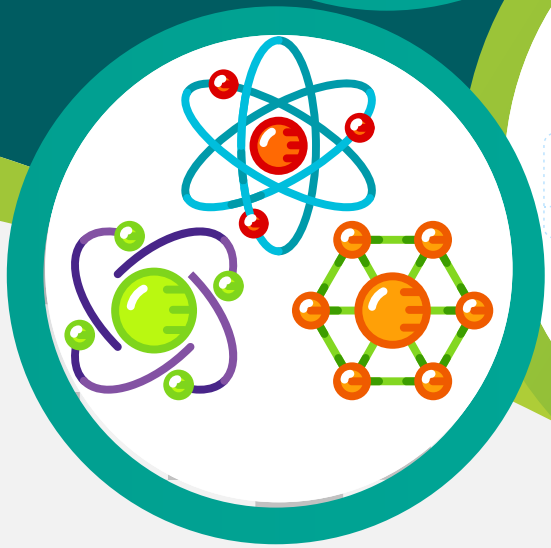

Curriculum Aligned Competency Based Test Items

Science

Class - 10

Central Board of Secondary Education

Sri Aurobindo Society
Creating the Next Future

ACER

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Curriculum Aligned Competency Based Test Items
Class 10
Foreword

The National Education Policy (2020), Government of India, envisions transforming school education by equipping students with 21st century skills. The endeavour is to shift focus from rote-learning to acquisition of competencies with a resolve to make education more meaningful and relevant.

The Central Board of Secondary Education (CBSE) in its continuous endeavour to improve the quality of education has already introduced some initiatives in this direction. Strengthening these efforts, the Board had signed an MoU with Sri Aurobindo Society (SAS), Pondicherry in November 2019. As a part of this initiative, SAS is supporting CBSE to develop resource materials, train teachers and take other measures that would facilitate adoption of Competency Based Education in schools. SAS has engaged with Australian Council for Educational Research (ACER) as its knowledge partner for this project.

CBSE, in collaboration with SAS and ACER, has prepared this resource material- ***Curriculum Aligned Competency Based Test Items (Class 10)*** in February, 2022 which is a compilation of assessment items in Science that are aligned to the NCERT/CBSE curriculum. These tasks based on authentic real life situations focus on developing critical understanding among learners in the discipline. Each test covers about 10 questions from a chapter. The assessments, useful for students' practice, are also exemplars for teachers who with their ingenuity can develop many similar items.

— Team CBSE

About CBSE

The Central Board of Secondary Education (CBSE) is a national Board under the Ministry of Education, Government of India. The Board has more than 27,000 schools affiliated to it in India and overseas, in 25 countries. These include the Kendriya Vidyalayas, the Jawahar Navodaya Vidyalayas, schools run by Central Government organizations such as The Army, Navy, Air Force etc., schools run or aided by the State Governments and independent private schools. The Board's mission is to encourage quality of education focussed on holistic development of learners. It motivates schools and teachers to adopt learner centric enquiry-based pedagogies and use innovative methods to achieve academic excellence. The Board is committed to providing a stress-free learning environment to develop competent and confident students who emerge as enterprising citizens of tomorrow, promoting harmony and peace in the world.

About SAS

Sri Aurobindo Society (SAS) is an international, spiritual, and cultural, not-for-profit NGO. SAS has been recognised by the Government of India as a Charitable Organisation, a research institute and an institute of national importance. Sri Aurobindo Society has more than 300 centres and branches across the country, with its head office in Puducherry. SAS is setting up models, centers of excellence and training institutions that are sustainable, scalable and replicable in the country.

About ACER

Australian Council for Educational Research (ACER) is a leading and pioneer international organization working in the field of competency based learning. ACER has been instrumental in coordinating a consortium of international organizations for the implementation of the Programme for International Students Assessment survey in 2000, 2003, 2006, 2009 and 2012.

Table of Contents

Test Item

Scoring Key

Curriculum Aligned Competency Based Test Items
Science
Class 10 – Chapter 1
Chemical Reactions and Equations

When steam is passed through red hot iron, iron oxide and hydrogen gas is formed.
The balanced equation for the reaction is shown below.

$$3Fe + 4H_2O \longrightarrow Fe_3O_4 + 4H_2$$

(Iron) (water) (iron oxide) (hydrogen)

SAS21S100101

1 Is heating iron to red hot a physical or a chemical change? Explain your answer.

_____

_____

SAS21S100102

2 What is true for the balanced chemical equation shown above?

A. Four atoms of water combine with iron to form four atoms of hydrogen.
B. Three atoms of iron combine with water to form four atoms of hydrogen.
C. Four molecules of water combine with iron to form an atom of iron oxide.
D. Three atoms of iron combine with water to form one molecule of iron oxide.

Cellular respiration is a chemical process by which cells convert glucose to energy.
The equation given below shows the reaction for cellular respiration.

$$C_6H_{12}O_6 + 6O_2 \longrightarrow 6CO_2 + 6H_2O + \text{Energy}$$

(glucose) (oxygen) (carbon dioxide) (water)

SAS21S100103

3 In the above reaction, which substance is oxidised?

_____

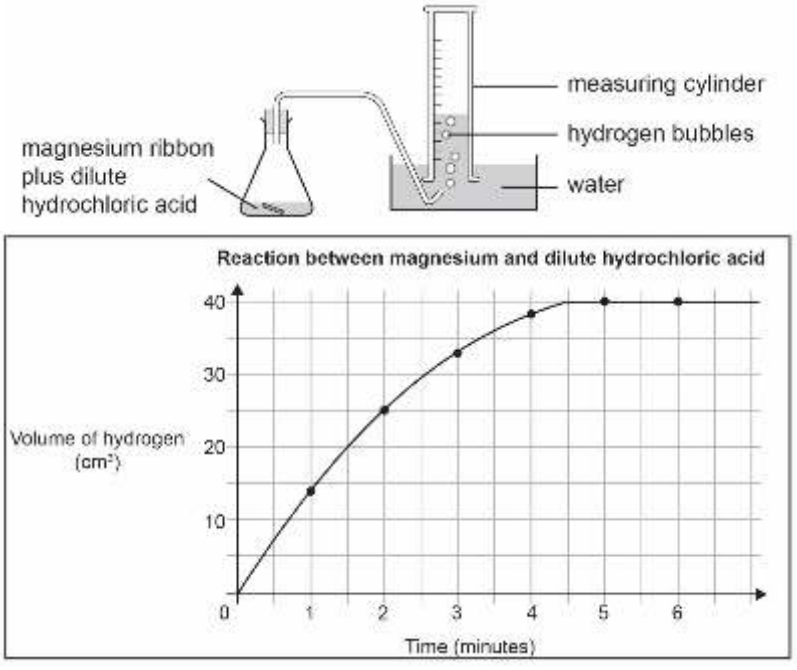
_____

SAS21S100104

4 Carbon dioxide and water are the two new substances formed during cellular respiration. What are they known as?

A. Reactants
B. Mixtures
C. Catalysts
D. Products

A piece of magnesium ribbon is added to a flask containing dilute hydrochloric acid.
Hydrogen gas is formed which is collected in the measuring cylinder.
The amount of hydrogen formed with time is plotted on a graph.
The line on the graph indicates the rate of chemical reaction occurring in the flask.



SAS21S100105

5 At what time is the reaction rate the fastest in the flask?

A. At 1 minute
B. At 3 minutes
C. At 4 minutes
D. At 6 minutes

SAS21S100106

6 The reaction is repeated with magnesium powder in place of magnesium ribbon under the same conditions. Will the reaction rate increase or decrease?
Explain your answer with reference to the volume of hydrogen formed in the flask at 2 minutes.

_____

_____

SAS21S100107

7 Which of these could increase the rate of reaction in the flask?
Circle 'Yes' or 'No' for each row.

Will this increase the rate of reaction?	Yes or No
Adding more acid to the flask	Yes/No
Heating the acid in the flask	Yes/No
Using a higher concentration of acid	Yes/No

SAS21S100108

8 Magnesium reacts with hydrochloric acid to form magnesium chloride and hydrogen gas.
Write a balanced chemical equation to show the reaction.

_____

_____

SAS21S100109

9 Which of these is an example of decomposition reaction?

A. Melting of glaciers
B. Rusting of old bridges
C. Rotting of fruits and vegetables
D. Absorption of carbon dioxide by oceans

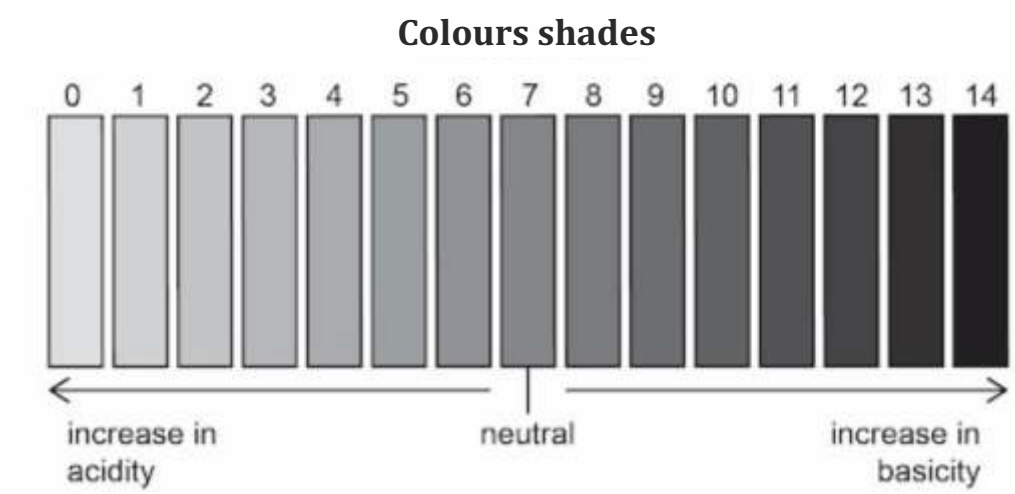
SAS21S100110

10 Methane gas released from waste water treatment plants can be used as a source of fuel. Which chemical equation represents combustion of methane to produce heat energy?

A. $CH_4 + CO_2 \rightarrow 2O_2 + 2H_2O$
B. $CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O$
C. $2O_2 + 2H_2O \rightarrow CO_2 + CH_4$
D. $CO_2 + 2O_2 \rightarrow CH_4 + 2H_2O$

Curriculum Aligned Competency Based Test Items
Science
Class 10 – Chapter 2
Acids, Bases and Salts

A pH paper changes its colour depending on the pH value of the substance it is dipped in.
The picture shows the different colours of a pH paper.



Leena tested the pH value of four liquids using a pH paper.
The table shows the shade of the pH paper after it is dipped separately in the four liquids.

	Liquid 1	Liquid 2	Liquid 3	Liquid 4
Shade of the pH paper	Colour 9	Colour 12	Colour 5	Colour 3

SAS21S100201

1 Which liquid has the lowest concentration of hydrogen ions?

A. Liquid 1
B. Liquid 2
C. Liquid 3
D. Liquid 4

SAS21S100202

2 Leena was advised by her teacher to wear gloves and use forceps while dipping the pH paper in the liquids.
What was the reason for this advice?
Circle 'Yes' or 'No' to mark your responses.

Is the reason correct?	Yes or No
Gloves keep the hands warm.	Yes/No
Forceps provide better grip than bare hands.	Yes/No
Gloves protect hands from corrosive liquids.	Yes/No

SAS21S100203

3 What should be the colour of a pH paper after it is dipped in distilled water?
Explain your answer.

_____

_____

The equation below shows a chemical reaction.
X is a non-metal, but Y is a metal.
$H^{(+)}X + YOH^{(-)} \rightarrow YX + HOH$ $YOH \rightarrow YX + HOH$

SAS21S100204

4 What is the chemical nature of YX?
Write your answer in terms of acid/base/salt.

_____

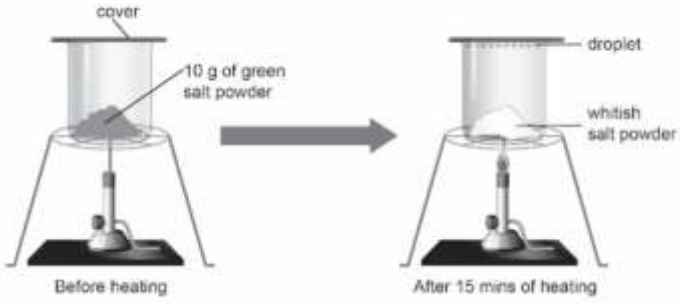
_____

SAS21S100205

5 Builders use plaster of Paris to make the surface layer of the inner walls of a building.
Which property of plaster of Paris powder makes it a suitable building material?

A. It is lightweight.
B. It is white in colour.
C. It is found readily in nature.
D. It gets hard when mixed with water.

Madhav took 10 g of a green salt powder in a covered beaker.
He heated the beaker for 15 minutes.
Madhav noticed that the salt powder turned whitish after 15 minutes.
He also found some droplets on the inner surface of the beaker cover.



Madhav added a few drops of water to the whitish powder.
The powder turned green.

SAS21S100206

6 What can be concluded about the green salt powder from Madhav's activity?
Circle 'Yes' or 'No' to mark your responses.

Is the reason correct?	Yes or No
It contains moisture.	Yes/No
It changes colour on heating.	Yes/No
It changes to a new chemical on heating.	Yes/No

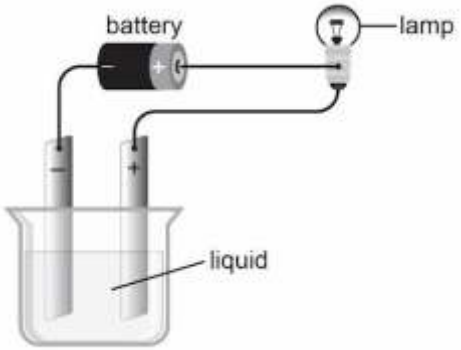
SAS21S100207

7 Madhav repeated the same activity but kept the beaker uncovered.
Will the results remain the same? Explain your answer.

_____

_____

Mike placed an electric circuit separately in a dilute acid and a dilute base.



Mike observed whether the lamp in the circuit glowed or not for each liquid.

SAS21S100208

8 Which property of acids and bases was Mike trying to test through his experiment?

_____

_____

SAS21S100209

9 Will the lamp glow if the circuit is placed in distilled water?
Explain your answer.

_____

_____

SAS21S100210

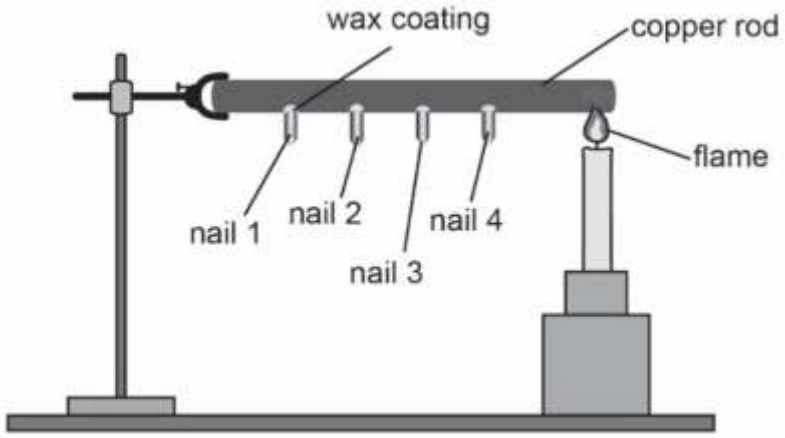
10 Acid + Metal → Salt + X
What is X in the equation?

_____

_____

Curriculum Aligned Competency Based Test Items
Science
Class 10 – Chapter 3
Metals and Non-Metals

Riya wants to find out how metal conducts heat.
She attaches four nails on a copper rod with wax.
Riya heats one end of the copper rod with a flame.



SAS21S100301

1 Which nail will fall last?

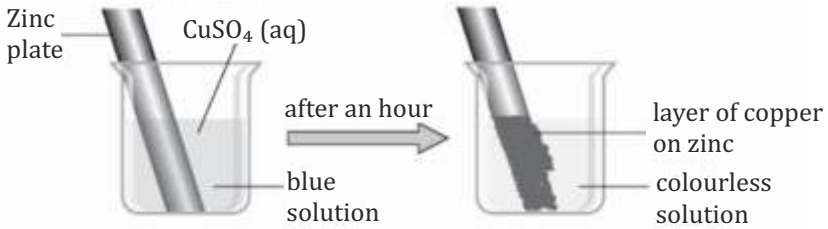
A. Nail 1
B. Nail 2
C. Nail 3
D. Nail 4

SAS21S100302

2 What should Riya keep the same in her activity?

A. Length of the nails
B. Material of the nails
C. Thickness of wax coatings
D. Distance between the nails

Reena immersed a zinc plate in an aqueous solution of copper sulphate.
She noticed a thick layer of copper on the surface of the zinc plate after an hour.



SAS21S100303

What is the formula of the colourless solution formed after the reaction?

A. Zn
B. Cu
C. $ZnSO_4$
D. $CuSO_4$

SAS21S100304

4 What should Reena have done to make the reaction faster?

A. Use a thicker zinc plate
B. Use pieces of small zinc flakes
C. Use a copper vessel for the reaction
D. Use copper sulphate solution of higher concentration

SAS21S100305

5 No reaction takes place when a copper plate is immersed in an aqueous solution of zinc sulphate.
Explain the reason behind this.

_____

_____

SAS21S100306

6 What makes gold exist in free state in nature?

_____

_____

SAS21S100307

7 $2Al + 3H_2O \longrightarrow Al_2O_3 + X$
What is X in the reaction?

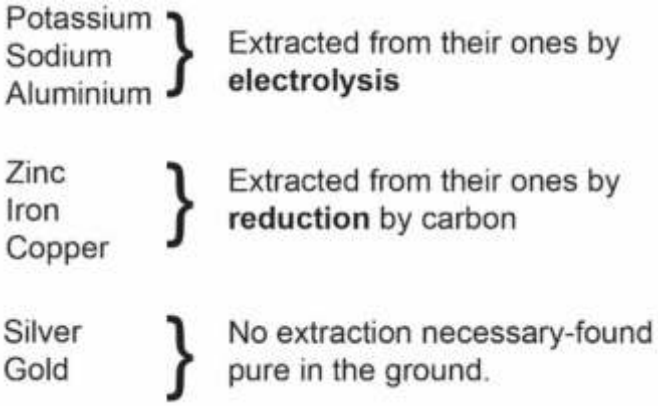
A. Al
B. H_2
C. O_3
D. AlH_3

SAS21S100308

8 Which of these is a property of an ionic compound?
Circle 'Yes' or 'No' to the correct response.

Is this a property of an ionic compound?	Yes or No
It is insoluble in water.	Yes/No
It has a high melting point.	Yes/No
It contains atoms of metal and non-metal.	Yes/No

The chart shows the process of extraction of some metals.



SAS21S100309

9 Which of these metals requires electricity for extraction from its ore?

A. Zinc
B. Silver
C. Copper
D. Aluminium

The table shows four different materials and their resistivity.

	Magnesium (Mg)	Sulphur (S)
Number of electrons in the shells of the atom	2, 8, 2	2, 8, 6

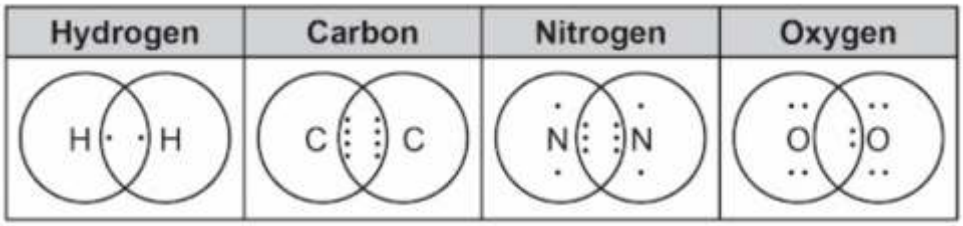
SAS21S100310

10 How many atoms of sulphur will react with one atom of magnesium to form a compound?

A. One
B. Two
C. Three
D. Four

Curriculum Aligned Competency Based Test Items
Science
Class 10 – Chapter 4
Carbon and its Compounds

The pictures show the bonds formed by the sharing of electrons by the atoms of four different molecules.



SAS21S100401

1 Which molecule has the strongest bond between its atoms?

A. Hydrogen
B. Carbon
C. Nitrogen
D. Oxygen

SAS21S100402

2 What is this type of bond between atoms known as?

_____

_____

SAS21S100403

3 Which of these is another way of representing the bonds between the atoms of a nitrogen molecule?

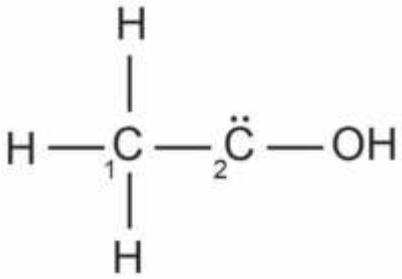
A. N ⊙ N
B. N × N
C. N ≡ N
D. N – N

SAS21S100404

4 Which of these statements is true about carbon compounds?
Circle 'Yes' or 'No' for the correct response.

Is this true about carbon compounds?	Yes or No
They are good conductors of electricity.	Yes/No
They exist in either saturated or unsaturated form.	Yes/No
They have lower boiling points than ionic compounds.	Yes/No

The picture shows the incomplete chain structure of a carbon compound.
The second carbon atom has two free electrons.



SAS21S100405

5 How many oxygen atoms can combine with the second carbon atom to complete the structure?

A. One
B. Two
C. Three
D. Four

SAS21S100406

6 Which of these molecules contains a double bond?

A. CH_4
B. C_2H_4
C. C_3H_8
D. C_4H_{10}

SAS21S100407

A part of a homologous series is shown below.
C_3H_4, C_4H_6, C_5H_8

7 Which of these compounds is a part of the series shown above?

A. C_2H_2
B. C_2H_4
C. C_8H_6
D. C_6H_{14}

Four combustion reactions of carbon compounds are shown below.

(i) $CH_4 + O_2 \rightarrow CO_2 + H_2O + heat$

(ii) $CH_3CHO + O_2 \rightarrow CO_2 + H_2O + heat$

(iii) $CH_3CH_2CH_2OH + O_2 \rightarrow CO_2 + H_2O + heat$

(iv) $C_6H_6 + O_2 \rightarrow CO_2 + H_2O + heat$

SAS21S100408

8 What can be concluded from the four reactions?
Circle 'Yes' or 'No' for the correct response.

Can this be concluded from the reactions?	Yes or No
All carbon compounds release oxygen on combustion.	Yes / No
All carbon compounds release water on reacting with oxygen.	Yes / No
All carbon compounds produce carbon dioxide on reacting with oxygen.	Yes / No

SAS21S100409

9 Which reaction shows the combustion of a type of alcohol?

A. Reaction i
B. Reaction ii
C. Reaction iii
D. Reaction iv

The picture shows the bonds between atoms in two allotropes of carbon.

SAS21S100410

10 Which allotrope is harder? Explain your answer.

_____

_____

केंद्रीय माध्यमिक शिक्षा बोर्ड
CENTRAL BOARD OF SECONDARY EDUCATION

Curriculum Aligned Competency Based Test Items
Science
Class 10 – Chapter 5
Periodic Classification of Elements

SAS21S100501

1 Which scientist **first** proposed the periodic table of elements?

A. Niels Bohr
B. John Newlands
C. Dmitri Ivanovich Mendeleev
D. Johann Wolfgang Dobereiner

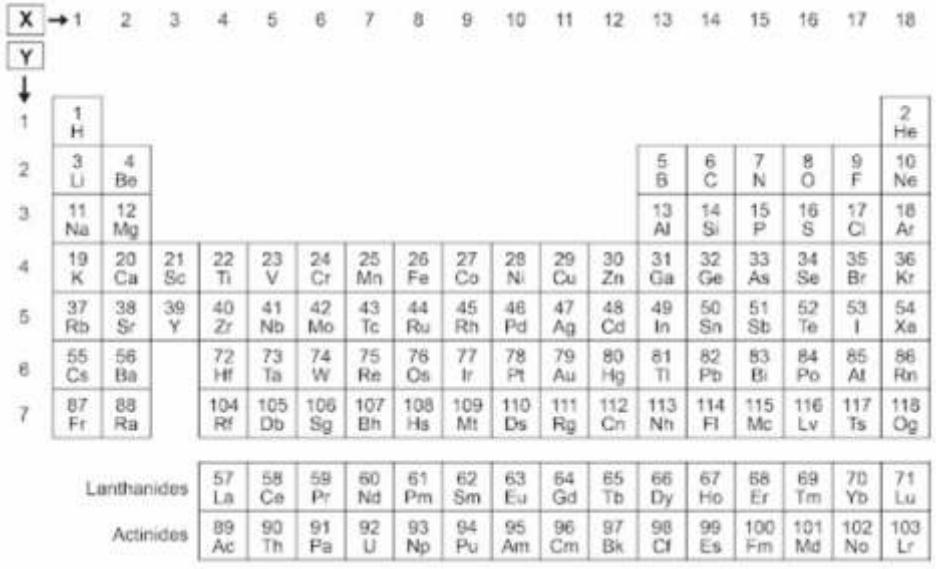
SAS21S100502

2 The Law of Octaves stated that – "when the elements are arranged in the order of increasing atomic masses, every eighth element had properties similar to that of the first".
Why was the Law of Octaves **not** applicable to all elements?

_____

_____

The picture shows the modern periodic table.



SAS21S100503

3 What do the columns **(X)** and rows **(Y)** stand for in the periodic table?

X =
Y =

SAS21S100504

4 Which of these columns in the periodic table contains chemically inert elements?

A. X1
B. X2
C. X13
D. X18

SAS21S100505

5 What is the order of arrangement of elements in the periodic table?

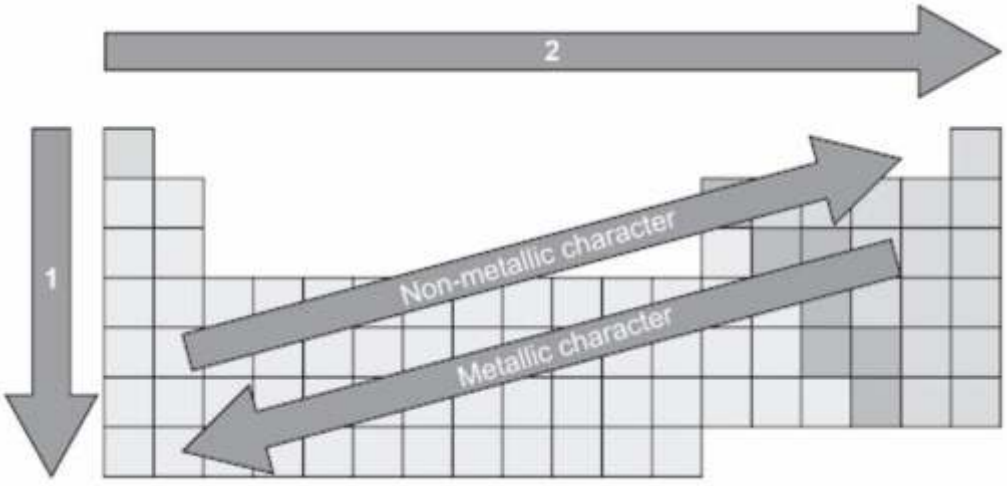
A. Increase in valency
B. Decrease in atomic mass
C. Increase in atomic number
D. Decrease in the number of atomic shells

SAS21S100506

6 What does the position of an element in the periodic table indicate?
Circle 'Yes' or 'No' for the correct response.

Does the position of an element in the periodic table show this?	Yes or No
How reactive the element is?	Yes/No
What is the boiling point of the element?	Yes/No
What is the number of atomic shells in the element?	Yes/No

The picture shows an incomplete periodic table.
Arrow 1 and arrow 2 indicate increase or decrease in chemical properties.

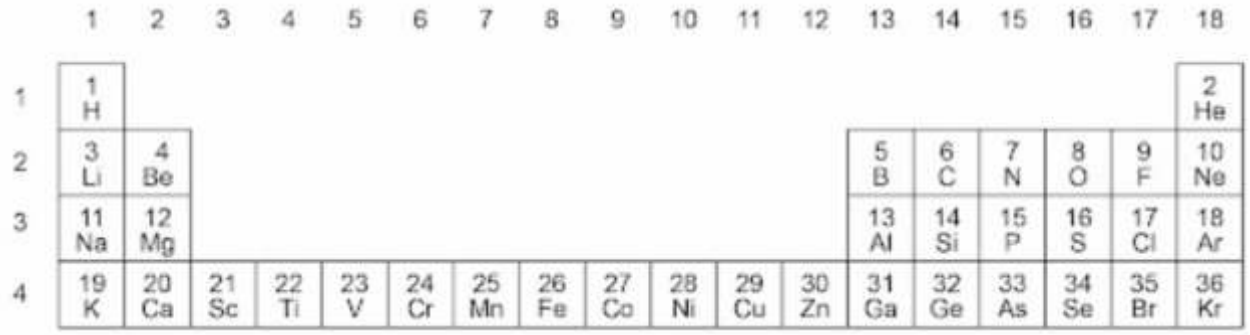


SAS21S100507

7 What do arrow 1 and arrow 2 represent?

	Arrow 1	Arrow 2
A.	Decrease in atomic mass	Increase in atomic radius
B.	Increase in atomic radius	Increase in electronegativity
C.	Increase in electronegativity	Decrease in atomic radius
D.	Decrease in atomic radius	Decrease in atomic mass

The picture shows a part of the periodic table.



SAS21S100508

8 Which element has the **highest** metallic property?

A. F
B. Al
C. K
D. Fe

SAS21S100509

9 Which element shows the properties of both metals and non-metals?

A. H
B. Ne
C. Mg
D. As

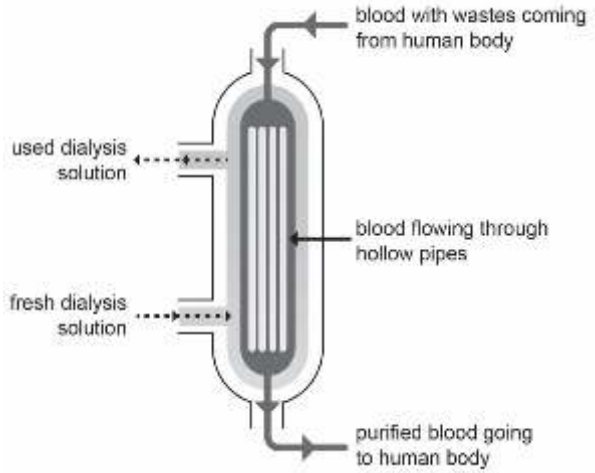
SAS21S100510

10 Which of these oxides is acidic in nature?

A. So_2
B. CaO
C. Al_2O_3
D. Fe_2O_3

Curriculum Aligned Competency Based Test Items
Science
Class 10 – Chapter 6
Life Processes

The process of filtering blood outside the human body to remove harmful wastes is called Dialysis.
Dialysis takes place in an enclosed chamber.
The given diagram shows how dialysis works.



SAS21S100601

1 Which of the following must be true for a dialysis chamber?
Circle 'Yes' or 'No' to indicate your response.

Is this necessary for dialysis?	Yes or No
Used dialysis solution is recycled back to the chamber as fresh dialysis solution.	Yes/No
The hollow pipes should have semi-permeable walls.	Yes/No
The blood pressure inside the hollow pipes should be higher than that inside the human body	Yes/No

SAS21S100602

2 What type of blood vessel brings in the blood with wastes?

_____

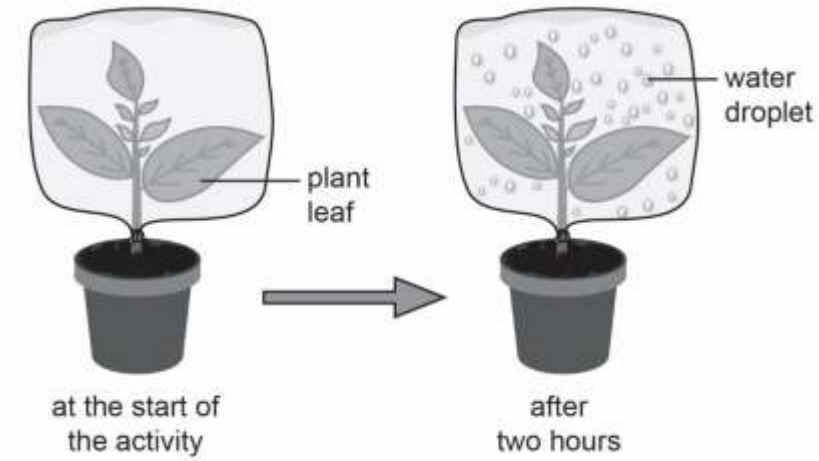
_____

SAS21S100603

3 Which organ acts like a natural dialysis chamber in the human body?

A. Heart
B. Brain
C. Kidneys
D. Pancreas

Sanjeev wanted to check whether plant leaves release water vapour.
He took a potted plant and covered the plant with a plastic bag.
The picture below shows what he observed after 2 hours.



SAS21S100604

4 Sanjeev compared the results of the activity with a new pot to confirm his findings.
Which of the following best represents the new pot?

A. 

B. 

C. 

D. 

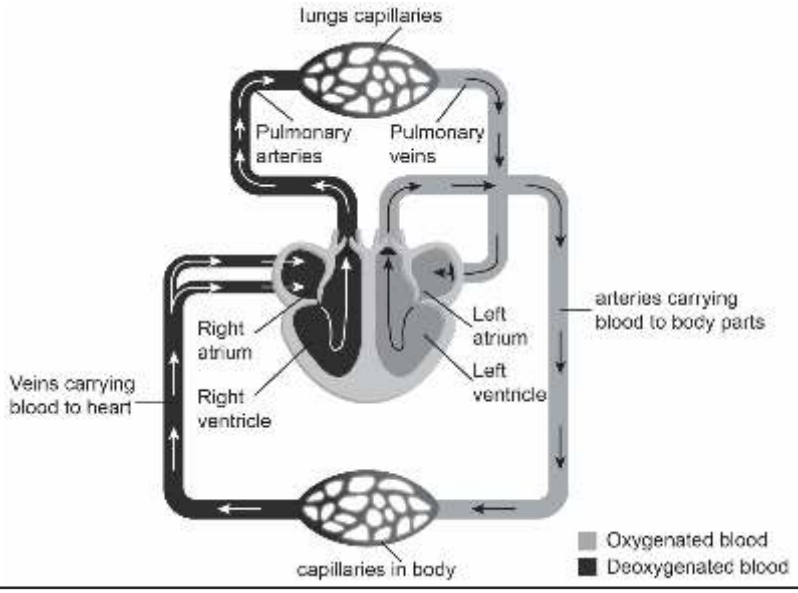
SAS21S100605

5 How does the loss of water by plant leaves help the plant? Mention two points.

_____

_____

Blood transports oxygen and carbon dioxide to different parts of the human body.
The exchange of gases between blood and inhaled air takes place in the capillaries of lungs.
The diagram below shows how blood circulates in the human body.



SAS21S100606

6 What statement is supported by the diagram?

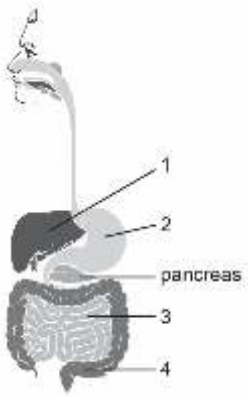
A. All arteries carry oxygenated blood.
B. Capillaries are permeable to gases.
C. The wall between the left ventricle and the right ventricle is porous.
D. Blood can flow back and forth between the right atrium and the right ventricle.

SAS21S100607

7 Which of these will be the immediate effect if gaseous exchange in the lung capillaries reduces?

A. Blood will flow in the reverse direction.
B. Pulmonary veins will receive blood with less oxygen.
C. The space inside the left and the right atrium will increase.
D. The pressure of blood inside the capillaries will decrease.

The diagram below shows the human alimentary canal.
1, 2, 3 and 4 are four different organs that are parts of the canal.



SAS21S100608

8 Which of the labelled parts represents the liver?

A. 1
B. 2
C. 3
D. 4

SAS21S100609

9 Pancreas secretes lipase enzyme. Mr. Ayub is suffering from malfunctioning of the pancreas. Which of the following will be adversely affected in Mr. Ayub's body?

A. Digestion of carbohydrates
B. Digestion of proteins
C. Digestion of fats
D. Digestion of vitamins

Small hair-like structures line the upper part of the human respiratory tract.
These structures trap the dust particles, germs and chemicals entering the human body during breathing.

SAS21S100610

10 Smoking is likely to cause infections in the respiratory tract.
Which statement best explains the fact?

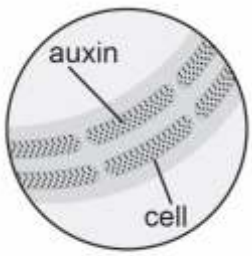
A. Smoking destroys the hair-like structures.
B. Smoking causes excessive growth of the hair-like structures.
C. Smoking stimulates the hair-like structures to release harmful chemicals.
D. Smoking makes the hair-like structures wet and they fail to trap dust particles.

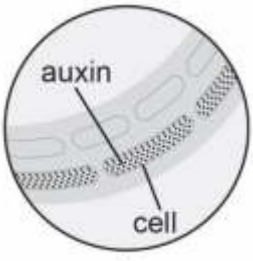
Curriculum Aligned Competency Based Test Items
Science
Class 10 – Chapter 7
Control and Coordination

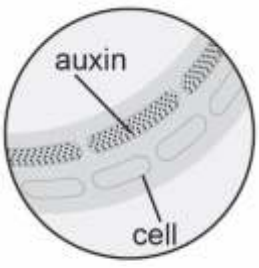
The figure shows the movement of a stem. X is a part of the stem.
The movement of plant hormone auxin in cells regulates cell elongation and growth of plants in a particular direction.

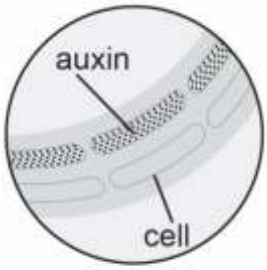
SAS21S100701

1 What would the size of cells and the distribution of auxin at part X of the stem look like?

A. 

B. 

C. 

D. 

SAS21S100702

2 How can the movement of the stem in a particular direction be described?

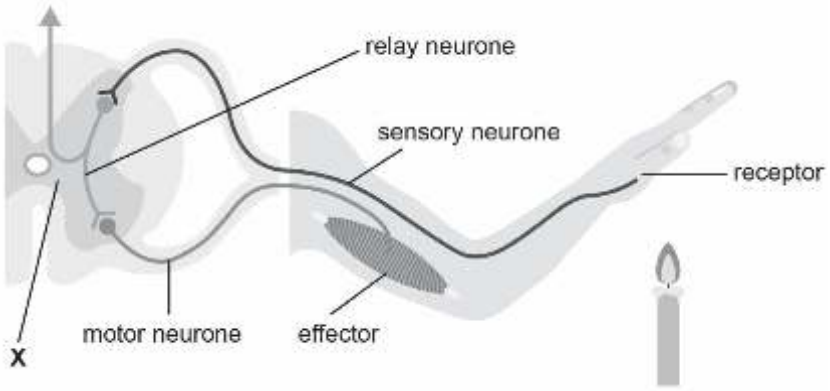
A. Against gravity
B. Away from touch
C. Away from chemicals
D. Towards a source of water

SAS21S100703

3 Cell division in plants is promoted by _____.

A. Auxin
B. Abscisic acid
C. Cytokinins
D. Gibberellins

The figure shows a reflex arc formed in response to heat.



SAS21S100704

4 Which of these is the correct sequence of the flow of information in the reflex arc?

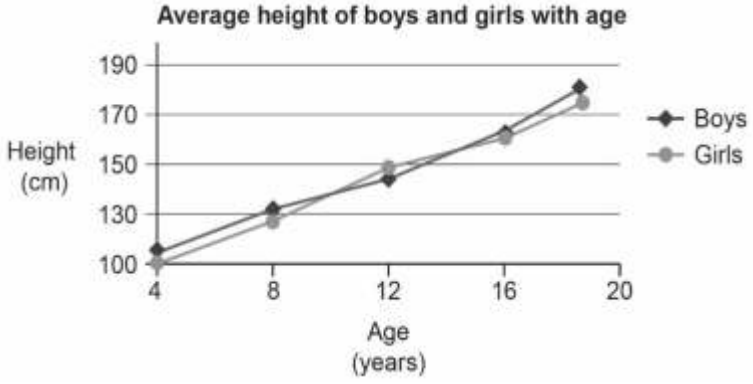
A. Sensory Neurone → Receptor → Motor Neurone → Relay Neurone → Effector
B. Receptor → Sensory Neurone → Relay Neurone → Motor Neurone → Effector
C. Sensory Neurone → Receptor → Motor Neurone → Relay Neurone → Effector
D. Effector → Motor Neurone → Relay Neurone → Sensory Neurone → Receptor

SAS21S100705

5 What is labelled as 'X' in the figure?

A. Cerebrum
B. Spinal cord
C. Pituitary gland
D. Hypothalamus

The graph shows the average height of boys and girls in a population.



SAS21S100706

6 What does the graph indicate?

A. The average height of boys is always greater than that of girls.
B. The average height of girls is greater than that of boys in adulthood.
C. The average height of girls during puberty is greater than that of boys.
D. The average heights of girls and boys are the same between 4 and 20 years.

SAS21S100707

7 A student suggested a different title for the graph - 'Height of boys and girls from birth to adulthood'. Is the title correct? Explain your answer.

_____

_____

SAS21S100708

8 Which of the following statements are correct?
Circle 'Yes' or 'No' to mark your response.

Statement	Yes or No
Hormones are released directly into the bloodstream.	Yes/No
Endocrine glands use electrical impulses.	Yes/No
Sex hormones regulate changes associated with puberty.	Yes/No

SAS21S100709

9 The cerebellum in the brain controls voluntary actions of the body.
Which of these actions is controlled by the cerebellum?

A. Beating of the heart
B. Blinking of the eyes
C. Watering of the mouth
D. Jumping from a height

SAS21S100710

10 Which of these health conditions is caused by a hormonal imbalance in the body?

A. Scurvy
B. Typhoid
C. Diabetes
D. Common cold

Curriculum Aligned Competency Based Test Items
Science
Class 10 – Chapter 8
How do Organisms Reproduce?

The diagram shows four different populations of a freshwater fish.
All fish belong to the same species but with two different adaptations.

Population 1

Population 2

Population 3

Population 4

 = can survive in both freshwater and slightly saline water, cannot tolerate temperatures beyond 25 °C

 = can survive only in freshwater, can tolerate temperatures up to 35 °C

SAS21S100801

1 Which population is most likely to survive a small increase in water salinity in its habitat?

A. Population 1
B. Population 2
C. Population 3
D. Population 4

SAS21S100802

2 Which of these is responsible for the difference in adaptation within the fish species?
Circle 'Yes' or 'No' to mark your response.

Is this responsible for the difference in adaptation?	Yes or No
Difference in food source	Yes/No
Variations in DNA	Yes/No
Difference in age	Yes/No

The fish with different adaptations were put in two separate tanks of water.

Tank 1 Tank 2

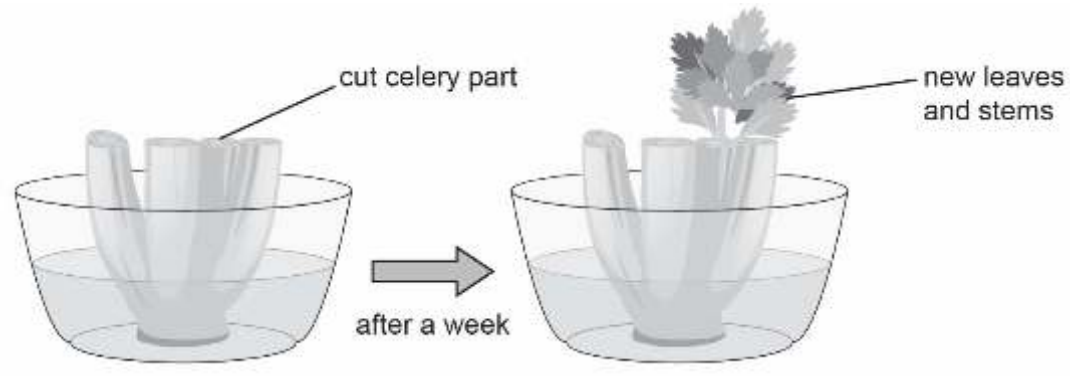
SAS21S100803

3 The water in both tanks was saline and maintained at 35 °C.
Will the fish in each tank survive after a week? Explain your answer.

_____

_____

Medha cut a celery plant into two pieces.
She placed the lower part of the cut celery in a jar of water.
The pictures show what Medha observed after a week.



SAS21S100804

4 What can Medha conclude from her activity?

A. Some plants can regenerate.
B. Some plants grow best indoors.
C. Some plants can grow without sunlight.
D. Some plants need both male and female organs to reproduce.

SAS21S100805

5 Scientists grow new plants from groups of cells in laboratories.
What is the technique known as?

_____

_____

The table lists the development of few characteristics in the human body.

Characteristics
growth of thick hair in the armpits of both males and females cracking of voice in males development of breasts in females

SAS21S100806

6 At which stage of human development do the above characteristics appear?

_____

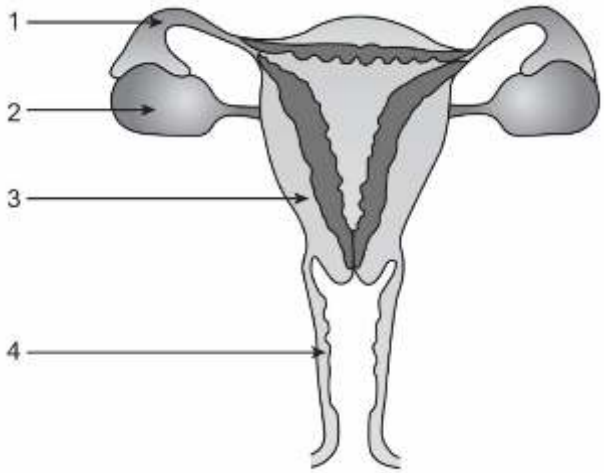
_____

SAS21S100807

7 Which of these statements is true for the characteristics listed in the table above?
Circle 'Yes' or 'No' to mark your response.

Is this statement true?	Yes or No
The characteristics generally develop earlier in girls than boys.	Yes/No
The characteristics develop over a span of few years.	Yes/No
The characteristics last for a short time.	Yes/No

The diagram shows the reproductive system of a human female.
1, 2, 3 and 4 are four different parts of the system.



SAS21S100808

8 Fertilisation is the union of a sperm with a mature egg.
In which part of the female reproductive system does fertilisation take place?

A. 1
B. 2
C. 3
D. 4

SAS21S100809

9 What is the number of sperm(s) that fertilise one egg?

_____

_____

SAS21S100810

10 Which of the following diseases is caused by a sexually transmissible bacterium?

A. Wart
B. Cholera
C. Influenza
D. Gonorrhoea

Curriculum Aligned Competency Based Test Items
Science
Class 10 – Chapter 9
Heredity and Evolution

A plant with red flower (Rw) is cross bred with a plant with white flower (ww).
There are two variations of the gene controlling the colour of the flower.
The gene for red flower (R) is dominant over that for white flower (w).

Red flower (Rw) White flower (ww)

The Punnett square shows the result of the cross.

	w	**w**
R	Rw	Rw
w	ww	ww

SAS21S100901

1 What percentage of the plants is likely to produce white flowers?

A. 25%
B. 50%
C. 75%
D. 100%

SAS21S100902

2 A red flower plant (RR) was cross bred with a white flower plant (ww).
What will be the colour of the flower of the next generation plants?

_____

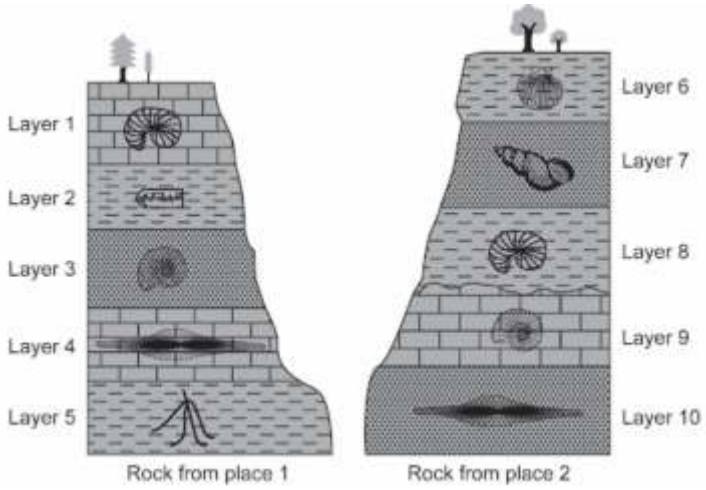
_____

SAS21S100903

3 What would have caused the variation in the gene for flower colour?

A. Mutation
B. Pollination
C. Speciation
D. Adaption

The picture shows different layers of rocks with fossils dug out from two different places.



SAS21S100904

4 Which layer of rocks contains the youngest fossil?

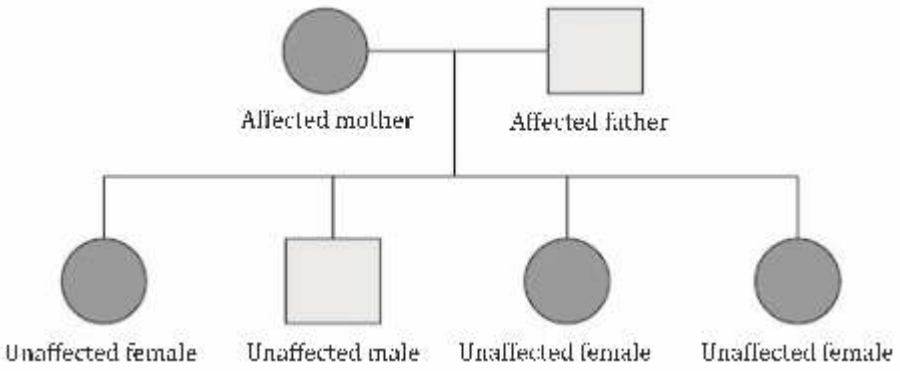
A. Layer 1
B. Layer 5
C. Layer 6
D. Layer 10

SAS21S100905

5 Which layers of rocks must have formed during the same time period?

A. Layer 1 and Layer 6
B. Layer 3 and Layer 9
C. Layer 4 and Layer 8
D. Layer 5 and Layer 10

The picture shows the inheritance of an X chromosome-linked trait in a family. There are two variations of the trait - X and x. The trait is recessive, and affected individuals carry two copies of the recessive gene.



SAS21S100906

6 Which of the following is the correct genotype of the mother and the father?

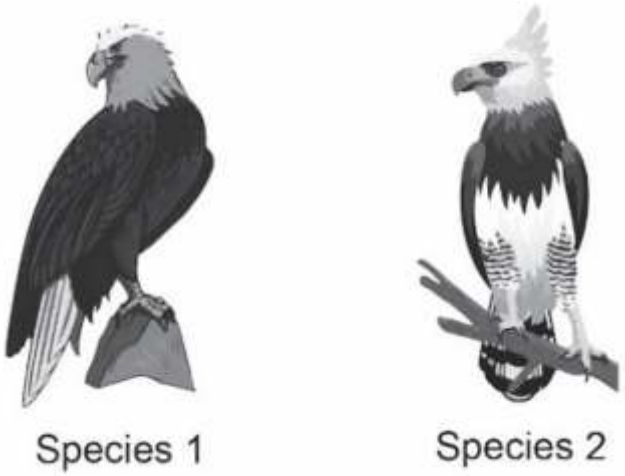
	Mother	Father
A.	XX	XY
B.	xx	XY
C.	Xx	xY
D.	xx	xY

SAS21S100907

7 Which of these traits is acquired by a human population in response to the environment?

A. Short hair
B. Body mass
C. Tall height
D. Brown eyes

The picture shows two species of birds living in different regions.

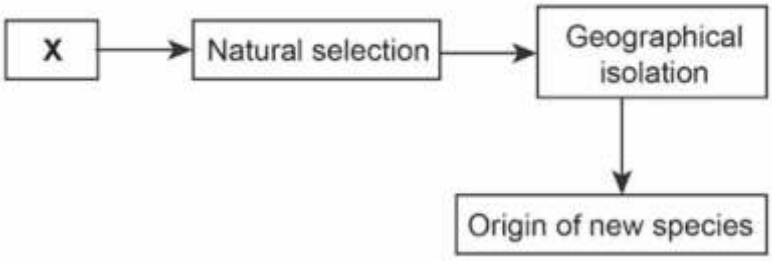


SAS21S100908

8 Which of the following is the correct genotype of the mother and the father?

A. They cannot interbreed.
B. They are not similar in shape.
C. They live in different geographical areas.
D. They have different mutations in their genes.

The two birds once belonged to the same species.
The following sequence of events is likely to have caused the origin of the two different species.



SAS21S100909

9 What is the biological event X?

A. Evolution
B. Speciation
C. Changes in DNA
D. Sexual reproduction

SAS21S100910

10 Which of the following statements is correct?
Circle 'Yes' or 'No' to mark your responses.

Is this statement correct?	Yes or No
Natural selection provides an advantage to organisms.	Yes/No
Genes mix with each other to produce new traits	Yes/No
All chromosomes in human cells are found in pairs.	Yes/No

Curriculum Aligned Competency Based Test Items
Science
Class 10 – Chapter 10
Light- Reflection and Refraction

The pictures show four ray diagrams of images formed by concave mirrors.
P is the pole or centre of the reflecting surface of the mirror.
C is the centre of curvature of the mirror.
F is the focus of the mirror.
AB is the object and A'B' is the image of the object.

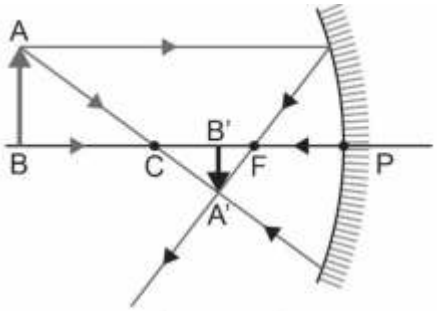


Diagram 1

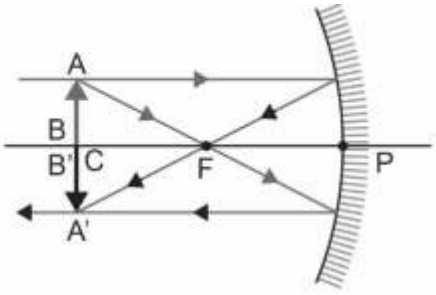


Diagram 2

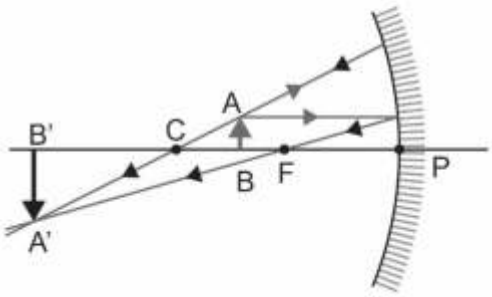


Diagram 3

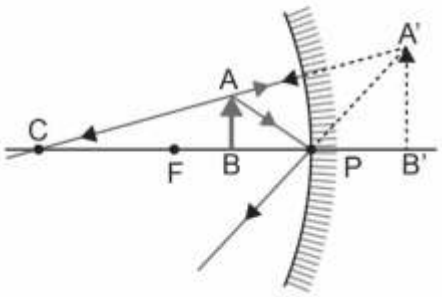


Diagram 4

SAS21S101001

1 Which of these can be concluded from diagram 1?

A. Image is formed at the focus.
B. Size of the image is equal to the size of the object.
C. Distance between pole and centre of curvature is twice the focal length.
D. Distance between the image and focus is half the distance between the object and focus.

SAS21S101002

2 Which diagram shows a real, inverted and enlarged image formed by the mirror?

A. Diagram 1
B. Diagram 2
C. Diagram 3
D. Diagram 4

SAS21S101003

3 In which condition does a concave mirror produce a virtual image?

A. When object is located within the focal length
B. When object is located at the centre of curvature
C. When object is located in between infinity and the centre of curvature
D. When object is located in between the centre of curvature and the focus

SAS21S100604

4 Solar cookers contain a concave mirror.
How does the concave mirror help in heating the food?
Circle 'Yes' or 'No' for the correct response.

How does the concave mirror heat the food?	Yes or No
Sun's rays are absorbed by the mirror.	Yes/No
Sun's rays reflected by the mirror converge at a point.	Yes/No
Sun's rays diverge out when reflected by the mirror.	Yes/No

The pictures show the ray diagrams of images formed by convex mirrors.
P is the pole or centre of the reflecting surface of the mirror.
C is the centre of curvature of the mirror.
F is the focus of the mirror.
AB is the object and A'B' is the image of the object.

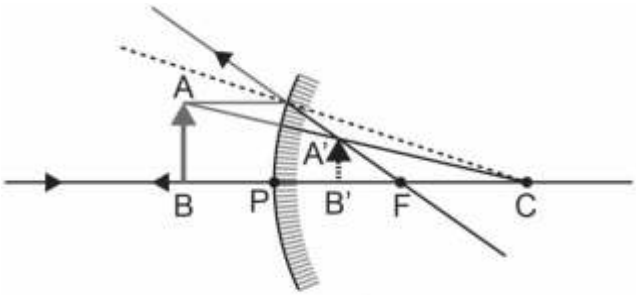


Diagram 1

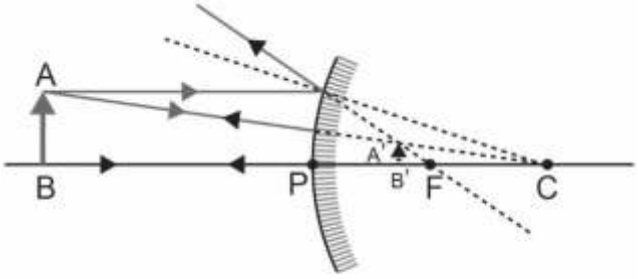


Diagram 2

SAS21S101005

5 Which statement is supported by the two diagrams?
Circle 'Yes' or 'No' for each statement.

Is the statement supported by the two diagrams?	Yes or No
Convex mirrors produce virtual images	Yes/No
Convex mirrors produce erect images	Yes/No
Convex mirrors have their focus behind the mirrors	Yes/No

SAS21S101006

6 Which of these is a convex mirror?

A. Shaving mirror
B. Dentist's mirror
C. Headlight mirror of a bike
D. Rear-view mirror of a car

SAS21S101007

7 A mirror magnifies the image of an object by minus 1.5 times.
Which of the following is true about the image produced by the mirror

A. The image is real and larger than the object.
B. The image is real and smaller than the object.
C. The image is virtual and larger than the object.
D. The image is virtual and smaller than the object.

The table below shows the refractive index of different materials.

	Water	Kerosene	Flint glass	Diamond
Refractive index of the material	1.33	1.44	1.65	2.42

The formula for calculating the refractive index (n_m) of a material is,

$$n_m = \frac{Speef\ of\ light\ in\ X}{Speef\ of\ light\ in\ the\ medium}$$

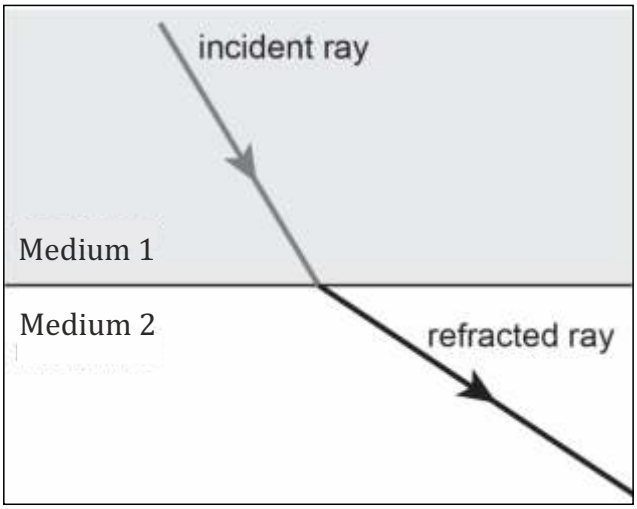
SAS21S101008

8 What does X stand for?

_____

_____

The picture shows the path of light as it travels from one medium to another.



SAS21S101009

9 What is medium 1 and medium 2?

	Medium 1	Medium 2
A.	Water	Kerosene
B.	Kerosene	Diamond
C.	Flint glass	Water
D.	Kerosene	Flint glass

SAS21S101010

10 The power of a lens (P) is calculated by the formula,

$$P = \frac{1}{f}$$

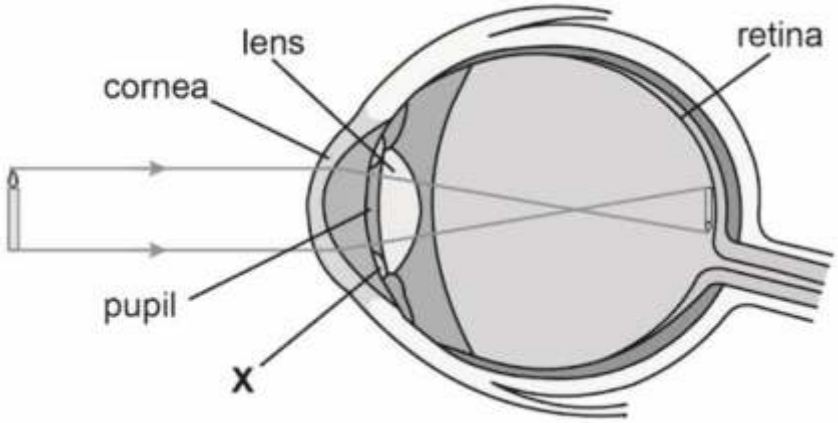
where f is the focal length of the lens.
A lens has a focal length of – 0.25 m.
Is it a convex lens or a concave lens? Explain your answer.

_____

_____

Curriculum Aligned Competency Based Test Items
Science
Class 10 – Chapter 11
The Human Eye and the Colourful World

The diagram shows how a human eye sees a candle.



SAS21S101101

1 What is X?

_____

_____

SAS21S101102

2 Which part of the eye produces maximum refraction of light rays?

A. Lens
B. Pupil
C. Retina
D. Cornea

SAS21S101103

3 What type of image is formed on the retina?

A. Virtual and inverted
B. Real and inverted
C. Virtual and erect
D. Real and erect

SAS21S101104

4 What would the size of the image formed on the retina depend on?

A. Age of the person
B. Curvature of the lens
C. ocal length of the lens
D. Distance of the candle from the eyes

SAS21S101105

5 Which eye is likely to be in the brightest light?

A. 

B. 

C. 

D. 

SAS21S101106

6 Which part of the eye controls the size of the pupil?

_____

_____

SAS21S101107

7 Presbyopia is a defect in vision.
What is the primary cause of presbyopia?

_____

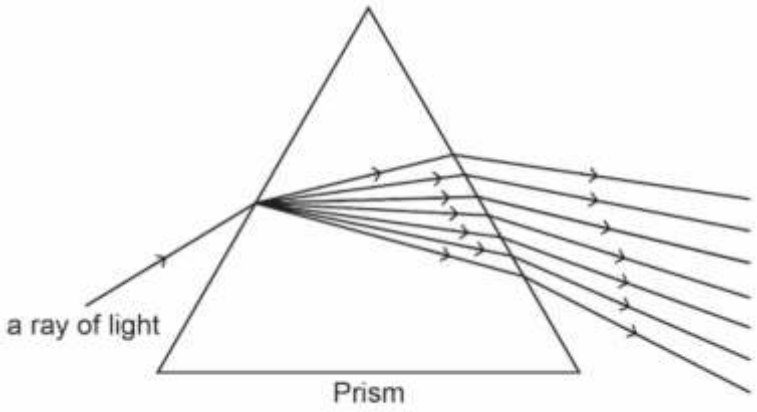
_____

SAS21S101108

8 A young person can clearly see nearby objects but not distant objects.
Which of these statements is true for the person?
Circle 'Yes' or 'No' to mark your responses.

Is this statement correct?	Yes or No
His eye lens is not flexible.	Yes/No
His eyeballs are elongated.	Yes/No
All chromosomes in human cells are found in pairs.	Yes/No

A ray of light passes through a glass prism.



Dispersion of light

SAS21S101109

9 When do the light rays get refracted?
Circle 'Yes' or 'No' to mark your responses.

When do the light rays get refracted?	Yes or No
As the light ray enters the prism from the air	Yes/No
As the light rays travel inside the prism	Yes/No
As the light rays move from the prism into the air	Yes/No

SAS21S101110

10 Why do leaves appear green?

_____

_____

Curriculum Aligned Competency Based Test Items
Science
Class 10 – Chapter 12
Electricity

The table shows four different materials and their resistivity.

Material	Resistivity(Ω m)
Material 1	1.62 ×10-8
Material 2	100 ×10-6
Material 3	6.84 ×10-8
Material 4	44 ×10-6

SAS21S101201

1 Which material is the best conductor of electricity?

A. Material 1
B. Material 2
C. Material 3
D. Material 4

SAS21S101202

2 What is the SI unit of Resistivity?

_____

_____

SAS21S101203

3 Why is nichrome wire used in many electrical heating devices?

A. It has low resistivity and low melting point.
B. It has high resistivity and low melting point.
C. It has low resistivity and high melting point.
D. It has high resistivity and high melting point.

SAS21S101204

4 What does the symbol mean in an electric circuit?

A. Switch
B. Wire joint
C. Electric bulb
D. Variable resistance

SAS21S101205

5 A current of 1A flows through an electric bulb for 5 minutes.
What is the amount of electric charge that flows through the bulb?
Show your calculation.

_____

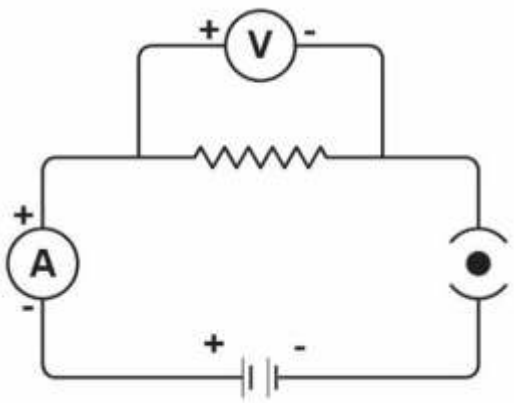
_____

SAS21S101206

6 Which of these decides the resistance of a wire?
Circle 'Yes' or 'No' for correct response.

Does this affect the resistance?	Yes or No
Length of the wire	Yes/No
Thickness of the wire	Yes/No
Material of the cover on the wire	Yes/No

The picture shows an electric circuit.



SAS21S101207

7 Which of these is true about the circuit?
Circle 'Yes' or 'No' for correct response.

Is this true for the circuit?	Yes or No
The circuit is open.	Yes/No
The circuit has double batteries.	Yes/No
The circuit has an ammeter and a voltmeter parallel to each other.	Yes/No

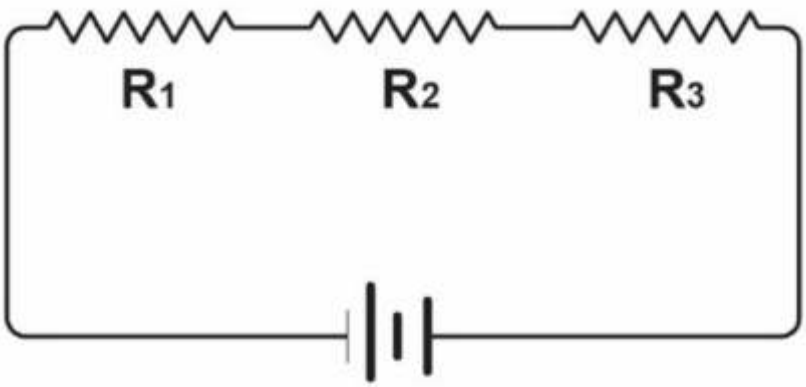
SAS21M10Q0108

8 Will there be any change in the ammeter reading if the length of the wire in the circuit is doubled? Explain your answer.

_____

_____

Leena creates an electric circuit with three resistors R1, R2 and R3.



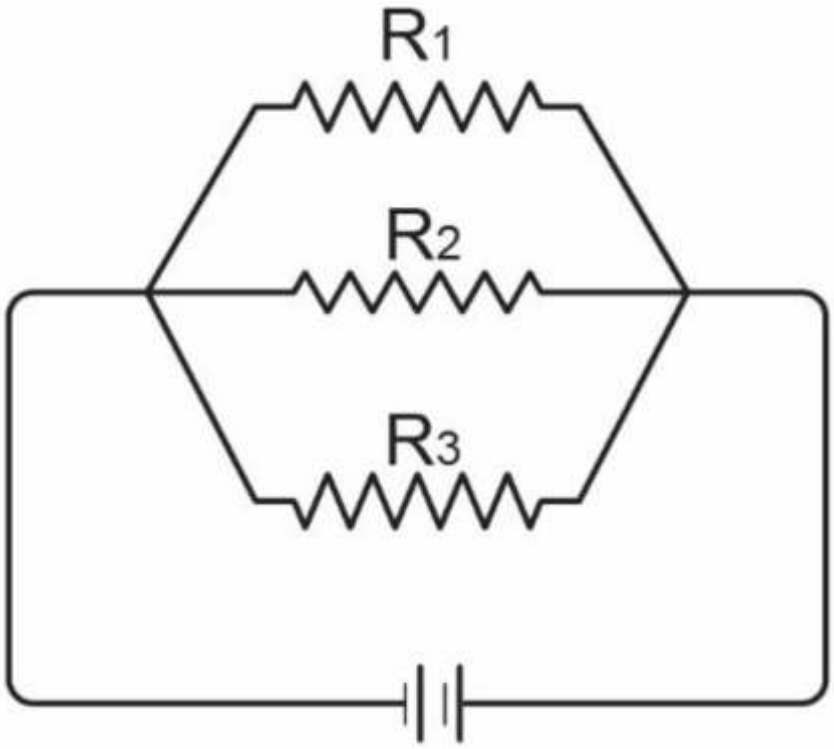
R_1	R_2	R_3
2Ω	3Ω	4Ω

SAS21S101209

9 What is the equivalent resistance of the circuit?

A. 3 Ω
B. 4 Ω
C. 5 Ω
D. 9 Ω

The same resistors are connected in a parallel combination in the circuit.



SAS21S101210

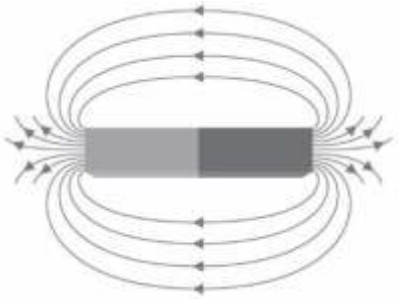
10 What is the equivalent resistance of the circuit?

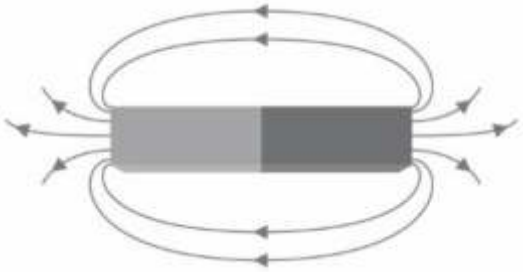
A. Less than 1 Ω
B. 1 Ω
C. 2 Ω
D. More than 2 Ω

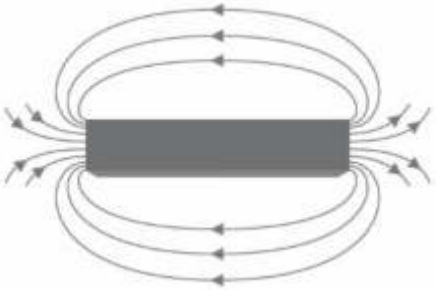
Curriculum Aligned Competency Based Test Items
Science
Class 10 – Chapter 13
Magnetic Effects of Electric Current

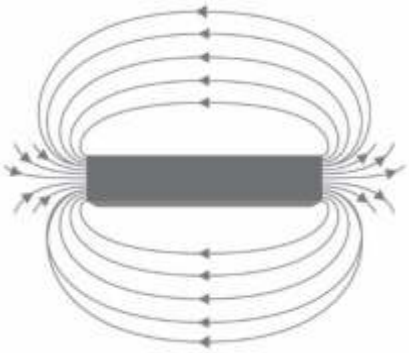
SAS21S101301

1 Which of these magnets has the strongest magnetic field?

A. 

B. 

C. 

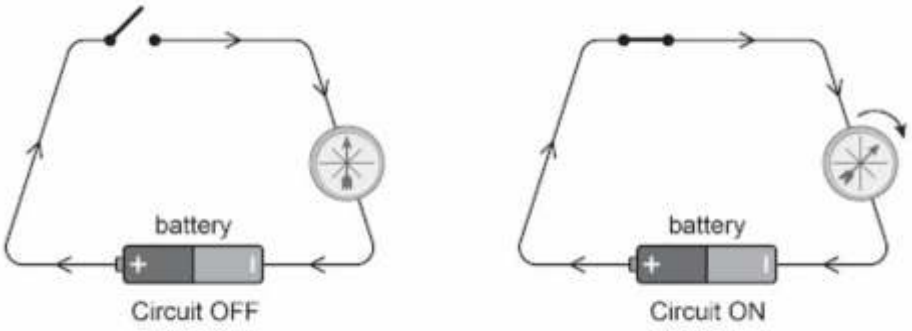
D. 

SAS21S101302

2 Which of these statements is true for the lines of a magnetic field?
Circle 'Yes' or 'No' for the correct response.

Is the statement true?	Yes or No
Lines of a magnetic field can sometimes cross each other.	Yes/No
Lines of a magnetic field emerge from the north pole and meet at the south pole.	Yes/No
Lines of a magnetic field can sometimes change direction.	Yes/No

Reema placed a magnetic needle in an electric circuit.
She noticed a deflection of the needle when the circuit is turned ON.



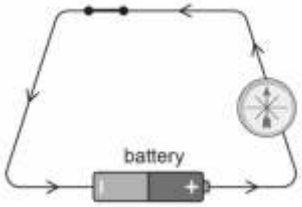
SAS21S101303

3 Reema placed a second battery in the circuit and turned the circuit ON.
What change in the needle will she observe now?

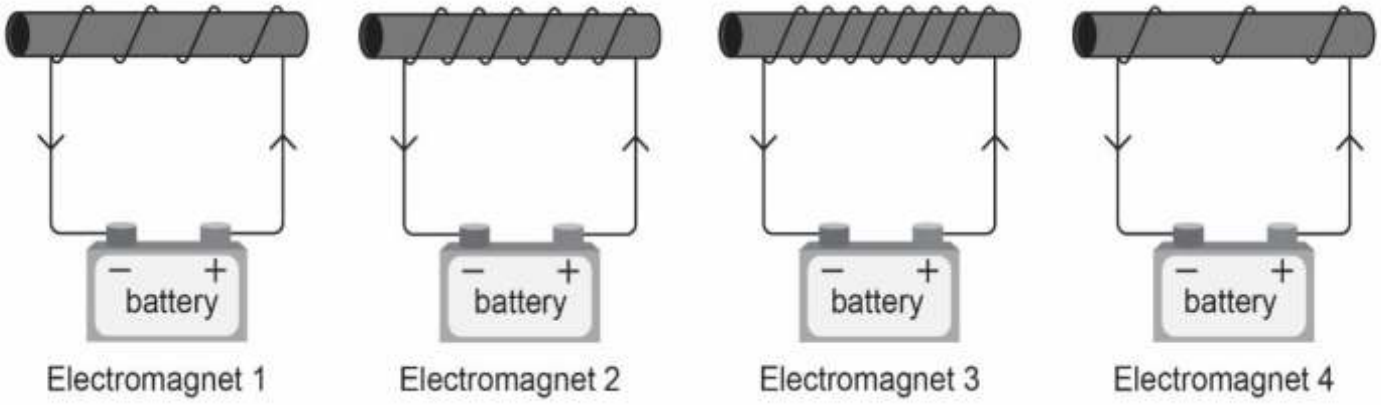
A. The needle will keep spinning.
B. The deflection of the needle will increase.
C. The deflection of the needle will decrease.
D. There will be no change in the deflection of the needle.

SAS21S101304

4 Reema reverses the direction of the battery in the circuit.
She turns the circuit ON.
Draw an arrow on the magnetic needle to show the correct deflection.



Sonia creates four electromagnets by placing iron bars in four different solenoids.
She brings a bunch of steel pins near each electromagnet.



SAS21S101305

5 Which electromagnet will attract the maximum number of pins?

A. Electromagnet 1
B. Electromagnet 2
C. Electromagnet 3
D. Electromagnet 4

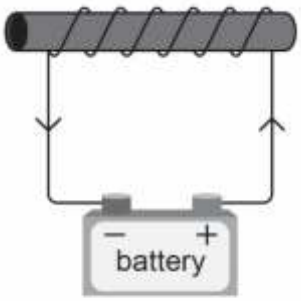
SAS21S101306

6 Which of these must Sonia keep the same for her activity?
Circle 'Yes' or 'No' for the correct response.

Should this be kept the same?	Yes or No
Thickness of the wires	Yes / No
Voltages of the batteries	Yes / No
Thickness of the iron bars	Yes / No

SAS21S101307

7 Label the north pole and south pole of the electromagnet in the diagram.



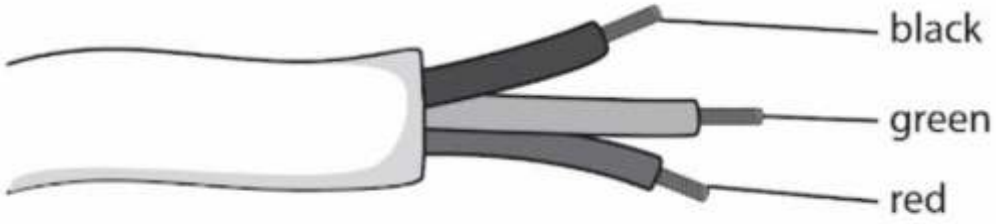
Electromagnet 2

SAS21S101308

8 Which of these devices works due to the magnetic effect of electric current?

A. LED bulb
B. Electric bell
C. Electric heater
D. Mobile charger

Leena creates an electric circuit with three resistors R1, R2 and R3.



SAS21S101309

9 Which wire should be connected to the negative terminal of a socket?

_____

_____

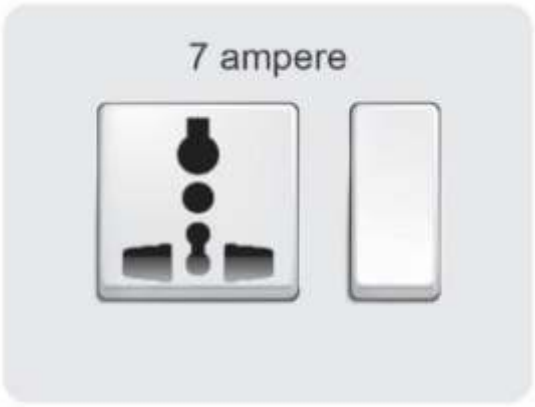
Electrical devices often have an ampere marking to indicate the strength of electric current required for it to work.

SAS21S101310

10 Will there be any change in the ammeter reading if the length of the wire in the circuit is doubled? Explain your answer.

A. 

B. 

C. 

D. 

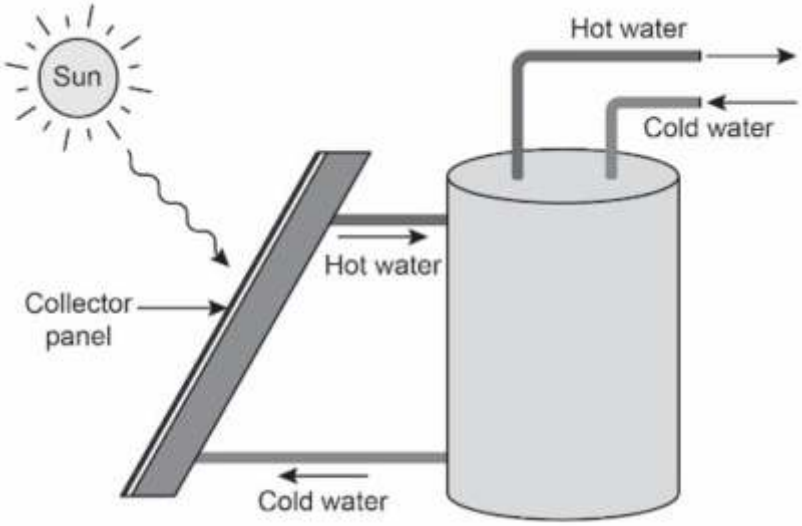
Curriculum Aligned Competency Based Test Items
Science
Class 10 – Chapter 14
Sources of Energy

SAS21S101401

1 Which source of energy for cooking will produce the least air pollution?

A. Petrol
B. Coal
C. LPG
D. Wood

The picture shows how sunlight heats the water in a solar water heater.



SAS21S101402

2 When will the solar water heater work most efficiently?

A. At noon under a clear sky
B. At noon under a cloudy sky
C. In the morning under a clear sky
D. In the morning under a cloudy sky

SAS21S101403

3 $^{2}H + {}^{2}H \rightarrow X + n$
What is the formula for X in the given reaction?

_____

_____

SAS21S101404

4 Which type of energy is derived from the sea?

A. Tidal energy
B. Wind energy
C. Nuclear energy
D. Thermal energy

SAS21S101405

5 Which source of energy emits large amounts of greenhouse gases?

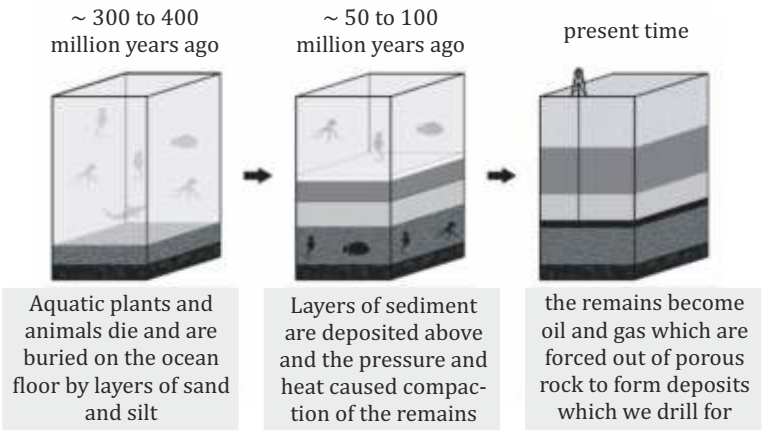
A. Sun
B. Coal
C. Wind
D. Water

SAS21S101406

6 Which of these statements is true about biogas?
Circle 'Yes' or 'No' for correct response.

Is this statement true about biogas?	Yes or No
It contains poisonous chemicals.	Yes/No
It contains 75% methane.	Yes/No
It is produced in the absence of oxygen.	Yes/No

The diagram shows the formation of fossil fuels.



SAS21S101407

7 What is the minimum time required for marine organisms to transform into fossil fuels?

A. Less than 100 million years
B. 100 - 200 million years
C. 200 - 300 million years
D. More than 300 million years

SAS21M10Q0108

8 Name any three examples of fossil fuels.

_____

_____

SAS21S101409

9 How are the wastes discharged from a biogas plant reused?

A. As clay for pottery
B. As fuel for cooking
C. As food for animals
D. As manure for plants

SAS21S101410

10 Which of these is true about fossil fuels?
Circle 'Yes' or 'No' for correct response.

Is this statement true for fossil fuels?	Yes or No
Formation of fossil fuels requires heat and pressure.	Yes/No
Fossil fuels have no alternatives as energy source.	Yes/No
Fossil fuels are non-conventional source of energy.	Yes/No

Curriculum Aligned Competency Based Test Items
Science
Class 10 – Chapter 15
Our Environment

The table shows some organisms and their food sources in an ecosystem.

Organism	Food source
Frog	Cricket, Grasshopper
Cricket	Grass
Snake	Frog, Shrew
Shrew	Cricket, Grasshopper
Grasshopper	Grass
Eagle	Snake, Shrew

SAS21S101501

1 Identify the primary consumer(s) in the ecosystem.

A. Snake
B. Shrew
C. Frog and Shrew
D. Cricket and Grasshopper

SAS21S101502

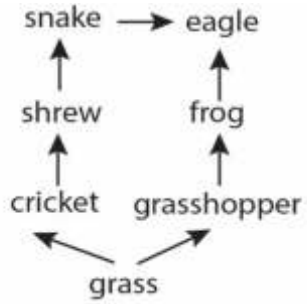
2 A snake eats a frog.
What percentage of energy of the frog is transferred to the snake?

A. 1%
B. 2%
C. 10%
D. 90%

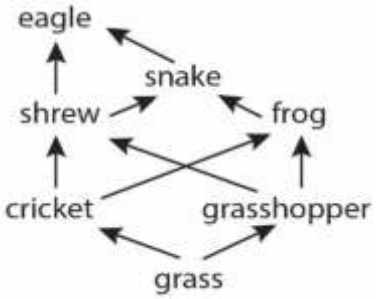
SAS21S101503

3 Which of these represents the correct food web of the ecosystem?

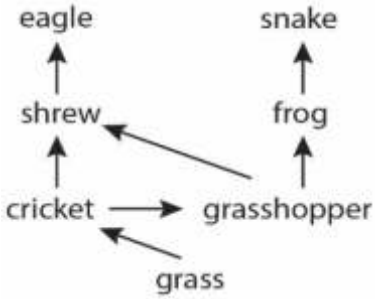
A.



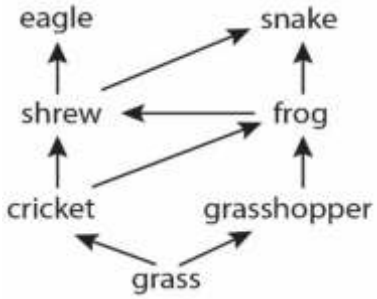
B.



C.



D.

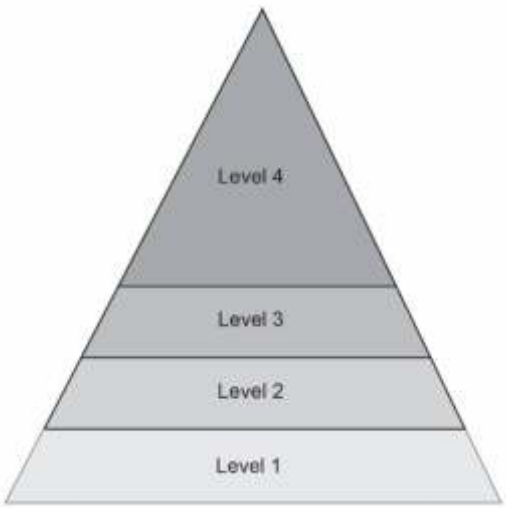


SAS21S101504

4 Which organism has the largest biomass in the ecosystem?

A. Grass
B. Snake
C. Eagle
D. Grasshopper

The picture shows the different trophic levels of an ecosystem.



SAS21S101505

5 Which level consists of herbivores?

A. Level 1
B. Level 2
C. Level 3
D. Level 4

The pair of reactions show the formation of ozone (O_3).

$$O_2 \xrightarrow{UV} O + O$$

$$O + O_2 \longrightarrow O_3$$

SAS21S101506

6 What is the role of ultraviolet (UV) rays in the reaction?

_____

_____

SAS21S101507

7 The ozone layer of the atmosphere shields the Earth's surface from the ultraviolet radiations of the Sun.
Which of these is likely to increase in humans with depletion of the ozone layer?

A. AIDS
B. COVID
C. Jaundice
D. Skin Cancer

Alisha digs a pit in her garden and puts the following items in it.

- paper cups
- glass bowls
- fruit peels
- rubber slippers

She then covers the pit with soil.

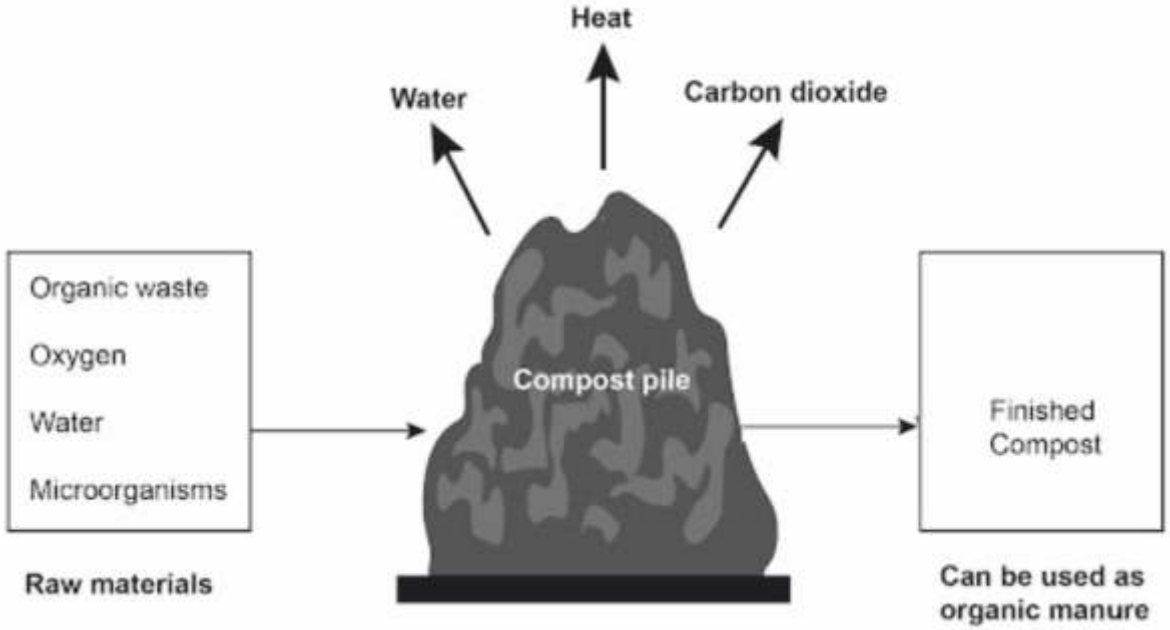
SAS21S101508

8 Which item will decompose first?

_____

_____

Composting is the process where organic wastes are degraded into compost.
The diagram shows the details of the process.



SAS21S101509

9 What can be concluded from the diagram?

A. Composting helps in recycling plastic scraps.
B. Composting absorbs heat from the environment.
C. Composting takes place only in the presence of oxygen.
D. Composting takes place in the presence of either oxygen or carbon dioxide.

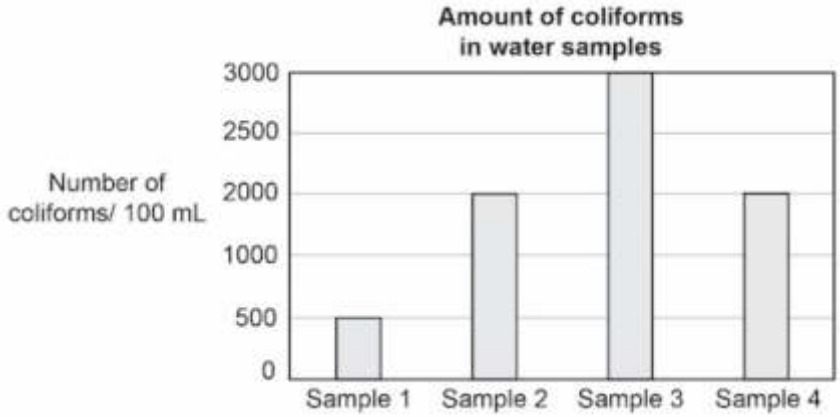
SAS21S101510

10 Which of these will reduce if compost is used in place of inorganic fertilizer in farms?
Circle 'Yes' or 'No' for the correct response.

Will this reduce?	Yes or No
Moisture in the farm soil	Yes/No
Microorganisms in the farm soil	Yes/No
Chemical residue in the farm soil	Yes/No

Curriculum Aligned Competency Based Test Items
Science
Class 10 – Chapter 16
Sustainable Management of Natural Resources

Coliform bacteria are mainly present in human faeces.
Drinking water should not contain more than 1 coliform per 100 mL.
The graph shows the amount of coliforms found in four water samples collected for a study.



SAS21S101601

1 What can be concluded from the graph?

A. Sample 1 is safe for drinking.
B. Sample 3 is least contaminated with human faeces.
C. Sample 2 and sample 4 are collected from the same water source.
D. Sample 1 and sample 2 contain the same concentration of coliforms.

SAS21S101602

2 Bathing water should not contain more than 1000 coliforms per 100 mL.
Which water sample is safe for bathing?

A. Sample 1
B. Sample 2
C. Sample 3
D. Sample 4

SAS21S101603

3 The same study was repeated over a period of five years.
Which questions can be answered by comparing the results of the study?
Circle 'Yes' or 'No' for the correct response.

Can this question be answered by the study?	Yes or No
Is the pollution in the water sources increasing over time?	Yes/No
Which water source is the most polluted?	Yes/No
What are the chemical wastes present in the water sources?	Yes/No

SAS21S101604

4 Industrial wastes entering rivers often make the river water acidic.
How can this lead to a decrease in the population of many aquatic organisms?

_____

_____

SAS21S101605

5 Which of these activities should be prohibited in water bodies to control water pollution?

A. Fishing
B. Swimming
C. Rowing boats
D. Washing Clothes

The table lists the number of species of plants and animals in four forests over a time period.

	Year - 1980		Year - 2000	
	Plants	Animals	Plants	Animals
Forest 1	780	205	705	180
Forest 2	1255	410	1240	400
Forest 3	1740	685	1080	395
Forest 4	685	210	650	205

SAS21S101606

6 Which forest was the most biodiverse in the year 2000?

A. Forest 1
B. Forest 2
C. Forest 3
D. Forest 4

SAS21S101607

7 Which forest had the greatest loss of biodiversity between 1980 and 2000?

A. Forest 1
B. Forest 2
C. Forest 3
D. Forest 4

SAS21S101608

8 Which of these areas has the greatest biodiversity?

A. Desert
B. Rainforest
C. Grassland
D. Mountain

SAS21S101609

9 Which of these is a bad effect of burning fossil fuels?

A. Depletion of ozone layer
B. Increase in global warming
C. Increase in atmospheric nitrogen
D. Decrease in atmospheric oxygen

SAS21S101610

10 Which of these is an effect of construction of dams?
Circle 'Yes' or 'No' for the correct response.

Is this an effect of construction of dams?	Yes or No
Loss of biodiversity	Yes/No
Displacement of people	Yes/No
Increase in the frequency of floods	Yes/No

Item Number	Question 1
Question Code	SAS21S100101
Grade & Unit Name	Grade 10 | Chemical Reactions and Equations
Concept | Sub-concept	Physical Science | Physical and Chemical change
Competency	Explaining Phenomena Scientifically
Item Type	Constructed Response
Full Credit (Full Score)	Mentions that heating iron to red hot is a physical change as no new substance is formed. For example: • It is a physical change as iron does not change its form.
No Credit (No Score)	Any other response or missing response

Item Number	Question 2
Question Code	SAS21S100102
Grade & Unit Name	Grade 10 | Chemical Reactions and Equations
Concept | Sub-concept	Physical Science | Balanced Chemical Equation
Competency	Explaining Phenomena Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	D. Three atoms of iron combine with water to form one molecule of iron oxide.
No Credit (No Score)	Any other response or missing response

Item Number	Question 3
Question Code	SAS21S100103
Grade & Unit Name	Grade 10 | Chemical Reactions and Equations
Concept | Sub-concept	Physical Science | Combination Reaction
Competency	Explaining Phenomena Scientifically
Item Type	Constructed Response
Full Credit (Full Score)	Mentions that glucose is oxidised. For example: • Glucose is oxidised.
No Credit (No Score)	Any other response or missing response

Item Number	Question 4
Question Code	SAS21S100104
Grade & Unit Name	Grade 10 | Chemical Reactions and Equations
Concept | Sub-concept	Physical Science | Combination Reaction
Competency	Explaining Phenomena Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	D. Products
No Credit (No Score)	Any other response or missing response

Item Number	Question 5
Question Code	SAS21S100105
Grade & Unit Name	Grade 10 | Chemical Reactions and Equations
Concept | Sub-concept	Physical Science | Chemical Changes in Matter
Competency	Interpreting Data & Evidence Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	A. At 1 minute
No Credit (No Score)	Any other response or missing response

Item Number	Question 6
Question Code	SAS21S100106
Grade & Unit Name	Grade 10 | Chemical Reactions and Equations
Concept | Sub-concept	Physical Science | Chemical Changes in Matter
Competency	Interpreting Data & Evidence Scientifically
Item Type	Constructed Response
Full Credit (Full Score)	Mentions that the reaction rate will increase and therefore the volume of hydrogen formed at 2 minutes will be higher.
No Credit (No Score)	Any other response or missing response

Item Number	Question 7
Question Code	SAS21S100107
Grade & Unit Name	Grade 10 | Chemical Reactions and Equations
Concept | Sub-concept	Physical Science | Chemical Changes in Matter
Competency	Evaluating & Designing Scientific Enquiry
Item Type	Complex Multiple Choice Question
Full Credit (Full Score)	No Yes Yes
No Credit (No Score)	Any other response or missing response

Item Number	Question 8
Question Code	SAS21S100108
Grade & Unit Name	Grade 10 | Chemical Reactions and Equations
Concept | Sub-concept	Physical Science | Balanced Chemical Reaction
Competency	Explaining Phenomena Scientifically
Item Type	Constructed Response
Full Credit (Full Score)	$Mg + 2HCl \rightarrow MgCl_2 + H_2$
No Credit (No Score)	Any other response or missing response

Item Number	Question 9
Question Code	SAS21S100109
Grade & Unit Name	Grade 10 | Chemical Reactions and Equations
Concept | Sub-concept	Physical Science | Decomposition Reaction
Competency	Explaining Phenomena Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	C. Rotting of fruits and vegetables
No Credit (No Score)	Any other response or missing response

Item Number	Question 10
Question Code	SAS21S100110
Grade & Unit Name	Grade 10 | Chemical Reactions and Equations
Concept | Sub-concept	Physical Science | Writing a Chemical Equation
Competency	Explaining Phenomena Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	B. $CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O$
No Credit (No Score)	Any other response or missing response

Item Number	Question 1
Question Code	SAS21S100201
Grade & Unit Name	Grade 10 | Acids, Bases and Salts
Concept | Sub-concept	Physical Science | How strong are acid and base solutions?
Competency	Interpreting Data & Evidence Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	B. Liquid 2
No Credit (No Score)	Any other response or missing response

Item Number	Question 2
Question Code	SAS21S100202
Grade & Unit Name	Grade 10 | Acids, Bases and Salts
Concept | Sub-concept	Physical Science | Properties of Acids and Bases
Competency	Evaluating & Designing Scientific Enquiry
Item Type	Complex Multiple Choice Question
Full Credit (Full Score)	No Yes Yes
No Credit (No Score)	Any other response or missing response

Item Number	Question 3
Question Code	SAS21S100203
Grade & Unit Name	Grade 10 | Acids, Bases and Salts
Concept | Sub-concept	Physical Science | Indicators of pH value
Competency	Explaining Phenomena Scientifically
Item Type	Constructed Response
Full Credit (Full Score)	Mentions that the colour will be colour 7 because distilled water is neither acidic nor basic. For example: • Colour 7. Distilled water is neither acidic nor basic.
No Credit (No Score)	Any other response or missing response

Item Number	Question 4
Question Code	SAS21S100204
Grade & Unit Name	Grade 10 | Acids, Bases and Salts
Concept | Sub-concept	Physical Science | Chemical properties of Acids and Bases
Competency	Explaining Phenomena Scientifically
Item Type	Constructed Response
Full Credit (Full Score)	Mentions salt as the response
No Credit (No Score)	Any other response or missing response

Item Number	Question 5
Question Code	SAS21S100205
Grade & Unit Name	Grade 10 | Acids, Bases and Salts
Concept | Sub-concept	Physical Science | Properties of POP
Competency	Explaining Phenomena Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	D. It gets hard when mixed with water.
No Credit (No Score)	Any other response or missing response

Item Number	Question 6
Question Code	SAS21S100206
Grade & Unit Name	Grade 10 | Acids, Bases and Salts
Concept | Sub-concept	Physical Science | Properties of Crystals of Salts
Competency	Interpreting Data & Evidence Scientifically
Item Type	Complex Multiple Choice Question
Full Credit (Full Score)	Yes Yes No
No Credit (No Score)	Any other response or missing response

Item Number	Question 7
Question Code	SAS21S100207
Grade & Unit Name	Grade 10 | Acids, Bases and Salts
Concept | Sub-concept	Physical Science | Properties of Crystals of Salts
Competency	Evaluating & Designing Scientific Enquiry
Item Type	Constructed Response
Full Credit (Full Score)	Mentions that the green salt powder will turn whitish AND that there will be no droplets formed.
Partial Credit (Partial Score)	Mentions any one of the two responses of full credit. For example: • The green salt powder will turn whitish. OR • There will be no droplets formed.
No Credit (No Score)	Any other response or missing response

Item Number	Question 8
Question Code	SAS21S100208
Grade & Unit Name	Grade 10 | Acids, Bases and Salts
Concept | Sub-concept	Physical Science | Properties of Acids and Bases
Competency	Evaluating & Designing Scientific Enquiry
Item Type	Constructed Response
Full Credit (Full Score)	Mentions that Mike was trying to find out whether acids and bases are good conductors of electricity. For example: • Are acids and bases good conductors of electricity?
No Credit (No Score)	Any other response or missing response

Item Number	Question 9
Question Code	SAS21S100209
Grade & Unit Name	Grade 10 | Acids, Bases and Salts
Concept | Sub-concept	Physical Science | Properties of Acids and Bases
Competency	Explaining Phenomena Scientifically
Item Type	Constructed Response
Full Credit (Full Score)	Mentions that the lamp will not glow if the circuit is placed in distilled water as distilled water does not contain free H^+ or free OH^- ions.
No Credit (No Score)	Any other response or missing response

Item Number	Question 10
Question Code	SAS21S100210
Grade & Unit Name	Grade 10 | Acids, Bases and Salts
Concept | Sub-concept	Physical Science | Chemical Properties of Acids and Bases
Competency	Explaining Phenomena Scientifically
Item Type	Constructed Response
Full Credit (Full Score)	Mentions hydrogen as the response
No Credit (No Score)	Any other response or missing response

Item Number	Question 1
Question Code	SAS21S100301
Grade & Unit Name	Grade 10 | Metals and Non-metals
Concept | Sub-concept	Physical Science | Physical Properties of Metals and Non-metals
Competency	Interpreting Data and Evidence Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	D. Nail 1
No Credit (No Score)	Any other response or missing response

Item Number	Question 2
Question Code	SAS21S100302
Grade & Unit Name	Grade 10 | Metals and Non-metals
Concept | Sub-concept	Physical Science | Physical Properties of Metals and Non-metals
Competency	Evaluating and Designing Scientific Enquiry
Item Type	Multiple Choice Question
Full Credit (Full Score)	C. Thickness of wax coatings
No Credit (No Score)	Any other response or missing response

Item Number	Question 3
Question Code	SAS21S100303
Grade & Unit Name	Grade 10 | Metals and Non-metals
Concept | Sub-concept	Physical Science | Chemical Properties of Metals
Competency	Interpreting Data and Evidence Scientifically
Item Type	Constructed Response
Full Credit (Full Score)	C. $ZnSO_4$
No Credit (No Score)	Any other response or missing response

Item Number	Question 4
Question Code	SAS21S100304
Grade & Unit Name	Grade 10 | Metals and Non-metals
Concept | Sub-concept	Physical Science | Chemical Properties of Metals
Competency	Evaluating and Designing Scientific Enquiry
Item Type	Multiple Choice Question
Full Credit (Full Score)	B. Use pieces of small zinc flakes
No Credit (No Score)	Any other response or missing response

Item Number	Question 5
Question Code	SAS21S100305
Grade & Unit Name	Grade 10 | Metals and Non-metals
Concept | Sub-concept	Physical Science | Chemical Properties of Metals
Competency	Explaining Phenomena Scientifically
Item Type	Constructed Response
Full Credit (Full Score)	Mentions that no reaction takes place as copper is less reactive than zinc. For example: • Copper is less reactive than zinc.
No Credit (No Score)	Any other response or missing response

Item Number	Question 6
Question Code	SAS21S100306
Grade & Unit Name	Grade 10 | Metals and Non-metals
Concept | Sub-concept	Physical Science | Occurrence of Metals
Competency	Explaining Phenomena Scientifically
Item Type	Constructed Response
Full Credit (Full Score)	Mentions that gold has very low reactivity.
No Credit (No Score)	Any other response or missing response

Item Number	Question 7
Question Code	SAS21S100307
Grade & Unit Name	Grade 10 | Metals and Non-metals
Concept | Sub-concept	Physical Science | Chemical Properties of Metals
Competency	Interpreting Data and Evidence Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	B. H_2
No Credit (No Score)	Any other response or missing response

Item Number	Question 8
Question Code	SAS21S100308
Grade & Unit Name	Grade 10 | Metals and Non-metals
Concept | Sub-concept	Physical Science | Properties of Ionic Compounds
Competency	Explaining Phenomena Scientifically
Item Type	Complex Multiple Choice Question
Full Credit (Full Score)	No Yes Yes
No Credit (No Score)	Any other response or missing response

Item Number	Question 9
Question Code	SAS21S100309
Grade & Unit Name	Grade 10 | Metals and Non-metals
Concept | Sub-concept	Physical Science | Extraction of Metals
Competency	Interpreting Data and Evidence Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	D. Aluminium
No Credit (No Score)	Any other response or missing response

Item Number	Question 10
Question Code	SAS21S100310
Grade & Unit Name	Grade 10 | Metals and Non-metals
Concept | Sub-concept	Physical Science | Reaction of Metals with Non-metals
Competency	Explaining Phenomena Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	A. One
No Credit (No Score)	Any other response or missing response

Item Number	Question 1
Question Code	SAS21S100401
Grade & Unit Name	Grade 10 | Carbon and its Compounds
Concept | Sub-concept	Physical Science | Bonding in Carbon
Competency	Explaining Phenomena Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	B. Carbon
No Credit (No Score)	Any other response or missing response

Item Number	Question 2
Question Code	SAS21S100402
Grade & Unit Name	Grade 10 | Carbon and its Compounds
Concept | Sub-concept	Physical Science | Bonding in Carbon
Competency	Explaining Phenomena Scientifically
Item Type	Constructed Response
Full Credit (Full Score)	Mentions covalent bond as the response.
No Credit (No Score)	Any other response or missing response

Item Number	Question 3
Question Code	SAS21S100403
Grade & Unit Name	Grade 10 | Carbon and its Compounds
Concept | Sub-concept	Physical Science | Bonding in Carbon
Competency	Explaining Phenomena Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	C. N≡N
No Credit (No Score)	Any other response or missing response

Item Number	Question 4
Question Code	SAS21S100404
Grade & Unit Name	Grade 10 | Carbon and its Compounds
Concept | Sub-concept	Physical Science | Properties of Carbon Compounds
Competency	Explaining Phenomena Scientifically
Item Type	Complex Multiple Choice Question
Full Credit (Full Score)	No Yes Yes
No Credit (No Score)	Any other response or missing response

Item Number	Question 5
Question Code	SAS21S100405
Grade & Unit Name	Grade 10 | Carbon and its Compounds
Concept | Sub-concept	Physical Science | Saturated and Unsaturated Carbon Compounds
Competency	Interpreting Data and Evidence Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	A. One
No Credit (No Score)	Any other response or missing response

Item Number	Question 6
Question Code	SAS21S100406
Grade & Unit Name	Grade 10 | Carbon and its Compounds
Concept | Sub-concept	Physical Science | Saturated and Unsaturated Carbon Compounds
Competency	Interpreting Data and Evidence Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	B. C_2H_4
No Credit (No Score)	Any other response or missing response

Item Number	Question 7
Question Code	SAS21S100407
Grade & Unit Name	Grade 10 | Carbon and its Compounds
Concept | Sub-concept	Physical Science | Homologous Series
Competency	Interpreting Data and Evidence Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	A. C_2H_2
No Credit (No Score)	Any other response or missing response

Item Number	Question 8
Question Code	SAS21S100408
Grade & Unit Name	Grade 10 | Carbon and its Compounds
Concept | Sub-concept	Physical Science | Chemical Properties of Carbon Compounds
Competency	Interpreting Data and Evidence Scientifically
Item Type	Complex Multiple Choice Question
Full Credit (Full Score)	No Yes Yes
No Credit (No Score)	Any other response or missing response

Item Number	Question 9
Question Code	SAS21S100409
Grade & Unit Name	Grade 10 | Carbon and its Compounds
Concept | Sub-concept	Physical Science | Chemical Properties of Carbon Compounds
Competency	Explaining phenomena scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	C. Reaction iii
No Credit (No Score)	Any other response or missing response

Item Number	Question 10
Question Code	SAS21S100410
Grade & Unit Name	Grade 10 | Carbon and its Compounds
Concept | Sub-concept	Physical Science | Allotropes of Carbon
Competency	Explaining Phenomena Scientifically
Item Type	Constructed Response
Full Credit (Full Score)	Mentions that allotrope 2 is harder as each of its atoms has a greater number of bonds than that of allotrope 1. For example, • Allotrope 2. Its atoms have a greater number of bonds than that of allotrope 1.
No Credit (No Score)	Any other response or missing response

Item Number	Question 1
Question Code	SAS21S100501
Grade & Unit Name	Grade 10 | Periodic Classification of Elements
Concept | Sub-concept	Physical Sciences | Periodic Table
Competency	Explaining phenomena scientifically
Item Type	Multiple Choice Questions
Full Credit (Full Score)	C. Dmitri Ivanovich Mendeléev
No Credit (No Score)	Any other response or missing response

Item Number	Question 2
Question Code	SAS21S100502
Grade & Unit Name	Grade 10 | Periodic Classification of Elements
Concept | Sub-concept	Physical Sciences | Newland's Law of Octaves
Competency	Explaining phenomena scientifically
Item Type	Constructed Response
Full Credit (Full Score)	Mentions that Law of Octaves does not hold true for heavier elements.
No Credit (No Score)	Any other response or missing response

Item Number	Question 3
Question Code	SAS21S100503
Grade & Unit Name	Grade 10 | Periodic Classification of Elements
Concept | Sub-concept	Physical Sciences | Position of Element in the Modern Periodic Table
Competency	Explaining phenomena scientifically
Item Type	Constructed Response
Full Credit (Full Score)	Mentions X as Groups and Y as Periods.
No Credit (No Score)	Any other response or missing response

Item Number	Question 4
Question Code	SAS21S100504
Grade & Unit Name	Grade 10 | Periodic Classification of Elements
Concept | Sub-concept	Physical Sciences | Position of Element in the Modern Periodic Table
Competency	Interpreting data and evidence scientifically
Item Type	Multiple Choice Questions
Full Credit (Full Score)	C. Dmitri Ivanovich Mendeléev
No Credit (No Score)	Any other response or missing response

Item Number	Question 5
Question Code	SAS21S100505
Grade & Unit Name	Grade 10 | Periodic Classification of Elements
Concept | Sub-concept	Physical Sciences | Position of Element in the Modern Periodic Table
Competency	Explaining phenomena scientifically
Item Type	Multiple Choice Questions
Full Credit (Full Score)	C. Increase in atomic number
No Credit (No Score)	Any other response or missing response

Item Number	Question 6
Question Code	SAS21S100506
Grade & Unit Name	Grade 10 | Periodic Classification of Elements
Concept | Sub-concept	Physical Sciences | Position of Element in the Modern Periodic Table
Competency	Interpreting data and evidence scientifically
Item Type	Complex Multiple Choice Question
Full Credit (Full Score)	Mentions all three responses correctly. Yes No Yes
No Credit (No Score)	Any other response or missing response

Item Number	Question 7
Question Code	SAS21S100507
Grade & Unit Name	Grade 10 | Periodic Classification of Elements
Concept | Sub-concept	Physical Sciences | Trends in the Modern Periodic Table
Competency	Interpreting data and evidence scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	B. Increase in atomic radius/Increase in electronegativity
No Credit (No Score)	Any other response or missing response

Item Number	Question 8
Question Code	SAS21S100508
Grade & Unit Name	Grade 10 | Periodic Classification of Elements
Concept | Sub-concept	Physical Sciences | Trends in the Modern Periodic Table
Competency	Interpreting data and evidence scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	C. K
No Credit (No Score)	Any other response or missing response

Item Number	Question 9
Question Code	SAS21S100509
Grade & Unit Name	Grade 10 | Periodic Classification of Elements
Concept | Sub-concept	Physical Sciences | Trends in the Modern Periodic Table
Competency	Explaining phenomena scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	D. As
No Credit (No Score)	Any other response or missing response

Item Number	Question 10
Question Code	SAS21S100510
Grade & Unit Name	Grade 10 | Periodic Classification of Elements
Concept | Sub-concept	Physical Sciences | Trends in the Modern Periodic Table
Competency	Explaining phenomena scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	A. So_2
No Credit (No Score)	Any other response or missing response

Item Number	Question 1
Question Code	SAS21S100601
Grade & Unit Name	Grade 10 | Life Processes
Concept | Sub-concept	Life Science | Excretion in Human Beings
Competency	Explaining Phenomena Scientifically
Item Type	Complex Multiple Choice Question
Full Credit (Full Score)	No Yes Yes
No Credit (No Score)	Any other response or missing response

Item Number	Question 2
Question Code	SAS21S100602
Grade & Unit Name	Grade 10 | Life Processes
Concept | Sub-concept	Life Science | Excretion in Human Beings
Competency	Explaining Phenomena Scientifically
Item Type	Constructed Response
Full Credit (Full Score)	Mentions that the blood with wastes is coming from a vein. For example: • Blood with waste is coming from a vein.
No Credit (No Score)	Any other response or missing response

Item Number	Question 3
Question Code	SAS21S100603
Grade & Unit Name	Grade 10 | Life Processes
Concept | Sub-concept	Life Science | Excretion in Human Beings
Competency	Explaining Phenomena Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	C. Kidneys
No Credit (No Score)	Any other response or missing response

Item Number	Question 4
Question Code	SAS21S100604
Grade & Unit Name	Grade 10 | Life Processes
Concept | Sub-concept	Life Science | Transport of Water in Plants
Competency	Evaluating & Designing Scientific Enquiry
Item Type	Multiple Choice Question
Full Credit (Full Score)	B. Image
No Credit (No Score)	Any other response or missing response

Item Number	Question 5
Question Code	SAS21S100605
Grade & Unit Name	Grade 10 | Life Processes
Concept | Sub-concept	Life Science | Transport of Water in Plants
Competency	Explaining Phenomena Scientifically
Item Type	Constructed Response
Full Credit (Full Score)	Mentions that loss of water by plant leaves helps the plant in absorbing water and minerals from the soil and also in controlling the temperature. For example: • It helps the plant to absorb water and minerals from the soil. • It helps the plant to control its temperature.
No Credit (No Score)	Any other response or missing response

Item Number	Question 6
Question Code	SAS21S100606
Grade & Unit Name	Grade 10 | Life Processes
Concept | Sub-concept	Life Science | Transportation in Human Beings
Competency	Interpreting Data & Evidence Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	B. Capillaries are permeable to gases.
No Credit (No Score)	Any other response or missing response

Item Number	Question 7
Question Code	SAS21S100607
Grade & Unit Name	Grade 10 | Life Processes
Concept | Sub-concept	Life Science | Transportation in Human Beings
Competency	Interpreting Data & Evidence Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	B. Pulmonary veins will receive blood with less oxygen.
No Credit (No Score)	Any other response or missing response

Item Number	Question 8
Question Code	SAS21S100608
Grade & Unit Name	Grade 10 | Life Processes
Concept | Sub-concept	Life Science | Nutrition in Human Beings
Competency	Explaining Phenomena Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	A. 1
No Credit (No Score)	Any other response or missing response

Item Number	Question 9
Question Code	SAS21S100609
Grade & Unit Name	Grade 10 | Life Processes
Concept | Sub-concept	Life Science | Nutrition in Human Beings
Competency	Explaining Phenomena Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	C. Digestion of fats
No Credit (No Score)	Any other response or missing response

Item Number	Question 10
Question Code	SAS21S100610
Grade & Unit Name	Grade 10 | Life Processes
Concept | Sub-concept	Life Science | Respiration
Competency	Explaining Phenomena Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	A. Smoking destroys the hair-like structures.
No Credit (No Score)	Any other response or missing response

Item Number	Question 1
Question Code	SAS21S100701
Grade & Unit Name	Grade 10 | Control and Coordination
Concept | Sub-concept	Life Science | Movement Due to Growth
Competency	Explaining Phenomena Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	B. Image
No Credit (No Score)	Any other response or missing response

Item Number	Question 2
Question Code	SAS21S100702
Grade & Unit Name	Grade 10 | Control and Coordination
Concept | Sub-concept	Life Science | Movement Due to Growth
Competency	Explaining Phenomena Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	B. Against gravity
No Credit (No Score)	Any other response or missing response

Item Number	Question 3
Question Code	SAS21S100703
Grade & Unit Name	Grade 10 | Control and Coordination
Concept | Sub-concept	Life Science | Plant Hormones
Competency	Explaining Phenomena Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	C. Cytokinins
No Credit (No Score)	Any other response or missing response

Item Number	Question 4
Question Code	SAS21S100704
Grade & Unit Name	Grade 10 | Control and Coordination
Concept | Sub-concept	Life Science | Reflex Action
Competency	Explaining Phenomena Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	B. Receptor → Sensory Neurone → Relay Neurone → Motor Neurone → Effector
No Credit (No Score)	Any other response or missing response

Item Number	Question 5
Question Code	SAS21S100705
Grade & Unit Name	Grade 10 | Control and Coordination
Concept | Sub-concept	Life Science | Reflex Action
Competency	Explaining Phenomena Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	B. Spinal cord
No Credit (No Score)	Any other response or missing response

Item Number	Question 6
Question Code	SAS21S100706
Grade & Unit Name	Grade 10 | Control and Coordination
Concept | Sub-concept	Life Science | Hormones in Humans
Competency	Interpreting Data and Evidence Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	C. The average height of girls during puberty is greater than that of boys.
No Credit (No Score)	Any other response or missing response

Item Number	Question 7
Question Code	SAS21S100707
Grade & Unit Name	Grade 10 | Control and Coordination
Concept | Sub-concept	Life Science | Hormones in Humans
Competency	Interpreting Data and Evidence Scientifically
Item Type	Constructed Response
Full Credit (Full Score)	Mentions that the title is incorrect because there is no data for height of girls and boys at birth For example: • The title is incorrect because the heights of boys and girls are shown from age 4 onwards. OR • The title is incorrect because the height of boys and girls from 0 to 3 years is not given.
No Credit (No Score)	Any other response or missing response

Item Number	Question 8
Question Code	SAS21S100708
Grade & Unit Name	Grade 10 | Control and Coordination
Concept | Sub-concept	Life Science | Hormones in Humans
Competency	Explaining Phenomena Scientifically
Item Type	Complex Multiple Choice Question
Full Credit (Full Score)	Yes No Yes
No Credit (No Score)	Any other response or missing response

Item Number	Question 9
Question Code	SAS21S100709
Grade & Unit Name	Grade 10 | Control and Coordination
Concept | Sub-concept	Life Science | Human Brain
Competency	Explaining Phenomena Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	D. Jumping from a height
No Credit (No Score)	Any other response or missing response

Item Number	Question 10
Question Code	SAS21S100710
Grade & Unit Name	Grade 10 | Control and Coordination
Concept | Sub-concept	Life Science | Hormones in Humans
Competency	Explaining Phenomena Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	C. Diabetes
No Credit (No Score)	Any other response or missing response

Item Number	Question 1
Question Code	SAS21S100801
Grade & Unit Name	Grade 10 | How do Organisms Reproduce?
Concept | Sub-concept	Life Science | Aquatic Life with pH of Water
Competency	Interpreting Data and Evidence Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	B. Population 2
No Credit (No Score)	Any other response or missing response

Item Number	Question 2
Question Code	SAS21S100802
Grade & Unit Name	Grade 10 | How do Organisms Reproduce?
Concept | Sub-concept	Life Science | Aquatic Life with pH of Water
Competency	Explaining Phenomena Scientifically
Item Type	Complex Multiple Choice Question
Full Credit (Full Score)	No Yes No
No Credit (No Score)	Any other response or missing response

Item Number	Question 3
Question Code	SAS21S100803
Grade & Unit Name	Grade 10 | How do Organisms Reproduce?
Concept | Sub-concept	Life Science | Aquatic Life with pH of Water
Competency	Interpreting Data and Evidence Scientifically
Item Type	Constructed Response
Full Credit (Full Score)	Mentions that the fish in both tanks will not survive as the conditions are unfavourable for all fish For example: • The fish in both tanks will not survive. • The conditions are unfavourable for all fish.
No Credit (No Score)	Any other response or missing response

Item Number	Question 4
Question Code	SAS21S100804
Grade & Unit Name	Grade 10 | How do Organisms Reproduce?
Concept | Sub-concept	Life Science | Vegetative Propagation
Competency	Explaining Phenomena Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	A. Some plants can regenerate.
No Credit (No Score)	Any other response or missing response

Item Number	Question 5
Question Code	SAS21S100805
Grade & Unit Name	Grade 10 | How do Organisms Reproduce?
Concept | Sub-concept	Life Science | Vegetative Propagation
Competency	Explaining Phenomena Scientifically
Item Type	Constructed Response
Full Credit (Full Score)	Mentions the term tissue culture
No Credit (No Score)	Any other response or missing response

Item Number	Question 6
Question Code	SAS21S100806
Grade & Unit Name	Grade 10 | How do Organisms Reproduce?
Concept | Sub-concept	Life Science | Reproductive Health
Competency	Explaining Phenomena Scientifically
Item Type	Constructed Response
Full Credit (Full Score)	Mentions puberty/adolescence as the correct response
No Credit (No Score)	Any other response or missing response

Item Number	Question 7
Question Code	SAS21S100807
Grade & Unit Name	Grade 10 | How do Organisms Reproduce?
Concept | Sub-concept	Life Science | Reproductive Health
Competency	Explaining Phenomena Scientifically
Item Type	Complex Multiple Choice Question
Full Credit (Full Score)	Yes Yes No
No Credit (No Score)	Any other response or missing response

Item Number	Question 8
Question Code	SAS21S100808
Grade & Unit Name	Grade 10 | How do Organisms Reproduce?
Concept | Sub-concept	Life Science | Reproduction In Human Beings
Competency	Explaining Phenomena Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	A. 1
No Credit (No Score)	Any other response or missing response

Item Number	Question 9
Question Code	SAS21S100809
Grade & Unit Name	Grade 10 | How do Organisms Reproduce?
Concept | Sub-concept	Life Science | Reproduction In Human Beings
Competency	Explaining Phenomena Scientifically
Item Type	Constructed Response
Full Credit (Full Score)	Mentions 1 as the correct answer
No Credit (No Score)	Any other response or missing response

Item Number	Question 10
Question Code	SAS21S100810
Grade & Unit Name	Grade 10 | How do Organisms Reproduce?
Concept | Sub-concept	Life Science | Reproductive Health
Competency	Explaining Phenomena Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	D. Gonorrhoea
No Credit (No Score)	Any other response or missing response

Item Number	Question 1
Question Code	SAS21S100901
Grade & Unit Name	Grade 10 | Heredity and Evolution
Concept | Sub-concept	Life Science | Rules of Inheritance Of Traits
Competency	Interpreting Data & Evidence Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	B. 50%
No Credit (No Score)	Any other response or missing response

Item Number	Question 2
Question Code	SAS21S100902
Grade & Unit Name	Grade 10 | Heredity and Evolution
Concept | Sub-concept	Life Science | Rules of Inheritance Of Traits
Competency	Interpreting Data & Evidence Scientifically
Item Type	Constructed Response
Full Credit (Full Score)	Mentions that all flowers in the next generation would be red as R is the dominant trait, the flowers will inherit Rw set of genes For example: • All flowers would be red as R is dominant • All flowers would be red as they would have Rw set in the first generation.
No Credit (No Score)	Any other response or missing response

Item Number	Question 3
Question Code	SAS21S100903
Grade & Unit Name	Grade 10 | Heredity and Evolution
Concept | Sub-concept	Life Science | Rules of Inheritance Of Traits
Competency	Explaining Phenomena Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	A. Mutation
No Credit (No Score)	Any other response or missing response

Item Number	Question 4
Question Code	SAS21S100904
Grade & Unit Name	Grade 10 | Heredity and Evolution
Concept | Sub-concept	Life Science | Fossils
Competency	Interpreting Data & Evidence Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	C. Layer 6
No Credit (No Score)	Any other response or missing response

Item Number	Question 5
Question Code	SAS21S100905
Grade & Unit Name	Grade 10 | Heredity and Evolution
Concept | Sub-concept	Life Science | Fossils
Competency	Interpreting Data & Evidence Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	B. Layer 3 and Layer 9
No Credit (No Score)	Any other response or missing response

Item Number	Question 6
Question Code	SAS21S100906
Grade & Unit Name	Grade 10 | Heredity and Evolution
Concept | Sub-concept	Life Science | Determination of Sex
Competency	Interpreting Data & Evidence Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	B. Mother xx/Father XY
No Credit (No Score)	Any other response or missing response

Item Number	Question 7
Question Code	SAS21S100907
Grade & Unit Name	Grade 10 | Heredity and Evolution
Concept | Sub-concept	Life Science | Acquired and Inherited Traits
Competency	Explaining Phenomena Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	A. Short hair
No Credit (No Score)	Any other response or missing response

Item Number	Question 8
Question Code	SAS21S100908
Grade & Unit Name	Grade 10 | Heredity and Evolution
Concept | Sub-concept	Life Science | Speciation
Competency	Explaining Phenomena Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	A. They cannot interbreed.
No Credit (No Score)	Any other response or missing response

Item Number	Question 9
Question Code	SAS21S100909
Grade & Unit Name	Grade 10 | Heredity and Evolution
Concept | Sub-concept	Life Science | Speciation
Competency	Explaining Phenomena Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	C. Changes in DNA
No Credit (No Score)	Any other response or missing response

Item Number	Question 10
Question Code	SAS21S100910
Grade & Unit Name	Grade 10 | Heredity and Evolution
Concept | Sub-concept	Life Science | Evolution
Competency	Explaining Phenomena Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	Mentions all three responses correctly Yes No No
No Credit (No Score)	Any other response or missing response

Item Number	Question 1
Question Code	SAS21S101001
Grade & Unit Name	Grade 10 | Light: Reflection and Refraction
Concept | Sub-concept	Physical Science | Image Formation by Spherical Mirrors
Competency	Interpreting Data & Evidence Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	C. Distance between pole and centre of curvature is twice the focal length.
No Credit (No Score)	Any other response or missing response

Item Number	Question 2
Question Code	SAS21S101002
Grade & Unit Name	Grade 10 | Light: Reflection and Refraction
Concept | Sub-concept	Physical Science | Image Formation by Spherical Mirrors
Competency	Interpreting Data & Evidence Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	C. Diagram 3
No Credit (No Score)	Any other response or missing response

Item Number	Question 3
Question Code	SAS21S101003
Grade & Unit Name	Grade 10 | Light: Reflection and Refraction
Concept | Sub-concept	Physical Science | Image Formation by Spherical Mirrors
Competency	Interpreting Data & Evidence Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	A. When object is located within the focal length
No Credit (No Score)	Any other response or missing response

Item Number	Question 4
Question Code	SAS21S101004
Grade & Unit Name	Grade 10 | Light: Reflection and Refraction
Concept | Sub-concept	Physical Science | Image Formation by Spherical Mirrors
Competency	Explaining Phenomena Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	No Yes No
No Credit (No Score)	Any other response or missing response

Item Number	Question 5
Question Code	SAS21S101005
Grade & Unit Name	Grade 10 | Light: Reflection and Refraction
Concept | Sub-concept	Physical Science | Image Formation by Spherical Mirrors
Competency	Interpreting Data & Evidence Scientifically
Item Type	Complex Multiple Choice Question
Full Credit (Full Score)	Yes Yes Yes
No Credit (No Score)	Any other response or missing response

Item Number	Question 6
Question Code	SAS21S101006
Grade & Unit Name	Grade 10 | Light: Reflection and Refraction
Concept | Sub-concept	Physical Science | Image Formation by Spherical Mirrors
Competency	Interpreting Data & Evidence Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	D. Rear-view mirror of a car
No Credit (No Score)	Any other response or missing response

Item Number	Question 7
Question Code	SAS21S101007
Grade & Unit Name	Grade 10 | Light: Reflection and Refraction
Concept | Sub-concept	Physical Science | Image Formation by Spherical Mirrors
Competency	Explaining Phenomena Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	A. The image is real and larger than the object.
No Credit (No Score)	Any other response or missing response

Item Number	Question 8
Question Code	SAS21S101008
Grade & Unit Name	Grade 10 | Light: Reflection and Refraction
Concept | Sub-concept	Physical Science | The Refractive Index
Competency	Explaining Phenomena Scientifically
Item Type	Constructed Response
Full Credit (Full Score)	Mentions that 'X' represents air. • Air
No Credit (No Score)	Any other response or missing response

Item Number	Question 9
Question Code	SAS21S101009
Grade & Unit Name	Grade 10 | Light: Reflection and Refraction
Concept | Sub-concept	Physical Science | Refraction Through a Rectangular Glass Slab
Competency	Explaining Phenomena Scientifically
Item Type	Complex Multiple Choice Question
Full Credit (Full Score)	C. Flint glass/water
No Credit (No Score)	Any other response or missing response

Item Number	Question 10
Question Code	SAS21S101010
Grade & Unit Name	Grade 10 | Light: Reflection and Refraction
Concept | Sub-concept	Physical Science | Power of a Lens
Competency	Explaining Phenomena Scientifically
Item Type	Constructed Response
Full Credit (Full Score)	Mentions that a lens with a negative focal length has a negative power by the mentioned formula. Concave lenses have a negative power. • The lens is concave. A lens with a negative focal length has a negative power. Concave lenses have negative power.
No Credit (No Score)	Any other response or missing response

Item Number	Question 1
Question Code	SAS21S101101
Grade & Unit Name	Grade 10 | The Human Eye and The Colourful World
Concept | Sub-concept	Life Science | The Human Eye
Competency	Explaining Phenomena Scientifically
Item Type	Constructed Response
Full Credit (Full Score)	Mentions X is iris
No Credit (No Score)	Any other response or missing response

Item Number	Question 2
Question Code	SAS21S101102
Grade & Unit Name	Grade 10 | The Human Eye and The Colourful World
Concept | Sub-concept	Life Science | The Human Eye
Competency	Interpreting Data & Evidence Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	D. Cornea
No Credit (No Score)	Any other response or missing response

Item Number	Question 3
Question Code	SAS21S101103
Grade & Unit Name	Grade 10 | The Human Eye and the Colourful World
Concept | Sub-concept	Life Science | The Human Eye
Competency	Interpreting Data & Evidence Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	B. Real and inverted
No Credit (No Score)	Any other response or missing response

Item Number	Question 4
Question Code	SAS21S101104
Grade & Unit Name	Grade 10 | The Human Eye and The Colourful World
Concept | Sub-concept	Life Science | The Human Eye
Competency	Explaining Phenomena Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	D. Distance of the candle from the eyes
No Credit (No Score)	Any other response or missing response

Item Number	Question 5
Question Code	SAS21S101105
Grade & Unit Name	Grade 10 | The Human Eye and The Colourful World
Concept | Sub-concept	Life Science | The Human Eye
Competency	Interpreting Data and Evidence Scientifically
Item Type	Constructed Response
Full Credit (Full Score)	B. Image
No Credit (No Score)	Any other response or missing response

Item Number	Question 6
Question Code	SAS21S101106
Grade & Unit Name	Grade 10 | The Human Eye and The Colourful World
Concept | Sub-concept	Life Science | The Human Eye
Competency	Explaining Phenomena Scientifically
Item Type	Constructed Response
Full Credit (Full Score)	Mentions iris as the response
No Credit (No Score)	Any other response or missing response

Item Number	Question 7
Question Code	SAS21S101107
Grade & Unit Name	Grade 10 | The Human Eye and the Colourful World
Concept | Sub-concept	Life Science | Defect of Vision
Competency	Explaining Phenomena Scientifically
Item Type	Constructed Response
Full Credit (Full Score)	Mentions that ageing is the primary reason. For example, • Old age
No Credit (No Score)	Any other response or missing response

Item Number	Question 8
Question Code	SAS21S101108
Grade & Unit Name	Grade 10 | The Human Eye and the Colourful World
Concept | Sub-concept	Life Science | The Human Eye
Competency	Complex Multiple Choice Question
Item Type	No Yes No
Full Credit (Full Score)	D. Distance of the candle from the eyes
No Credit (No Score)	Any other response or missing response

Item Number	Question 9
Question Code	SAS21S101109
Grade & Unit Name	Grade 10 | The Human Eye and the Colourful World
Concept | Sub-concept	Life Science | Dispersion of white light by a glass prism
Competency	Interpreting Data & Evidence Scientifically
Item Type	Complex Multiple Choice Question
Full Credit (Full Score)	Yes No Yes
No Credit (No Score)	Any other response or missing response

Item Number	Question 10
Question Code	SAS21S101110
Grade & Unit Name	Grade 10 | The Human Eye and The Colourful World
Concept | Sub-concept	Life Science | Scattering of Light
Competency	Explaining Phenomena Scientifically
Item Type	Constructed Response
Full Credit (Full Score)	Mentions that the leaves absorb all colours and reflect only the green colour to the eyes
No Credit (No Score)	Any other response or missing response

Item Number	Question 1
Question Code	SAS21S101201
Grade & Unit Name	Grade 10 | Electricity
Concept | Sub-concept	Physical Science | Electrical Resistivity
Competency	Explaining Phenomena Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	A. Material 1
No Credit (No Score)	Any other response or missing response

Item Number	Question 2
Question Code	SAS21S101202
Grade & Unit Name	Grade 10 | Electricity
Concept | Sub-concept	Physical Science | Electrical Resistivity
Competency	Explaining Phenomena Scientifically
Item Type	Constructed Response
Full Credit (Full Score)	Mentions ohm-meter (Ω m) as correct response.
No Credit (No Score)	Any other response or missing response

Item Number	Question 3
Question Code	SAS21S101203
Grade & Unit Name	Grade 10 | Electricity
Concept | Sub-concept	Physical Science | Electrical Resistivity
Competency	Explaining Phenomena Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	D. It has high resistivity and high melting point.
No Credit (No Score)	Any other response or missing response

Item Number	Question 4
Question Code	SAS21S101204
Grade & Unit Name	Grade 10 | Electricity
Concept | Sub-concept	Physical Science | Electric Current and Circuit
Competency	Explaining Phenomena Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	D. Distance of the candle from the eyes
No Credit (No Score)	Any other response or missing response

Item Number	Question 5
Question Code	SAS21S101205
Grade & Unit Name	Grade 10 | Electricity
Concept | Sub-concept	Physical Science | Electric Current and Circuit
Competency	Interpreting Data and Evidence Scientifically
Item Type	Constructed Response
Full Credit (Full Score)	Mentions the response as given below, We are given, Amount of electric current, I = 1A;
Partial Credit (Partial Score)	Time of electric current flow, t = 5 min= 300 s The total amount of electric charge that flow within the time, Q = I × t = 1A × 300 s = 300 C
No Credit (No Score)	Any other response or missing response

Item Number	Question 6
Question Code	SAS21S101206
Grade & Unit Name	Grade 10 | Electricity
Concept | Sub-concept	Physical Science | Factors on which resistance depends
Competency	Explaining Phenomena Scientifically
Item Type	Complex Multiple Choice Question
Full Credit (Full Score)	Mentions all three responses correctly. • Yes/Yes/No
No Credit (No Score)	Any other response or missing response

Item Number	Question 7
Question Code	SAS21S101207
Grade & Unit Name	Grade 10 | Electricity
Concept | Sub-concept	Physical Science | Circuit diagram
Competency	Interpreting Data and Evidence Scientifically
Item Type	Complex Multiple Choice Question
Full Credit (Full Score)	No Yes No
No Credit (No Score)	Any other response or missing response

Item Number	Question 8
Question Code	SAS21S101208
Grade & Unit Name	Grade 10 | Electricity
Concept | Sub-concept	Physical Science | Factors on Which Resistance Depends
Competency	Explaining Phenomena Scientifically
Item Type	Constructed Response
Full Credit (Full Score)	Mentions that the ammeter's reading will be decreased by one-half.
No Credit (No Score)	Any other response or missing response

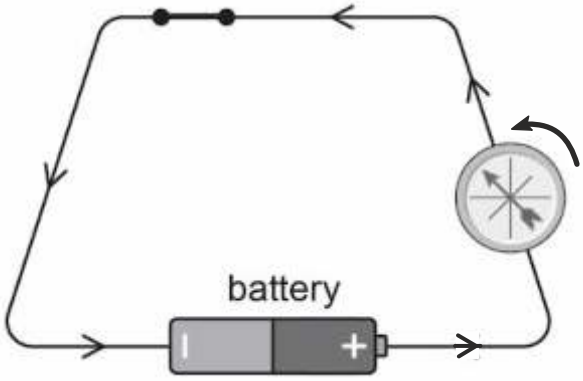
Item Number	Question 9
Question Code	SAS21S101209
Grade & Unit Name	Grade 10 | Electricity
Concept | Sub-concept	Physical Science | Resistance of a System of Resistors
Competency	Interpreting Data and Evidence Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	D. 9 Ω
No Credit (No Score)	Any other response or missing response

Item Number	Question 10
Question Code	SAS21S101210
Grade & Unit Name	Grade 10 | Electricity
Concept | Sub-concept	Physical Science | Resistance of a System of Resistors
Competency	Interpreting Data and Evidence Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	A. less than 1 Ω
No Credit (No Score)	Any other response or missing response

Item Number	Question 1
Question Code	SAS21S101301
Grade & Unit Name	Grade 10 | Magnetic Effects of Electric Current
Concept | Sub-concept	Physical Science | Magnetic Field and Field Lines
Competency	Interpreting Data and Evidence Scientifically
Item Type	Constructed Response
Full Credit (Full Score)	Mentions that the ammeter's reading will be decreased by one-half.
No Credit (No Score)	Any other response or missing response

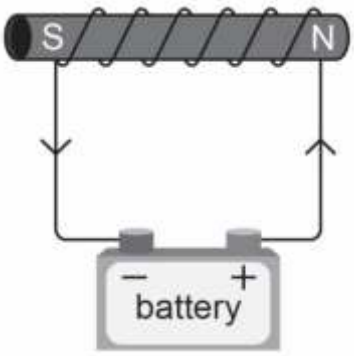
Item Number	Question 2
Question Code	SAS21S101302
Grade & Unit Name	Grade 10 | Magnetic Effects of Electric Current
Concept | Sub-concept	Physical Science | Magnetic Field and Field Lines
Competency	Explaining Phenomena Scientifically
Item Type	Complex Multiple Choice Question
Full Credit (Full Score)	No Yes No
No Credit (No Score)	Any other response or missing response

Item Number	Question 3
Question Code	SAS21S101303
Grade & Unit Name	Grade 10 | Magnetic Effects of Electric Current
Concept | Sub-concept	Physical Science | Magnetic Field Due To Current Carrying Conductor
Competency	Evaluating and Designing Scientific Enquiry
Item Type	Multiple Choice Question
Full Credit (Full Score)	B. The deflection of the needle will increase.
No Credit (No Score)	Any other response or missing response

Item Number	Question 4
Question Code	SAS21S101304
Grade & Unit Name	Grade 10 | Magnetic Effects of Electric Current
Concept | Sub-concept	Physical Science | Magnetic Field Due To Current Carrying Conductor
Competency	Evaluating and Designing Scientific Enquiry
Item Type	Constructed Response
Full Credit (Full Score)	
No Credit (No Score)	Any other response or missing response

Item Number	Question 5
Question Code	SAS21S101305
Grade & Unit Name	Grade 10 | Magnetic Effects of Electric Current
Concept | Sub-concept	Physical Science | Electromagnetic Induction
Competency	Interpreting Data and Evidence Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	C. Electromagnet 3
No Credit (No Score)	Any other response or missing response

Item Number	Question 6
Question Code	SAS21S101306
Grade & Unit Name	Grade 10 | Magnetic Effects of Electric Current
Concept | Sub-concept	Physical Science | Electromagnetic Induction
Competency	Evaluating and Designing Scientific Enquiry
Item Type	Complex Multiple Choice Question
Full Credit (Full Score)	Yes Yes No
No Credit (No Score)	Any other response or missing response

Item Number	Question 7
Question Code	SAS21S101307
Grade & Unit Name	Grade 10 | Magnetic Effects of Electric Current
Concept | Sub-concept	Physical Science | Electromagnetic Induction
Competency	Explaining Phenomena Scientifically
Item Type	Constructed Response
Full Credit (Full Score)	
No Credit (No Score)	Any other response or missing response

Item Number	Question 8
Question Code	SAS21S101308
Grade & Unit Name	Grade 10 | Magnetic Effects of Electric Current
Concept | Sub-concept	Physical Science | Electromagnetic Induction
Competency	Explaining Phenomena Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	B. Electric bell
No Credit (No Score)	Any other response or missing response

Item Number	Question 9
Question Code	SAS21S101309
Grade & Unit Name	Grade 10 | Magnetic Effects of Electric Current
Concept | Sub-concept	Physical Science | Domestic Electric Circuits
Competency	Explaining Phenomena Scientifically
Item Type	Constructed Response
Full Credit (Full Score)	Mentions black wire as the response.
No Credit (No Score)	Any other response or missing response

Item Number	Question 10
Question Code	SAS21S101310
Grade & Unit Name	Grade 10 | Magnetic Effects of Electric Current
Concept | Sub-concept	Physical Science | Domestic Electric Circuits
Competency	Explaining Phenomena Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	D. 15 Ampere
No Credit (No Score)	Any other response or missing response

Item Number	Question 1
Question Code	SAS21S101401
Grade & Unit Name	Grade 10 | Sources of Energy
Concept | Sub-concept	Earth Science | Good Source Of Energy
Competency	Explaining Phenomena Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	C. LPG
No Credit (No Score)	Any other response or missing response

Item Number	Question 2
Question Code	SAS21S101401
Grade & Unit Name	Grade 10 | Sources of Energy
Concept | Sub-concept	Earth Science | Solar Energy
Competency	Interpreting Data and Evidence Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	A. At noon under a clear sky
No Credit (No Score)	Any other response or missing response

Item Number	Question 3
Question Code	SAS21S101403
Grade & Unit Name	Grade 10 | Sources of Energy
Concept | Sub-concept	Earth Science | Nuclear Energy
Competency	Explaining Phenomena Scientifically
Item Type	Constructed Response
Full Credit (Full Score)	Mentions ^{3}He as correct response
No Credit (No Score)	Any other response or missing response

Item Number	Question 4
Question Code	SAS21S101404
Grade & Unit Name	Grade 10 | Sources of Energy
Concept | Sub-concept	Earth Science | Energy from Sea
Competency	Explaining Phenomena Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	A. Tidal energy
No Credit (No Score)	Any other response or missing response

Item Number	Question 4
Question Code	SAS21S101404
Grade & Unit Name	Grade 10 | Sources of Energy
Concept | Sub-concept	Earth Science | Fossils Fuels
Competency	Explaining Phenomena Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	B. Coal
No Credit (No Score)	Any other response or missing response

Item Number	Question 6
Question Code	SAS21S101406
Grade & Unit Name	Grade 10 | Sources of Energy
Concept | Sub-concept	Earth Science | Biomass
Competency	Interpreting Data and Evidence Scientifically
Item Type	Complex Multiple Choice Question
Full Credit (Full Score)	No Yes Yes
No Credit (No Score)	Any other response or missing response

Item Number	Question 7
Question Code	SAS21S101407
Grade & Unit Name	Grade 10 | Sources of Energy
Concept | Sub-concept	Earth Science | Fossil Fuels
Competency	Interpreting Data and Evidence Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	D. More than 300 million years
No Credit (No Score)	Any other response or missing response

Item Number	Question 8
Question Code	SAS21S101408
Grade & Unit Name	Grade 10 | Sources of Energy
Concept | Sub-concept	Earth Science | Fossil Fuels
Competency	Explaining Phenomena Scientifically
Item Type	Constructed Response
Full Credit (Full Score)	Mentions any three examples of fossil fuels. For example: • Coal, petrol, diesel, LPG
No Credit (No Score)	Any other response or missing response

Item Number	Question 9
Question Code	SAS21S101409
Grade & Unit Name	Grade 10 | Sources of Energy
Concept | Sub-concept	Earth Science | Biomass
Competency	Explaining Phenomena Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	D. As manure for plants
No Credit (No Score)	Any other response or missing response

Item Number	Question 10
Question Code	SAS21S101410
Grade & Unit Name	Grade 10 | Sources of Energy
Concept | Sub-concept	Earth Science | Fossil Fuels
Competency	Interpreting Data and Evidence Scientifically
Item Type	Complex Multiple Choice Question
Full Credit (Full Score)	Yes No No
No Credit (No Score)	Any other response or missing response

Item Number	Question 1
Question Code	SAS21S101501
Grade & Unit Name	Grade 10 | Our Environment
Concept | Sub-concept	Earth Science | Food Chains and Webs
Competency	Explaining Phenomena Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	D. Cricket and Grasshopper
No Credit (No Score)	Any other response or missing response

Item Number	Question 2
Question Code	SAS21S101502
Grade & Unit Name	Grade 10 | Our Environment
Concept | Sub-concept	Earth Science | Food Chains and Webs
Competency	Explaining Phenomena Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	C. 10%
No Credit (No Score)	Any other response or missing response

Item Number	Question 3
Question Code	SAS21S101503
Grade & Unit Name	Grade 10 | Our Environment
Concept | Sub-concept	Earth Science | Food Chains and Webs
Competency	Interpreting Data and Evidence Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	B. Image
No Credit (No Score)	Any other response or missing response

Item Number	Question 4
Question Code	SAS21S101504
Grade & Unit Name	Grade 10 | Our Environment
Concept | Sub-concept	Earth Science | Fossil Fuels
Competency	Explaining Phenomena Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	A. Grass
No Credit (No Score)	Any other response or missing response

Item Number	Question 5
Question Code	SAS21S101505
Grade & Unit Name	Grade 10 | Our Environment
Concept | Sub-concept	Earth Science | Food Chains and Webs
Competency	Explaining Phenomena Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	B. Level 2
No Credit (No Score)	Any other response or missing response

Item Number	Question 6
Question Code	SAS21S101506
Grade & Unit Name	Grade 10 | Our Environment
Concept | Sub-concept	Earth Science | Ozone Layer and Its Depletion
Competency	Explaining Phenomena Scientifically
Item Type	Constructed Response
Full Credit (Full Score)	Mentions that UV rays help in splitting oxygen molecules into free oxygen.
No Credit (No Score)	Any other response or missing response

Item Number	Question 7
Question Code	SAS21S101507
Grade & Unit Name	Grade 10 | Our Environment
Concept | Sub-concept	Earth Science | Ozone Layer and Its Depletion
Competency	Interpreting Data and Evidence Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	D. Skin cancer
No Credit (No Score)	Any other response or missing response

Item Number	Question 8
Question Code	SAS21S101508
Grade & Unit Name	Grade 10 | Our Environment
Concept | Sub-concept	Earth Science | Managing the Garbage We Produce
Competency	Explaining Phenomena Scientifically
Item Type	Constructed Response
Full Credit (Full Score)	Mentions fruit peels as the response.
No Credit (No Score)	Any other response or missing response

Item Number	Question 9
Question Code	SAS21S101509
Grade & Unit Name	Grade 10 | Our Environment
Concept | Sub-concept	Earth Science | Managing the Garbage We Produce
Competency	Interpreting Data and Evidence Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	C. Composting takes place only in the presence of oxygen.
No Credit (No Score)	Any other response or missing response

Item Number	Question 10
Question Code	SAS21S101510
Grade & Unit Name	Grade 10 | Our Environment
Concept | Sub-concept	Earth Science | Managing the Garbage We Produce
Competency	Interpreting Data and Evidence Scientifically
Item Type	Complex Multiple Choice Question
Full Credit (Full Score)	No No Yes
No Credit (No Score)	Any other response or missing response

Item Number	Question 1
Question Code	SAS21S101601
Grade & Unit Name	Grade 10 | Sustainable Management of Natural Resources
Concept | Sub-concept	Earth Science | Water Pollution
Competency	Interpreting Data and Evidence Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	C. Sample 2 and sample 4 are collected from the same water source.
No Credit (No Score)	Any other response or missing response

Item Number	Question 2
Question Code	SAS21S101602
Grade & Unit Name	Grade 10 | Sustainable Management of Natural Resources
Concept | Sub-concept	Earth Science | Water Pollution
Competency	Interpreting Data and Evidence Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	A. Sample 1
No Credit (No Score)	Any other response or missing response

Item Number	Question 3
Question Code	SAS21S101603
Grade & Unit Name	Grade 10 | Sustainable Management of Natural Resources
Concept | Sub-concept	Earth Science | Water Pollution
Competency	Evaluating and Designing Scientific Enquiry
Item Type	Complex Multiple Choice Question
Full Credit (Full Score)	Yes Yes No
No Credit (No Score)	Any other response or missing response

Item Number	Question 4
Question Code	SAS21S101604
Grade & Unit Name	Grade 10 | Sustainable Management of Natural Resources
Concept | Sub-concept	Earth Science | Water Pollution
Competency	Explaining Phenomena Scientifically
Item Type	Constructed Response
Full Credit (Full Score)	Mentions that acidic water can kill many aquatic organisms. For example • Many aquatic organisms cannot survive in acidic water.
No Credit (No Score)	Any other response or missing response

Item Number	Question 5
Question Code	SAS21S101605
Grade & Unit Name	Grade 10 | Sustainable Management of Natural Resources
Concept | Sub-concept	Earth Science | Water Pollution
Competency	Explaining Phenomena Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	D. Washing Clothes
No Credit (No Score)	Any other response or missing response

Item Number	Question 6
Question Code	SAS21S101606
Grade & Unit Name	Grade 10 | Sustainable Management of Natural Resources
Concept | Sub-concept	Earth Science | Forest and Wildlife
Competency	Interpreting Data and Evidence Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	B. Forest 2
No Credit (No Score)	Any other response or missing response

Item Number	Question 7
Question Code	SAS21S101607
Grade & Unit Name	Grade 10 | Sustainable Management of Natural Resources
Concept | Sub-concept	Earth Science | Forest and Wildlife
Competency	Interpreting Data and Evidence Scientifically
Item Type	Complex Multiple Choice Question
Full Credit (Full Score)	C. Forest 3
No Credit (No Score)	Any other response or missing response

Item Number	Question 8
Question Code	SAS21S101604
Grade & Unit Name	Grade 10 | Sustainable Management of Natural Resources
Concept | Sub-concept	Earth Science | Forest and Wildlife
Competency	Explaining Phenomena Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	B. Rainforest
No Credit (No Score)	Any other response or missing response

Item Number	Question 9
Question Code	SAS21S101609
Grade & Unit Name	Grade 10 | Sustainable Management of Natural Resources
Concept | Sub-concept	Earth Science | Coal and Petroleum
Competency	Explaining Phenomena Scientifically
Item Type	Multiple Choice Question
Full Credit (Full Score)	B. Increase in Global Warming
No Credit (No Score)	Any other response or missing response

Item Number	Question 10
Question Code	SAS21S101610
Grade & Unit Name	Grade 10 | Sustainable Management of Natural Resources
Concept | Sub-concept	Earth Science | Dams
Competency	Explaining Phenomena Scientifically
Item Type	Complex Multiple Choice Question
Full Credit (Full Score)	Yes Yes No
No Credit (No Score)	Any other response or missing response