR

For Gonorrhoea

- **Infertility**
- **Long-term pelvic pain / Long term abdominal pain**

*Any one answer from above = [1]

[1]

[Total: 6]

SECTION C (30 marks)

Answer **all** the questions in the spaces provided.

C1 Grey solid iron reacts slowly with orange bromine solution to form a reddish-brown iron (III) bromide solution.

- (a) Write the word equation for the chemical reaction.
Iron + Bromine [1] → Iron bromide / Iron (III) bromide [1]
 [2]
***If an equal sign (=) is written instead of arrow sign (→), penalise 2nd marking point.**

- (b) Fig. 8 shows the apparatus used to determine the speed of reaction of iron with bromine solution.

Speed of reaction is defined as the mass of iron reacting with bromine solution per minute.

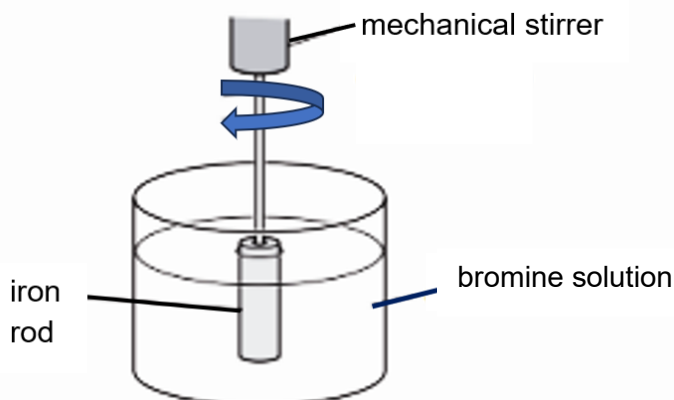


Fig. 8

The iron rod is removed at regular intervals. It is washed, dried and then weighed. The iron rod is then put back in the solution. The experiment is repeated twice, each time with a different concentration of bromine solution. The speed of reaction is calculated.

concentration of bromine solution (g/cm ³)	speed of reaction (mass of iron reacted in mg/min)
0.10	9.2
0.15	18.1
0.20	27.2

- (i) State the variables of the reaction.
Speed of reaction / Mass of iron reacted per minute [1]
 dependent variable:
Concentration of bromine solution [1]
***Penalise here if didn't write 'solution' but no further**
penalisation for subsequent same mistake
 independent variable:
Rate / speed of stirring, Volume of bromine solution,
Intervals / duration / amount of time, Temperature [1]
***Penalise here if didn't write 'solution' but no further**
penalisation for subsequent same mistake
 constant variable: [3]
- (ii) Describe the relationship between the dependent and independent variables in (b)(i).
 • **When the concentration of bromine solution increases, the speed of**

reaction increases. [1] OR

 • **When the concentration of bromine solution increases, the mass of**

iron reacted per minute increases. [1]
 [1]
- (c) (i) Describe the change in mass of the iron rod **each time** when it is dried and weighed.
Change in mass of the iron rod / It increases each time. [1]

***Reject: Mass of iron rod**

***Reject: If student just quote data purely (e.g. lost 4.2g, 18.1g and 27.2g)**
 [1]
- (ii) Explain your answer in (c)(i).
Each time the concentration of the bromine solution increases, more iron

reacted. [1]
 [1]
- (d) List two apparatus to be used in the experiment to ensure accuracy in measurement.
 • **Stopwatch**
 • **Measuring cylinder**
 • **Mass balance / Electronic balance / Electronic mass balance**
 [2]
***Any two answers from above = [2]**

[Total: 10]

- C2** Fig. 9.1 shows two common household appliances, a 2000 W oven and a 100 W fan, used by a family.



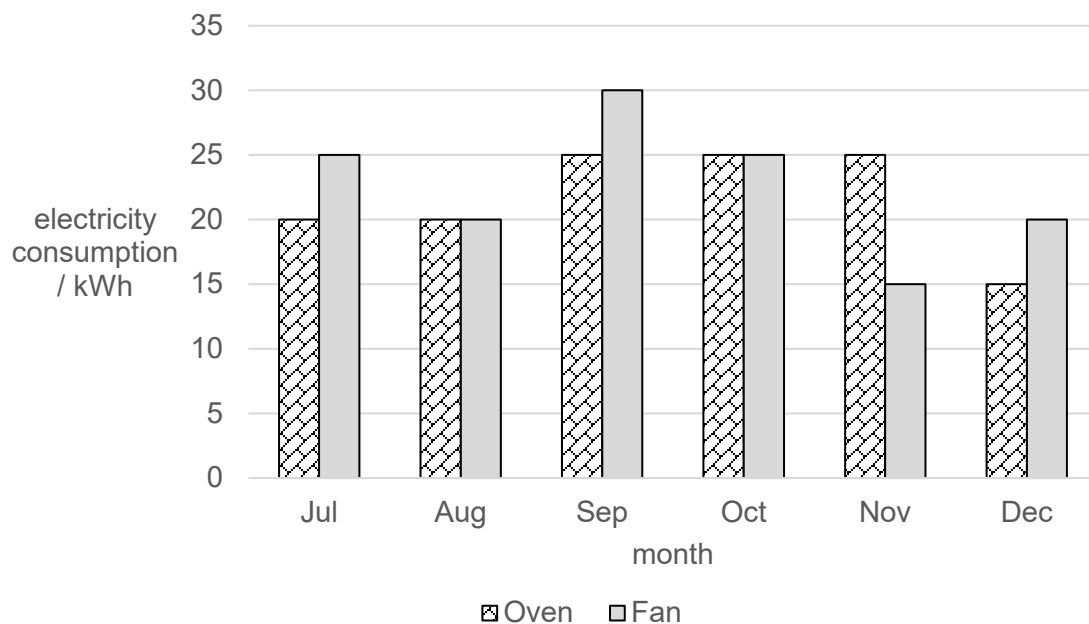
2000 W oven



100 W fan

Fig. 9.1

Fig. 9.2 shows the bar graph for the monthly electricity consumption for the two appliances.

**Fig. 9.2**

- (a) State the months with the **combined** highest and lowest amount of electricity used for the two appliances.

month with highest amount of electricity used: **September [1]**

month with lowest amount of electricity used: **December [1]** [2]

- (b) Table 9.3 shows the electricity bill which reflects electricity consumption for using the oven and the fan in September.

Complete Table 9.3 by calculating the

- (i) cost of electricity consumption for each appliance and
(ii) total cost the family should pay in September.

Table 9.3

electricity bill for September				
appliance	electricity consumption / kWh	rate / \$ per kWh	(i) cost / \$	(ii) total cost / \$
oven	25	0.29	7.25 [1]	15.95 [1]
fan	30		8.70 [1]	

[3]

- (c) The family decides to reduce their monthly electricity consumption to save cost by reducing electrical wastage.

Suggest **two** ways how the family could reduce electrical energy wastage at home.

- Switch off appliances when not in use OR Switch off / Turn off the main switch / Unplugging the appliance / Put appliance on standby mode
- Use fans instead of air conditioner
- Use appliances that are more energy saving / more energy efficient / have higher energy efficiency rating / have more ticks on energy label / Use appliance that uses less electricity
- Reduce amount of time using appliances / Reduce frequency of using appliances (B.O.D. Use (name of appliance) less
- Use airfryer instead of oven
- Install / Use LED lights
- Not setting the fridge to the lowest temperature
- Do not use fan and air conditioner at the same time
- Reduce the power or speed of the fan

*Any correct answer = [1], max is [2]

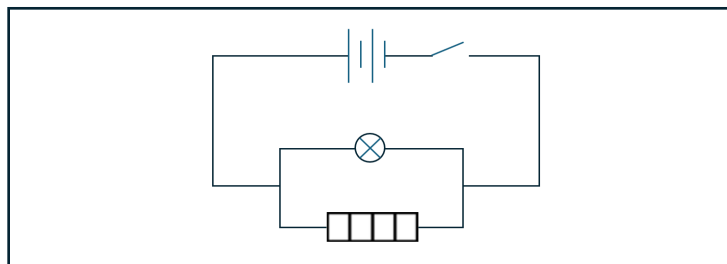
*Reject: Eat outside instead of at home / Use food delivery instead of cook at home

*Reject: Shower lesser or faster (rejected because no mention of use of heater)

[2]

- (d) The oven consists of two electrical components – a bulb and heater element. It works such that when the switch is turned on, both the bulb and heater works. When one component in the oven is damaged, the other component will still work.

Complete the circuit diagram for the oven in the space below using a battery as a power source, switch, wires, a light bulb and a heater. The heater symbol is already drawn below.



[3]

[Total: 10]

- [1] = Cell / Battery and Switch are in series
 [1] = Light bulb in parallel to heater
 [1] Correct connection for all wires

- C3 (a) Fig. 10.1 shows an experiment conducted to investigate the action of lipase. This experimental set-up was maintained for 4 hours.

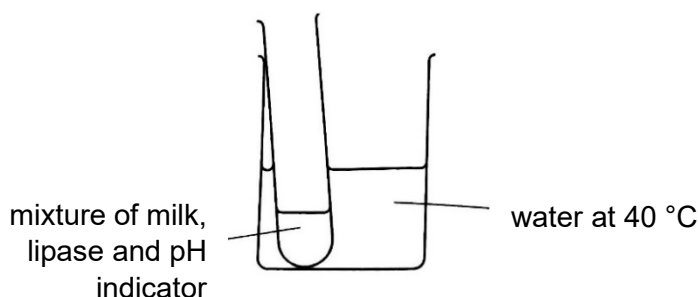


Fig. 10.1

The pH indicator used is colourless when the pH is 7 or less, and purple when the pH is over 7.

- (i) Predict and explain the colour of the indicator at the end of the experiment.
- Colourless as pH decreases / acidic [1]
 - Lipase catalyses the breakdown of fats in milk to produce / form fatty acids (and glycerol). [1] OR
 - Lipase digests fats in milk to produce / form fatty acids (and glycerol). [1]
- [2]
- *Reject: Lipase reacted with fats / Lipase digests milk

- (ii) State the part of the human digestive system where lipase is involved in chemical digestion.

Small intestine [1] *Spelling mistake = [0]

..... [1]

- (iii) State two differences between physical digestion and chemical digestion.

physical digestion	chemical digestion
Involves <u>force / mechanically break down</u>	Involves <u>enzymes</u>
No new substances / products formed *Reject: No chemical reaction	New substances / products are formed *Reject: Chemical reaction takes place
<u>Large food pieces are broken down into smaller food pieces</u>	(Large), <u>complex and insoluble</u> molecules / nutrients are broken into (small), <u>simple and soluble</u> molecules / nutrients.

***Each correct row = [1], max = [2]**

[2]

- (b) Fig. 10.2 shows the chemical reaction that takes place in the human mouth.

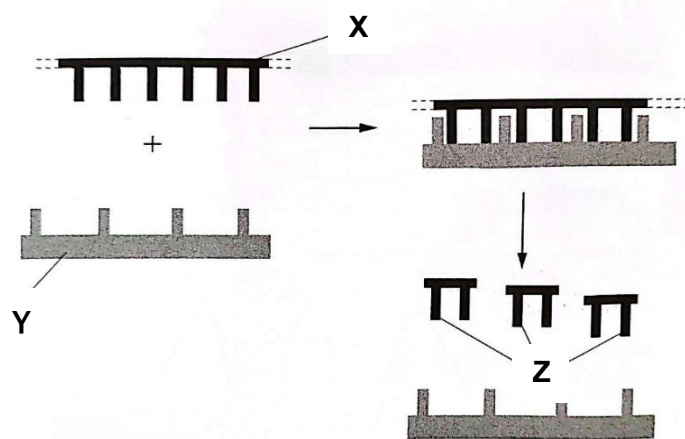


Fig. 10.2

(i) Name X, Y and Z.

Starch [1] *Reject: Carbohydrates / Sugars because too vague
 X

Carbohydrase / Amylase / Salivary amylase [1]
 Y

Simple sugars / Maltose / Glucose / Partially digested sugars [1]
***Reject: Carbohydrates / Sugars because too vague**
 Z [3]
***Any spelling error, penalise that error**

(ii) Describe the function of Z in the human body.

- **Z provides / gives energy to the body. OR**

 [1]
- **Z is a source of energy. OR**

 [1]
- **Z is used in respiration to release / provide / give energy. [1]**
***Reject: produce energy / create energy**
 [1]

(iii) Define the term 'diabetes'.

Diabetes is a disease where the level of sugar in the blood / blood sugar

level is too high. [1]
 [1]
***B.O.D. for excess sugar in blood**

[Total: 10]

End of Paper