BRITISH COUNCIL

CBSE

Competency-based education for CBSE

Item Bank:

Science Class 6

September 2021

Content created by AlphaPlus

Introduction for teachers

A bank of resources has been created to support teachers to develop and administer end-of-class tests. These resources should be used together. You can view and download the following resources from http://cbseacademic.nic.in:

- Learning ladder for science
- Assessment specification for science
- Sample lesson plans

This document is a compilation of the sample items for Science Class 6. There are 42 items.

This item bank is supported by the assessment specification which sets out the end-of-class assessment requirements and the learning ladder for the subject which maps the CBSE syllabi content to the NCERT curriculum. The item index (page 6) shows how each item maps to the learning ladder content and the assessment objectives.

What these assessment items can be used for

You can use the bank of questions in whatever way you wish but three main purposes have been identified:

- Create end-of-class assessments using the items from the bank to meet the requirements set out in the assessment specifications.
- Create end-of-topic tests using the items from the bank for when you finish teaching a topic.
- Use individual or groups of questions from the bank to create or add to worksheets for use in class and for homework.

What is in this document

You will find linked questions and single questions which cover different aspects of the learning ladder content and different assessment objectives. You can use these questions to create your own assessments.

Each item in this document begins with the metadata (see Figure 1). The metadata gives details of the content, assessment objective coverage and the number of marks.

There is then a section showing any source material needed followed by the questions themselves and finally the mark scheme for the questions.

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
Science6SA1	1				6.1.1	1

Figure 1: Example of metadata

How to use the assessment items

You can peruse the bank of items by flicking through this document and selecting questions you wish to use. However, if you are assessing specific content then you can use the learning ladder to identify this content and then use the item index (page 6) to find any items which cover that content.

Please note that not all of the content will have items. The item bank is only a sample of the questions which could be created so it may be necessary for you to write questions of your own to fill gaps.

When you find a relevant assessment item in this document, you can copy and paste the question(s) and any source material into a new Word document which will form the assessment or worksheet. Other questions from the bank can be copied and pasted to this document and an assessment or worksheet covering a range of items created. The questions can then easily be edited in the new document using Word and you can add any questions you write to best meet the needs of your classes.

Once the questions have been pasted into the new document the numbering of the items can be changed so that they run through 1, 2 etc. There should be no need to change the numbering of parts (a), (b) etc unless a question has been deleted.

You can create the mark schemes in the same way by copying the relevant section of the item documents and pasting them into a separate Word document which will form the mark scheme. Again, the question numbering will need to be amended. You can use these mark schemes to make sure that the marking is standardised, particularly if more than one teacher uses the assessment.

When creating an end-of-class test the teacher should use the assessment specification to identify the number of marks and questions needed, the balance of content to be covered and the weighting of the assessment objectives needed. You can then select items from the bank to build a test that meets the assessment specification and then order these in a logical manner so that it allows the students to work through the assessment. You should also add a front page with the assessment name and details of the number of marks and the length of the assessment. Again, the mark scheme can be created at the same time and question numbers will need to be amended.

When copying items from the bank care needs to be taken to keep the format and style of the items consistent including the spacing and layout and ensuring that the number of marks available for each question is clearly linked to the question.

Assessment objectives

This document sets out the assessment objectives for CBSE Science and their percentage weighting for the CBSE end of year tests for the different classes from VI to X.

		Class				
No.	**Description of Assessment Objective**	**VI**	**VII**	**VIII**	**IX**	**X**
AO1	Demonstrate knowledge and understanding of scientific ideas, techniques, and procedures.	40	40	40	30	30
AO2	Apply knowledge and understanding of scientific ideas, techniques and procedures to classroom and real-world situations	40	40	40	30	30
AO3	Analyse scientific information and ideas to present data and interpret patterns and relationships	10	10	10	20	20
AO4	Evaluate scientific information to: • make judgments and draw conclusions • develop and improve experimental procedure	10	10	10	20	20

Item Index

Assessment content	Assessment topic	Filename	Question ID	AO1	AO2	AO3	AO4
6.1.1	Botany	Science6SA1	Science6SA1	1			
6.1.1	Botany	Science6RAJ1	Science6RAJ1		1		
6.1.4	Botany	Science6RAJ3	Science6RAJ3a		1		
6.1.5	Botany	Science6RAJ4	Science6RAJ4a		1		
6.2.1	Botany	Science6RAJ5	Science6RAJ5c		2		
6.2.2	Botany	Science6RAJ5	Science6RAJ5a	2			
6.2.2	Botany	Science6RAJ5	Science6RAJ5b	2			
6.2.2	Botany	Science6RAJ4	Science6RAJ4b		2		
6.2.2	Botany	Science6SA3	Science6SA3		2		
6.2.3	Botany	Science6SA5	Science6SA51b	2			
6.2.3	Botany	Science6SA5	Science6SA51a		2		
6.4.1	Botany	Science6SA4	Science6SA41b	1			
6.4.1	Botany	Science6SA4	Science6SA41a	3			
6.6.1	Botany	Science6SA2	Science6SA2	1			
6.6.1	Botany	Science6RAJ6	Science6RAJ6b	2			
6.6.2	Botany	Science6RAJ3	Science6RAJ3b				3
6.2.4	Diet	Science6AR5	Science6AR51a	1			
6.2.4	Diet	Science6AR5	Science6AR51c	1			
6.2.4	Diet	Science6AR5	Science6AR51e	1			
6.2.4	Diet	Science6AR3	Science6AR31d	2			
6.2.4	Diet	Science6SK1	Science6SK1		1		
6.2.4	Diet	Science6AR5	Science6AR51b			1	
6.2.4	Diet	Science6AR5	Science6AR51d			1	
6.2.4	Diet	Science6AR5	Science6AR51f			1	
6.2.4	Diet	Science6SA5	Science6SA51c				2
6.2.5	Diet	Science6AR6	Science6AR61a	1			
6.2.5	Diet	Science6SK5	Science6SK51a	3			
6.2.5	Diet	Science6AR3	Science6AR31b		1		
6.2.5	Diet	Science6AR4	Science6AR41b		1		
6.2.5	Diet	Science6AR6	Science6AR61b		1		
6.2.5	Diet	Science6AR6	Science6AR61c		1		
6.3.2	Diet	Science6SK4	Science6SK41d				2
6.6.3	Diet	Science6SK4	Science6SK41c			2	
6.6.4	Diet	Science6SRN2	Science6SRN2	1			
6.6.4	Diet	ScienceSK3	ScienceSK31a		1		
6.6.4	Diet	ScienceSK3	ScienceSK31b		2		

6.6.5	Diet	Science6SK2	Science6SK2	1			
6.1.6	Food	Science6SRN1	Science6SRN1	1			
6.1.6	Food	Science6AR1	Science6AR1	1			
6.1.6	Food	Science6AR2	Science6AR2	1			
6.1.6	Food	Science6AR3	Science6AR31a	1			
6.1.6	Food	Science6AR3	Science6AR31c	1			
6.1.6	Food	Science6AR4	Science6AR41a	1			
6.1.6	Food	Science6SRN1	Science6SRN1	1			
6.1.6	Food	Science6SK5	Science6SK51b	2			
6.1.6	Food	Science6SK4	Science6SK41b	3			
6.1.6	Food	Science6SK4	Science6SK41a		2		
6.1.6	Food	Science6AR4	Science6AR41c				2
6.1.7	Light	Science6JS5	Science6JS51a		1		
6.1.7	Light	Science6JS5	Science6JS51d		2		
6.2.7	Light	Science6JS2	Science6JS2		1		
6.2.8	Light	Science6JS3	Science6JS31d	1			
6.2.8	Light	Science6JS3	Science6JS31b		1		
6.2.8	Light	Science6JS4	Science6JS41c		1		
6.2.8	Light	Science6JS3	Science6JS31a		2		
6.2.8	Light	Science6JS3	Science6JS31c				1
6.3.3	Light	Science6JS1	Science6JS1	1			
6.5.1	Light	Science6JS4	Science6JS41b	1			
6.5.1	Light	Science6JS5	Science6JS51b	1			
6.5.1	Light	Science6JS5	Science6JS51c	2			
6.5.1	Light	Science6JS5	Science6JS51e		2		
6.5.1	Light	Science6JS4	Science6jS41a	1	2		
6.1.12	Magnets	Science6SPA3	Science6SPA31a	2			
6.1.13	Magnets	Science6SG1	Science6SG1	1			
6.1.13	Magnets	Science6SG3	Science6SG31c				2
6.2.12	Magnets	Science6SG3	Science6SG31b	1			
6.2.12	Magnets	Science6SG4	Science6SG41b	1			
6.2.12	Magnets	Science6SG4	Science6SG41a	2			
6.2.12	Magnets	Science6SG4	Science6SG41ciii	3			
6.2.12	Magnets	Science6SG2	Science6SG2		1		
6.2.12	Magnets	Science6SG5	Science6SG51c		1		
6.2.12	Magnets	Science6SG3	Science6SG31a		2		
6.2.12	Magnets	Science6SG5	Science6SG51a		2		
6.2.12	Magnets	Science6SG4	Science6SG41cii			1	
6.2.12	Magnets	Science6SG5	Science6SG51b			1	
6.2.12	Magnets	Science6SG4	Science6SG41ci				1

6.1.10	Solubility and Water	Science6DP1	Science6DP1	1			
6.1.10	Solubility and Water	Science6DP2	Science6DP21b	1			
6.1.10	Solubility and Water	Science6DP3	Science6DP3	1			
6.1.10	Solubility and Water	Science6DP4	Science6DP41a	1			
6.1.10	Solubility and Water	Science6DP4	Science6DP41c	1			
6.1.10	Solubility and Water	Science6SPA4	Science6SPA41a	2			
6.1.10	Solubility and Water	Science6DP2	Science6DP21a		1		
6.1.10	Solubility and Water	Science6DP2	Science6DP21d		1		
6.1.10	Solubility and Water	Science6DP4	Science6DP41b		1		
6.1.10	Solubility and Water	Science6DP4	Science6DP41d		1		
6.1.10	Solubility and Water	Science6DP4	Science6DP41e		2		
6.1.10	Solubility and Water	Science6DP2	Science6DP21c			1	1
6.1.11	Solubility and Water	Science6SPA4	Science6SPA41b	1			
6.1.9	Solubility and Water	Science6SPA2	Science6SPA2		1		
6.2.10	Solubility and Water	Science6SPA4	Science6SPA41c	1			2
6.2.11	Solubility and Water	Science6SPA5	Science6SPA51c	2			
6.2.9	Solubility and Water	Science6RAJ6	Science6RAJ6a				2
6.4.4	Solubility and Water	Science6SPA5	Science6SPA51a	1			
6.4.4	Solubility and Water	Science6SPA5	Science6SPA51b	2			
6.4.5	Solubility and Water	Science6SPA3	Science6SPA31b	2			
6.4.5	Solubility and Water	Science6SPA3	Science6SPA31c				1
6.5.3	Solubility and Water	Science6SPA1	Science6SPA1		1		

Science6SA1

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
Science6SA1	1				6.1.1	1

Item purpose

The question assesses the ability to identify plant type on the basis of observable features or characteristics.

Question(s)

1 Which one of the following best describes characteristics of a tree?

A. Weak stem which cannot stand upright.
B. Thick, woody stem with branches high on the plant.
C. Green, tender stem.
D. Thick, woody stem with branching near the base.

(1 mark)

Mark scheme

1 (a) Which one of the following best describes characteristics of a tree? A. Weak stem which cannot stand upright. B. Thick, woody stem with branches high on the plant. C. Green, tender stem. D. Thick, woody stem with branching near the base.	
Answer	Guidance
B. Thick, woody stem with branches high on the plant.	

Science6RAJ1

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
Science6RAJ1		1			6.1.1	1

Item purpose

The question assesses the student's ability to:

- *recall the characteristic features of a creeper.*
- *observe and classify the pumpkin as a creeper.*

Source(s)

Source information: DV5PRUS7XFEHLHWMPAUJ2NUITE.jpg (1400×1050) (wave3.com)

Question(s)

1 The picture shows a pumpkin. The spreading stems shown indicate that a pumpkin should be classified as a:

A. Herb
B. Shrub
C. Creeper
D. Tree

(1 mark)

Mark scheme

1. The picture shows a pumpkin. The spreading stems shown indicate that a pumpkin should be classified as a: A. Herb B. Shrub C. Creeper D. Tree	
Answer	Guidance
C. Creeper	1 for the correct option

Science6RAJ3

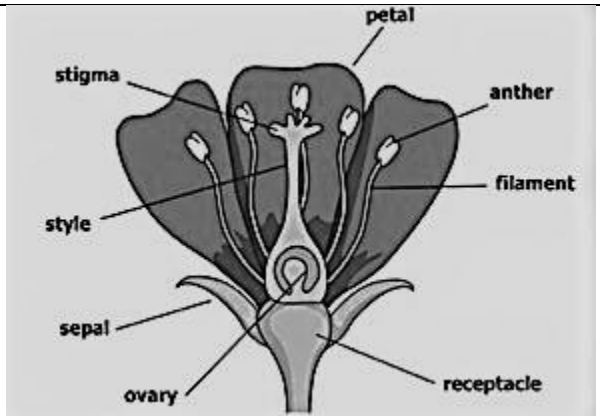
Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
Science6RAJ3a		1			6. 1. 4	1
Science6RAJ3b				3	6. 6. 2	3
Total marks		1		3		4

Item purpose

The question assesses the learners' ability to:

- *Recall parts of a flower.*
- *Identify and classify the female reproductive parts of a flower.*
- *Recall the definition of pollination.*
- *Explain how pollination is carried out by bees.*
- *Deduce the importance of bees for the growth of plants.*

Source(s)



Source information: https://classnotes.org.in/class7/science-7/reproduction-in-plants/sexual-reproduction-in-plants/

Question(s)

1

1 (a) The female reproductive part of a flower consists of:

A. Anther, Filament, Ovary
B. Petal, Stalk, Sepal
C. Receptacle, Sepal, Filament
D. Stigma, Style, Ovary

(1 mark)

1 (b) 'If we lose the bees, we lose the food.'. Explain why we need to save bees for plants to survive?

(3 marks)

(Total marks 4)

Mark scheme

1 (a) . The female reproductive part of a flower consists of: A. Anther, Filament, Ovary B. Petal, Stalk, Sepal C. Receptacle, Sepal, Filament D. Stigma, Style, Ovary	
Answer	Guidance
D. Stigma, Style, Ovary	1m for the correct answer.
1 (b) If we lose the bees, we lose the food.'. Explain why do we need to save bees for plants to survive?	
Answer	Guidance
• Bees visit flowers to drink the nectar. (1m) • As they do so the pollen grains stick to their body. (1m)	

• When they visit another plant the pollen grains get transferred and pollination takes place. (1m) • This process results in the formation of fruits and seeds that give rise to new plants. (1m) • If bee numbers drop, few insects are available to pollinator flowers (1m)	

Science6RAJ4

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
Science6RAJ4a		1			6.1.5	1
Science6RAJ4b		2			6.2.2	2
Total marks		3				3

Item purpose

The question assesses that the learner will be able to:

- *Recall that a cactus grows in a desert*
- *Recall and distinguish between biotic and abiotic components*
- *Observe and identify the biotic component*
- *Recall the adaptations observed in a cactus*
- *Explain how does a cactus adapt to a desert habitat*

Source(s)

Source information: https://wallpapercave.com/desert-oasis-wallpapers

Question(s)

1

1 (a) The given picture is of a desert ecosystem. The biotic component of this ecosystem is the:

A. date palm
B. sand dune
C. sunlight
D. water

(1 mark)

1 (b) Explain any two adaptations observed in a cactus that help it to survive in a desert?

(2 marks)

(Total marks 3)

Mark scheme

1 (a) The given picture is of a desert ecosystem. A biotic component of this ecosystem is the: A. date palm B. sand dune C. sunlight D. water	
Answer	Guidance
Date palm	1m for the correct answer.
1 (b) Explain any two adaptations observed in a cactus that help it to survive in a desert?	
Answer	Guidance

• it has a thick spongy stem that stores water (• the leaves are reduced to spines to prevent transpiration • the stem has a waxy coating that prevents loss of water. • Roots grow deep into the soil to tap for ground water.	Accept: The spines protect the plant from grazing animals. Credit other relevant points may also be considered.

Science6RAJ5

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
Science6RAJ5a	2				6.2.2	2
Science6RAJ5b	2				6.2.2	2
Science6RAJ5c		2			6.2.1	2
Total marks	4	2				6

Item purpose

The question assesses that the student will be able to:

- *Recall and define tropism*
- *Classify and record the different types of tropism*
- *Observe the different features of the aquatic plant.*
- *Explain how these adaptations help the lotus plant to survive in its habitat,*

Source(s)

Source information : lotus-flower.jpg (1024×680) (pitara.com) https://shesaidsunflower.com/do-sunflowers-follow-the-sun/

Question(s)

1

1 (a) State the meaning of the word ‘tropism’

(2 marks)

1 (b) Name the tropism that you observe in the given pictures of a sunflower

(1 mark)

1 (c) State and explain any two features observed in a lotus plant that helps it to adapt to an aquatic habitat.

(2 marks)

(Total marks 6)

Mark scheme

1 (a) What is tropism?	
Answer	Guidance
The movements of a plant in the direction of a stimulus is called tropism.	The movements of a plant (1 mark) in the direction of the stimulus (1 mark) 2m for the correct answer
1 (b) Name the tropism that you observe in the given pictures of a sunflower	
Answer	Guidance
Sunflower – phototropism	

1 (c) State and explain any two features observed in a lotus plant that helps it to adapt to an aquatic habitat.	
Answer	Guidance
Leaves float on surface (1) to increase exposure to light (1) Leaves covered in thick wax (1) to allow water to run off Air spaces in their spongy stem (1) make them buoyant. (1 mark)	Award marks for an adaptation and an associated explanation

Science6SA3

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
Science6SA3		2			6.2.2	2
Total marks						2

Item purpose

The question assesses understanding of structural adaptations of plants to different environmental conditions.

Source(s)

Question(s)

1 The picture shows a cactus. It is found in hot deserts.

Explain how the leaves of the cactus help it to survive in its habitat.

(2 marks)

Mark scheme

1. The picture shows a cactus. It is found in hot deserts. Explain how the leaves of the cactus help it to survive in its habitat.	
Answer	Guidance
Leaves are reduced to spines (1) which prevents loss of water (through transpiration) (1)	Accept: have sunken stomata to reduce loss of water.

Science6SA5

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
Science6SA51a		2			6.2.3	2
Science6SA51b	2				6.2.3	2
Science6SA51c				2	6.2.4	2
Total marks	2	2		2		6

Item purpose

The question assesses understanding the conditions essential for plant growth under various conditions.

Question(s)

1 (a) Three similar potted plants were taken to conduct an activity to determine the conditions essential for plant growth:

Plant A was kept in sunlight but not watered.

Plant B was kept in sunlight and watered.

Plant C was watered and kept in a dark room.

Which plant will grow best, and which plant(s) will not show proper growth?

(2 marks)

1 (b) From the above experiment list two main factors necessary for plant growth.

(2 marks)

1 (c) Leaves were taken from each of the plants and boiled to remove the green colour. They then had iodine solution placed on the leaves. Describe and explain what would be observed for leaves A and B.

(2 marks)

(Total marks 6)

Mark scheme

<table>
<tr><td colspan="2">1 (a) Three similar potted plants were taken to conduct an activity to determine the conditions essential for plant growth:

Plant A was kept in sunlight but not watered.

Plant B was kept in sunlight and watered.

Plant C was watered and kept in a dark room.

In which container will the plant grow best, and which plant will not show proper growth?</td></tr>
<tr><td>Answer</td><td>Guidance</td></tr>
<tr><td>Container B

Plant A and B</td><td>Accept:

Second container/

Container which had both sunlight and water.</td></tr>
<tr><td colspan="2">1 (b) From the above experiment list two main factors necessary for plant growth.</td></tr>
<tr><td>Answer</td><td>Guidance</td></tr>
<tr><td>Sunlight

Water</td><td></td></tr>
<tr><td colspan="2">1 (c) Will the result be the same when iodine solution is put on a leaf taken from plant A and a leaf taken from plant B? Evaluate the observations in each case and give reason for each to justify your answer.</td></tr>
<tr><td>Answer</td><td>Guidance</td></tr>
<tr><td>A-No change because absence of starch.

B- iodine solution turns bluish black in colour because of presence of starch.</td><td>A-Does not turn bluish black in colour.

B-Colour of iodine solution changes.</td></tr>
</table>

Science6SA4

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
Science6SA41a	3				6.4.1	3
Science6SA41b	1				6.4.1	1
Total marks	4					4

Item purpose

The question assesses the ability to draw a labelled diagram of parts of a flower.

Question(s)

1 (a) Draw a neat diagram of a flower and add labels for the following parts:

A. The part that receives the pollen grains.
B. The male reproductive part of a flower.
C. The swollen base of the pistil.

(3 marks)

1 (b) Which part of the flower helps to attract insects for pollination?

(1 mark)

(Total marks 4)

Mark scheme

1(a) Draw a neat well labelled diagram of a flower and label on it A. Part that receives the pollen grains. B. Male reproductive part of a flower. C. The swollen base of pistil.	
Answer	Guidance
a) Stigma labelled in correct position (1) b) Stamen labelled in correct position (1) c) Ovary labelled in correct position (1)	a) uppermost part of pistil/carpel b) Androecium c)Ovary
1(b) Which part of the flower helps to attract insects for pollination?	
Answer	Guidance
Petals (1)	Accept corolla

Science6SA2

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
Science6SA2	1				6.6.1	1

Item purpose

The question assesses understanding and applying knowledge of separation of substances- scientific concepts in day-to-day life.

Question(s)

1 Name the method used for separating heavier and lighter components by blowing air.

A. Sieving
B. Threshing
C. Winnowing
D. Sedimentation

(1 mark)

Mark scheme

1 Name the method used for separating heavier and lighter components by blowing air. A. Sieving B. Threshing C. Winnowing D. Sedimentation	
Answer	Guidance
C. Winnowing	

Science6RAJ6

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
Science6RAJ6a				2	6.2.9	2
Science6RAJ6b	2				6.6.1	2
Total marks	2		2			4

Item purpose

The question assesses that the learner will be able to:

- *Observe the difference in the particle size of the impurity present in the water.*
- *Choose the method to separate heavy insoluble particles in a solution.*
- *Analyse and choose the muslin cloth to separate the fine insoluble particles.*
- *Recall the different methods of separation of substances.*
- *Observe the nature of the mixture and choose the method of separation.*

Source(s)

Source information : https://www.instructables.com/Filtration-Experiment-Clean-Your-Own-Dirty-Water/

https://www.pixelsquid.com/png/empty-glass-2259622736164820722?image=G03

https://www.indiamart.com/proddetail/muslin-cloth-fabric-13295023562.html

Question(s)

1

1 (a) You have been given a glass of muddy water, an empty glass and a muslin cloth. Describe a method to obtain clean water.

(2 marks)

1 (b) Identify the method of separation used to:

a) separate chaff from the grain.
b) separate tea leaves from water.

(2 marks)

(Total marks 4)

Mark scheme

1 (a) You have been given a glass of muddy water, an empty glass, and a muslin cloth. Describe a method to obtain clean water.	
Answer	Guidance
Keep the glass still for sedimentation to take place. Filter the water using the muslin cloth to obtain clear water in the glass.	Accept: a reference to need sterilise the water with additional materials. (1)
1(b) Identify the method of separation used to: A. separate chaff from the grain. B. separate tea leaves from water.	
Answer	Guidance
A. Winnowing. B. Filtration	2m for the correct answer.

Science6AR5

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
Science6AR51a	1				6.1.6 and 6.2.4	1
Science6AR51b			1		6.1.6 and 6.2.4	1
Science6AR51c	1				6.1.6 and 6.2.4	1
Science6AR51d			1		6.1.6 and 6.2.4	1
Science6AR51e	1				6.1.6 and 6.2.4	1
Science6AR51f			1		6.1.6 and 6.2.4	1
Total marks	3		3			6

Item purpose

The question assesses understanding, knowledge, analytical skills and scientific aptitude.

Question(s)

1 Complete the following table (First one is done for your reference)

Food Item	Key nutrient	Test for the presence of nutrient
Rice	Carbohydrate (Starch)	Iodine Test
Butter	**(a)**_____	**(b)**_____
Eggs	**(c)**_____	**(d)**_____
Sugarcane	**(e)** _____	**(f)**_____

(Total marks 6)

Mark scheme

1 Complete the following table (First one is done for your reference):	
Answer	Guidance
1 Mark each (a) to (f) (a) Fats/Oils/Lipids (b) Emulsion Test (c) Proteins (d) Biuret Test (e) Sugar/Carbohydrate (f) Benedict's Test	• No marks shall be awarded for incorrect spelling of Emulsion, Biuret and Benedict. Accept any one. • Lipids or Fats or oils for part (a) • Sugar or Carbohydrate for part (e)

Science6AR3

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
Science6AR3a	1				6.1.6	1
Science6AR3b		1			6.2.5	1
Science6AR3c	1				6.1.6	1
Science6AR3d	2				6.2.4	2
Total marks	4	1				5

Item purpose

The question assesses understanding, knowledge, analytical skills and scientific aptitude.

Source(s)

Food Items Rich in Component ‘X’

Source information : https://www.unlockfood.ca/en/Articles/Protein/Introduction-To-Protein-And-High-Protein-Foods.aspx

Question(s)

1 **Observe the given and answer the following questions:**

1 (a) The food items shown are mainly rich in ‘X’, a nutrient component of food. What is ‘X’?

(1 mark)

1 (b) Name the disease caused by deficiency of component ‘X’.

(1 mark)

1 (c) What is the main function of this food component?

(1 mark)

1 (d) What are the chemicals used to test the presence of the ‘X’ in the food items?

(2 marks)

(Total marks 5)

Mark scheme

1 (a) The food items shown are mainly rich in ‘X’ component of food?	
Answer	Guidance
X is Protein	Meat, eggs, milk, beans, cheese all are rich in proteins
1 (b) Name the disease caused by deficiency of component ‘X’.	
Answer	Guidance
Kwashiorkor	It is a deficiency disease caused by deficiency of proteins.
1 (c) What is the main function of this food component?	
Answer	Guidance
Proteins are required for growth and repairing of tissues in our body.	Proteins are also called body building food. They are required for growth and

Or They help in building new tissues.	development; growth also includes increase in muscle mass. Accept • Increase in musculature. • Muscle contraction.
1 (d) What are the chemicals used to test the presence of the ‘X’ in the food items.	
Answer	Guidance
Copper sulphate (Caustic Soda Biuret reagent	Accept both names only. Paper transparency test not applicable.

Science6SK1

Item identity	AO1 marks	AO2 marks	AO3 Marks	AO4 marks	Content Reference(s)	Marks
Science6SK1		1			6.2.4	1

Item purpose

The question assesses the investigation and interpretation of the food tests

Question(s)

1 Reena performed the following test on a food sample.

Water soluble food sample + iodine solution → observed blue black colour.

Which component of food is present in it?

A. Proteins
B. Vitamins
C. Starch
D. Fat

(1 mark)

Mark scheme

1 Reena performed the following test on the given food sample Water soluble food sample+ iodine solution → observed blue black colour. Which component of food is present in it? A. Proteins B. Vitamins C. Starch D. Fat	
Answer	Guidance
C. Starch	

Science6AR6

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
Science6AR61a	1				6.2.5	1
Science6AR61b		1			6.2.5	1
Science6AR61c		1			6.2.5	1
Total marks	1	2				3

Item purpose

The question assesses understanding, knowledge, and scientific aptitude.

Question(s)

1 Rita visited doctor as she was having bleeding in her gums. The doctor told her that she is suffering from a deficiency disease. Help her by giving the answers to the following questions:

1 (a) What is a deficiency disease?

(1 marks)

1 (b) Name the nutrient which is deficient in her diet.

(1 marks)

1 (c) Which deficiency disease is Rita suffering from?

(1 marks)

(Total marks 3)

Mark scheme

1 (a) What is a deficiency disease?	
Answer	Guidance
Diseases that occur due to lack of nutrients over a long period are called deficiency diseases or nutritional disease.	Award 1 Mark if the following keywords are there. Nutrient deficiency or lack of nutrients.
1 (b) Name the nutrient which is deficient in her diet.	
Answer	Guidance
Vitamin C	Vitamin C or Ascorbic acid is very important for gum health. Don’t accept Calcium, as deficiency of calcium causes both gum and tooth decay.
1 (c) Rita is suffering from which deficiency disease?	
Answer	Guidance
Scurvy	No other answer is acceptable.

Science6SK5

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
Science6SK51a	3				6.2.5	3
Science6SK51b	2				6.1.6	2
Total marks	5					5

Item purpose

The question assesses understanding about the causes, effects, and prevention of deficiency diseases.

Source(s)

https://images.app.goo.gl/4Zte4bgK5kVuixpf7

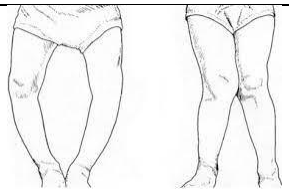
https://images.app.goo.gl/hA3BmZ4bburonbii9

https://images.app.goo.gl/dwDjmAuZ5YYtGnSNA

Question(s)

1

1 (a) Observe the given table carefully and complete it by writing the correct name of disease, symptom or deficient nutrient.

Name of disease	Symptoms	Image	Nutrient deficiency
1	Bending of legs		Vitamin D
Scurvy	2		Vitamin C
Goiter	Swollen neck		3

(3 marks)

1 (b) From given help box find out the correct vitamin or mineral and write it at the centre of the given images A and B.

Vitamin D	Vitamin C	Iron
Proteins	Iodine	

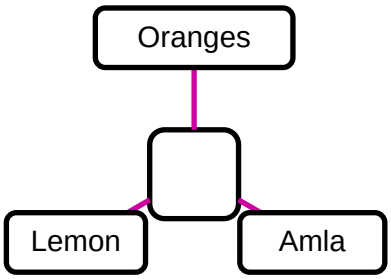


Image A

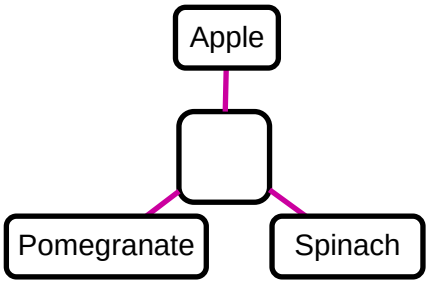


Image B

(2 marks)

(Total marks 5)

Mark scheme

1. 1 (a) Observe the given table carefully and complete it by writing correct name of disease, symptom or deficiency nutrient.	
Answer	Guidance

1 Rickets 2. bleeding gums 3. Iodine	
1 (b) From given help box find out the correct vitamin or mineral and write it at the centre of the given images A and B.	
Answer	Guidance
Vitamin C In Image A Iron In image B	1 mark for one correct response

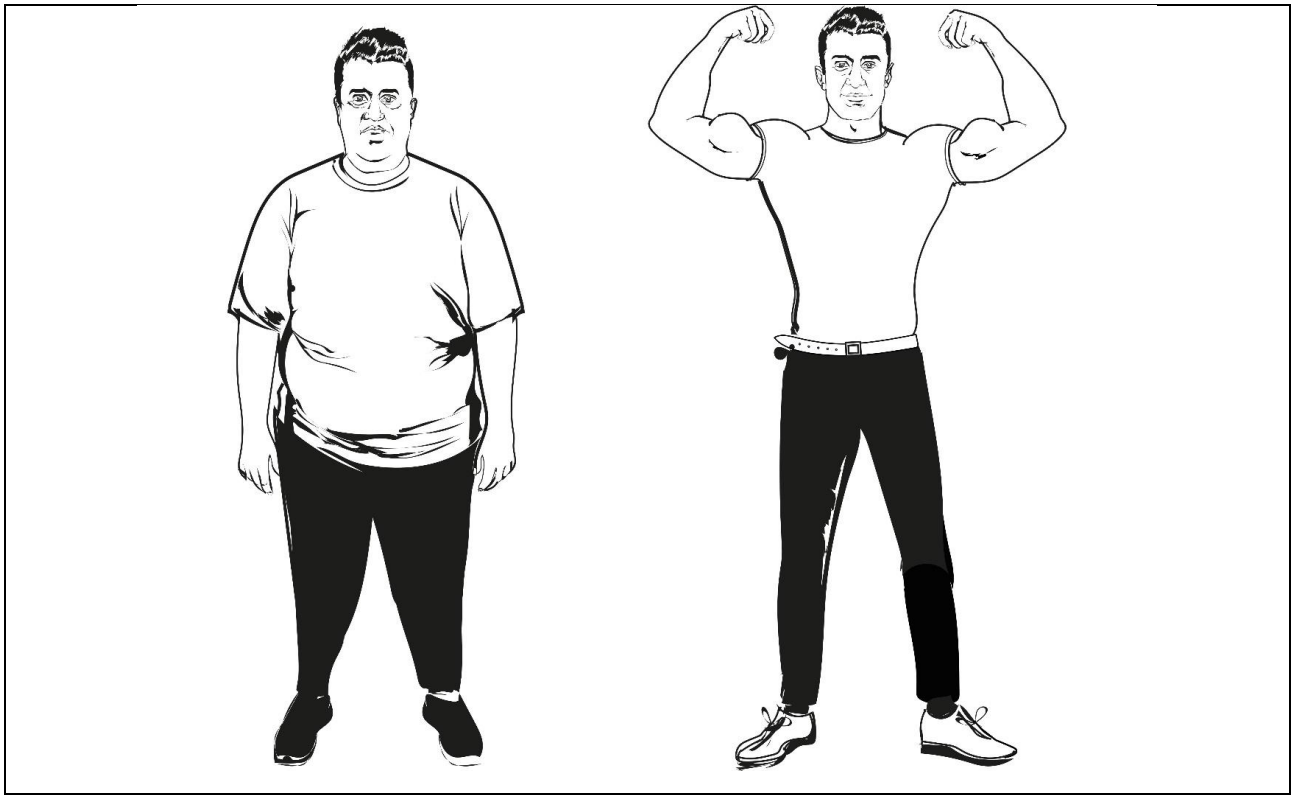
Science6AR4

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
Science6AR41a	1				6.1.6	1
Science6AR41b		1			6.2.5	1
Science6AR41c				2	6.1.6	2
Total marks	1	1		2		4

Item purpose

The question assesses understanding, knowledge and scientific aptitude.

Source(s)



Arjun Yash

Question(s)

1 **Observe the given picture and the table to answer the following questions:**

Arjun	Yash
• Profession - Software Engineer • Eating Habits – French fries /butter/ Pizza/Burger/ Fried Rice/ Nuts/ Cheese • Routine – no fixed routine, no fixed meals	• Profession - Cricketer • Eating Habits – Fruits/ Vegetables/ Shakes/ Sprouts/ Oatmeal/ Salads/ Dal Boiled Rice/ Chapatti/ Meat • Routine - Fixed routine, fixed meals.

1 (a) Which component of food does Arjun have an excess of in his diet?

(1 mark)

1 (b) What kind of diet does Yash have?

(1 mark)

1 (c) Write two features which may have a negative effect on Arjun's health.

(2 marks)

(Total marks 4)

Mark scheme

1 (a) Which component of food Arjun is having in his diet?	
Answer	Guidance
Fats/Oils	Don't Accept any other component.
1 (b) What word describes the diet does Yash have?	
Answer	Guidance
Balanced Diet	A balanced diet is one that contains an adequate quantity of all the nutrients required by our body. A balanced diet should contain food items with different nutritional value to fulfil our nutritional requirements. Don't Accept a Healthy Diet
1 (c) Write two observations which can have a negative effect on Arjun's health.	
Answer	Guidance
1. Arjun has a sedentary lifestyle (1) 2. He has lots of fats in his diet (1) 3. He is overweight. (1)	2 max Accept answers that explain the following conditions. • Lack of exercise • Excess intake of fats

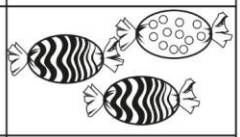
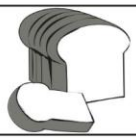
Science6SK4

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
Science6SK41a		2			6.1.6	2
Science6SK41b	3				6.1.6	3
Science6SK41c			2		6.6.3	2
Science6SK41d				2	6.3.2	2
Total marks	3	2	2	2		9

Item purpose

These questions assess the understanding and analysing the requirements of key nutrients in our daily meal.

Source(s)

Name of food item	Picture
Sweets	
Soyabeans	
Vegetables	
Roti/bread	
Eggs	

Question(s)

1 (a) Identify two major sources of carbohydrates from the table above

(2 marks)

1 (b) Draw lines between the columns to match items from column A with items in column B

Column A	Column B
Energy giving foods	egg, pulses, soyabeans
Body building foods	fruits and vegetables
Protective foods	potato, sweets, wheat

(3 marks)

1 (c) Tables given below show two diet plan A and B. Explain why a body builder would choose diet plan A over diet plan B.

DIET PLAN A		DIET PLAN B	
Name of nutrients	Quantity required per day	Name of nutrients	Quantity required per day
Fat	0.5 – 1.5 g/kg	Fat	0.5 – 1.5 g/kg
Proteins	20-25 g/kg	Proteins	5-10 g/kg
Carbohydrates	3 – 5 g/kg	Carbohydrates	3 – 5 g/kg

(2 marks)

1 (d) A doctor prescribed Sarika 100g of this given health drink to meet her daily nutrient requirements. But Sarika does not like its taste and takes only 50g of it. How much calories will she get from it now?

Serving Size 100g		
Nutrients	quantity	Known functions of nutrients
Calcium Vitamin D Vitamin K(K2) Protein Magnesium Vitamin C Zinc	1000.00mg 16.66 mcg 91.66 mcg 15 g 121.00 mg 66.60 mg 2.70 mg	Bone health
Energy 359.8 kcal		
Carbohydrate Fat	68.2 g 3g	Source of energy
Vitamin B1 Niacin Biotin Iodine	0.55 mg 6.67 mg 16.50 mg 82.50 mg	Helps in release energy
Vitamin B2 Vitamin B6 Vitamin B12 Folic acid	1.80mg 3.30mg 1.60mcg 200.00mcg	Vital nutrients for blood and healthy skin

(2 marks)

(Total marks 9)

Mark scheme

1 (a) Identify and write sources of carbohydrates from the table ?	
Answer	Guidance
Sweet Roti /bread	Give 1 mark for one correct option
1 (b) Match the following column	
Answer	Guidance
1. Energy giving food → potato, sweets, wheat 2. Body building food → egg, pulses, soyabeans 3. Protective food → fruits and vegetables	
1 (c) Tables given below showing two diet plan A and B. Why does a body builder choose diet plan A over diet plan B?	
Answer	Guidance
Diet plan A contain more proteins Proteins are body building food	1 mark if only reason is given without explanation.
1 (d) Doctor prescribed Sarika 100g of given health drink to meet her daily nutrients requirement. But Sarika does not like its taste and takes only 50g of it. How much calories will she get from it now?	
Answer	Guidance
100g → 359.8 kcal 50 g → 359.8/2 = 179.9 kcal	Allow one mark for working that includes 359.8 Allow rounding to 180

Science6SRN2

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
Science6SRN2	1				6.6.4 Explain the conditions under which foods rot, showing an understanding of which foods are most prone to rotting:	1

Item purpose

The question assesses to test the application of knowledge from daily life about bread mould.

Source(s)

Fig. 1 Rhizopus

Source information: NCERT Test Book for Class VIII – Science

Image: https://www.britannica.com/science/Rhizopus

Question

1. Rhizopus is a type of fungi.

   Fig.1 shows Rhizopus growing on food.

Name the food item and the conditions it provides for Rhizopus to grow.

(1 mark)

Mark scheme

1. Name the food item and the conditions it provides for Rhizopus to grow.	
Answer	Guidance
(stale) bread and moist;	Microorganism given in the figure is bread mould (Rhizopus) is a fungus. It grows on bread, cheese and other moist foods are acceptable.

ScienceSK3

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
SCIENCESK31a		1			6.6.4	1
SCIENCESK31b		2			6.6.4	2
Total marks		3				3

Item purpose

The question assesses the understanding about different causes of spoilage of food and identification of correct method of preservation of food.

Question(s)

1 (a) Four items of food are left on a table in a warm room for two weeks.

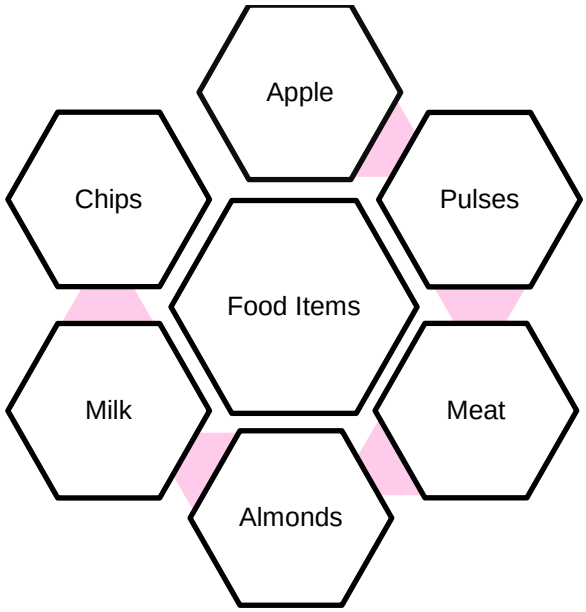
Select which food would be **least** likely to rot during this time.

A. Milk
B. Pork
C. Rice
D. Banana

(1 mark)

1 (b) Ram wants to preserve the given food item at home. Complete the following table with any appropriate methods of preservation and foods from the following list.

Method of preservation	Food that Ram can preserve this way
Adding salt	Meat
	Milk
Drying	



(2 marks)

(Total marks 3)

Mark scheme

1 (a) Four items of food are left on a table in a warm room for two weeks. Select which food would be **least** likely to rot during this time. A. Milk B. Pork C. Rice D. Banana	
Answer	Guidance
C. Rice	
1 (b) Ram wants to preserve the given food item at home. Name any two preservative methods he would use to preserve these food items?	
Answer	Guidance
1. Ram wants to preserve the given food item at home. Complete the	Accept any valid method of preserving milk

<table>
<tr>
<td>following table with any appropriate methods of preservation and foods from the following list.

<table>
<tr><th>Method of preservation</th><th>Food that Ram can preserve this way</th></tr>
<tr><td>Adding salt</td><td>Meat</td></tr>
<tr><td>Freeze/refrigerate (1)</td><td>Milk</td></tr>
<tr><td>Drying</td><td>Apple, meat (1)</td></tr>
</table>
</td>
<td>Do not accept other foods not on list e.g. grapes.</td>
</tr>
</table>

Science6SK2

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
Science6SK2	1				6.6.5	1

Item purpose

The question assesses the understanding about the consequences of wastage of food on environment.

Question(s)

1 Neha makes a compost pit in her garden for leftover food. She had read in a newspaper that million tons of food is wasted globally every year. Select an impact of wasting of food on the environment:

A. Ozone hole
B. Acid rain
C. Global warming
D. Smog

(1 mark)

Mark scheme

1 Neha makes a compost pit in her garden for leftover food. She had read in a newspaper that million tons of food is wasted globally every year. Select an impact of wasting of food on the environment

A. Ozone hole
B. Acid rain
C. Global warming
D. Smog

Answer	Guidance
C. Global warming	

Science6SRN1

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
Science6SRN1	1				6.1.6 Classify foods as sources of particular nutritional requirements:	1

Item purpose

The question assesses to test the application of knowledge in the nutrient's composition of milk.

Question

1 Which of the following statements is **false** about nutrients in milk?

A. Milk is a good source of calcium
B. Milk is a good source of protein
C. Milk is a good source of vitamin C
D. Milk is a good source of vitamin D

(1 mark)

Mark scheme

1 Which of the following statements is **false** about nutrients in milk? A. Milk is a good source of calcium B. Milk is a good source of protein C. Milk is a good source of vitamin C D. Milk is a good source of vitamin D	
Answer	Guidance
C. Milk is a good source of vitamin C	

Science6AR1

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
Science6AR1	1				6.1.6	1

Item purpose

The question assesses knowledge and understanding.

Question(s)

1 Select the two which best provide energy in foods

A. Carbohydrate, Fats
B. Fats, Iron
C. Iron, Proteins
D. Minerals, Vitamins

(1 mark)

Mark scheme

1. Which type of food pair, referred as energy giving foods? A. Carbohydrate, Fats B. Fats, Iron. C. Iron, Proteins D. Minerals, Vitamins	
Answer	Guidance
Carbohydrates, Fats	• Iron is a mineral. Vitamins and minerals are protective foods. • Proteins are body building foods.

Science6AR2

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
Science6AR2	1				6.1.6	1

Item purpose

The question assesses knowledge and understanding.

Question(s)

1 Identify the nutrient **absent** in milk.

A. Sugar
B. Calcium
C. Vitamin C
D. Fat

(1 mark)

Mark scheme

1. Identify the nutrient absent in milk.
   A. Sugar
   B. Calcium
   C. Vitamin C
   D. Fat

Answer	Guidance
Vitamin C	Milk is known as a complete food. Mostly all nutrients are present in it except Vitamin C.

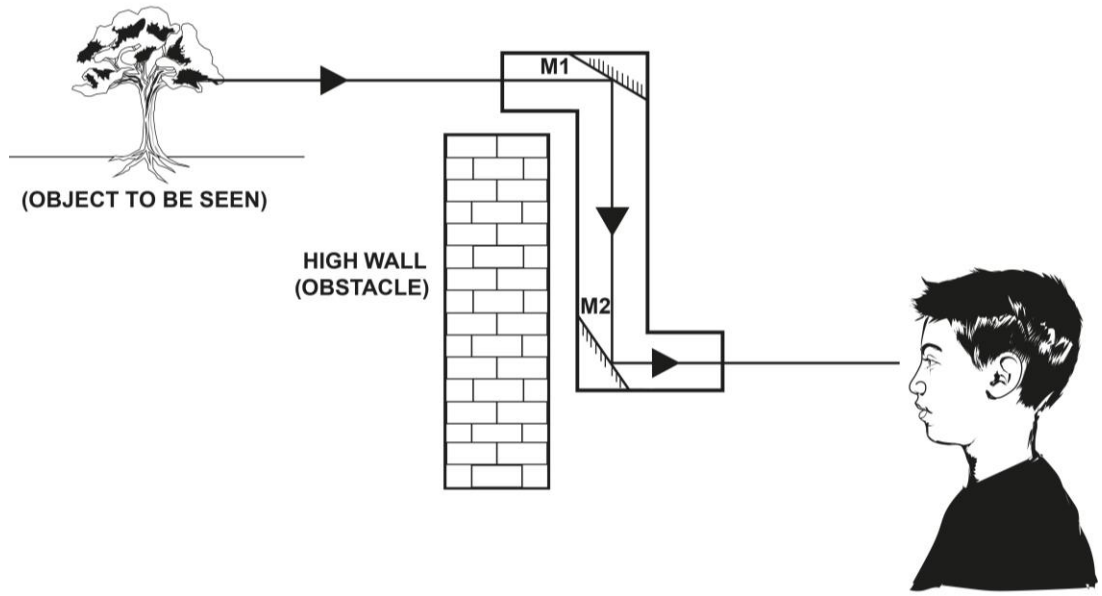
Science6JS5

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
Science6JS51a		1			6.1.7	1
Science6JS51b	1				6.5.1	1
Science6JS51c	2				6.5.1	2
Science6JS51d		2			6.1.7 + 6.2.7	2
Science6JS51e		2			6.5.1	2
Total marks	3	5				8

Item purpose

The question assesses the learners' understanding of the principle and use of periscope and also the knowledge of different types of materials on the basis of ability of light to pass through it.

Source(s)



Question(s)

1

1 (a) Why is Sachin not able to see through the wall?

A. The wall is transparent.
B. The wall is translucent.
C. The wall is opaque.
D. The wall is reflective

(1 mark)

1 (b) Name the device Sachin is using to see the tree on the other side of the wall.

A. Microscope
B. Periscope
C. Telescope
D. Electroscope

(1 mark)

1 (c) Describe how this device allows Sachin to see over the wall.

(2 marks)

1 (d) Can we use cardboard instead of a plane mirror in this device? Give a reason for your answer.

(2 marks)

1 (e) Periscopes are often used by in national defence. Describe two possible uses of this device by the military.

(2 marks)

(Total marks 8)

Mark scheme

<table>
<tr><td colspan="2">1(a) Why is Sachin not able to see through the wall?
A. Wall is transparent.
B. Wall is translucent.
C. Wall is opaque.
D. Wall is reflective</td></tr>
<tr><td>Answer</td><td>Guidance</td></tr>
<tr><td>C. Wall is opaque</td><td>C. Wall is opaque</td></tr>
<tr><td colspan="2">1(b) Name the device Sachin is using to see the tree on the other side of the wall.
A. Microscope
B. Periscope
C. Telescope
D. Electroscope</td></tr>
<tr><td>Answer</td><td>Guidance</td></tr>
<tr><td>B. Periscope</td><td>B. Periscope</td></tr>
<tr><td colspan="2">1(c) Describe how this device allows Sachin to see over the wall.</td></tr>
<tr><td>Answer</td><td>Guidance</td></tr>
<tr><td>Any two from:
Reflection
of light <u>from</u> object/tree
At right angles
From two plane mirrors
Which are in parallel to each other</td><td></td></tr>
<tr><td colspan="2">1(d) Can we use cardboard instead of a plane mirror in this device? Give reason for your answer.</td></tr>
<tr><td>Answer</td><td>Guidance</td></tr>
<tr><td>• No (no mark)
• Cardboard is not a polished and shiny surface.
• So, it reflects only a small amount of light.</td><td>Accept:
• Polished surfaces reflect more light than dull and rough surfaces.
OR</td></tr>
</table>

	• Dull surfaces like cardboard produce irregular reflection of light. Polished surfaces like mirrors produce regular reflection of light.
1(e) Periscopes are often used by in national defence. Describe two possible uses of this device by the military.	
Answer	Guidance
• Use in submarine • Used by soldiers in trenches to see enemies.	• Use in watch towers. • Use to see above the heads of a crowd. (1 mark each for any two relevant points)

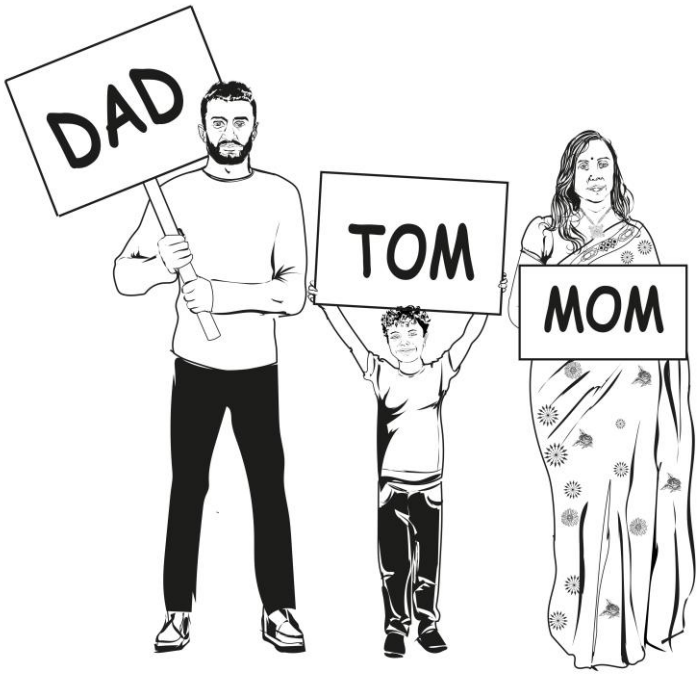
Science6JS2

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
Science6JS2		1			6.2.7	1

Item purpose

The question assesses the learner's application of understanding of the behaviour of light rays reflecting off a plane mirror (in this case, the property of lateral inversion).

Source(s)



Question(s)

1 Tom, his mother and father are holding the placards in their hands as shown in the above figure. Who among them will be able to read his/her placard same in the plane mirror?

A. Dad
B. Mom
C. Tom
D. The whole family

(1 mark)

Mark scheme

1. Tom, his mother and father are holding the placards in their hands as shown in the above figure. Who among them will be able to read his/her placard the same in a plane mirror? A. Dad B. Mom C. Tom D. The whole family	
Answer	Guidance
B. Mom	Accept B. Mom

Science6JS3

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
Science6JS31a		2			6.2.8	2
Science6JS31b		1			6.2.8	1
Science6JS31c				1	6.2.8	1
Science6JS31d	1				6.2.8	1
Total marks	1	3	0	1		5

Item purpose

The question assesses the learner's understanding of the formation of shadows.

Source(s)

Once upon a time, in a jungle, lived a wolf. One day, he decided to leave his cave and go out and play. On his way, he saw a shadow of a giant figure. He was scared. He was about to run but then realized that it was a shadow of a tree. He started laughing.

He moved on and played with his friends. When he was returning back to his cave, the sun had started to set. The setting sun casted shadows of everything everywhere. So, the setting sun casted wolf's shadow as well. He was extremely happy with his dark figure on the ground. The wolf admired himself. "Why should I run away from the lion? I bet, if I go and growl at him, he will tremble in fear and ask me to be the king."

Suddenly he saw lion not far away from where wolf was standing. He made his way to the lion. When he came near the lion, he growled with all his might. " I shall rule this jungle." The lion laughed at the wolf. Then, the lion roared. And before the wolf knew it, he became the lion's meal. The foolish wolf didn't know that the sun was playing a trick with him.

Source information: self-created

Question(s)

1

1(a) Discuss in brief any two characteristics of a shadow that are shown in the story given above.

(2 marks)

1(b) At what time of the day will wolf's shadow be the longest?

A. 11:00 am
B. 12:00 pm
C. 03:00 pm
D. 05:30 pm

(1 mark)

1(c) In which direction was the shadow of the wolf pointing on his way back to his cave?

A. East
B. North
C. South
D. West

(1 mark)

1(d) Name the property of light that is responsible for the formation of shadow of an object.

(1 mark)

(Total marks 5)

Mark scheme

<table>
<tr><td colspan="2">1(a) Discuss in brief any two characteristics of a shadow that are shown in the story given above.</td></tr>
<tr><td>Answer</td><td>Guidance</td></tr>
<tr><td>Shadows do not tell the exact shape of the object.
Shadows do not tell the exact size of the object.</td><td>Accept:
Shadows are formed on the other side of the light source.
Shadow of an object is real. (It is formed on the screen)
Shadow of an object is the longest in early morning or late evening.
(1 mark each for any two of the given relevant points)</td></tr>
<tr><td colspan="2">1(b) At what time of the day will our shadow be the longest?
A. 11:00 am
B. 12:00 pm
C. 03:00 pm
D. 05:30 pm</td></tr>
<tr><td>Answer</td><td>Guidance</td></tr>
<tr><td>D. 05:30 pm</td><td>D.05:30 pm</td></tr>
<tr><td colspan="2">1(c) In which direction was the shadow of the wolf pointing, on his way back to his cave?
A. East
B. North
C. South
D. West</td></tr>
<tr><td>Answer</td><td>Guidance</td></tr>
<tr><td>A. East</td><td>Accept A. East</td></tr>
<tr><td colspan="2">1(d) Name the property of light that is responsible for the formation of shadow of an object.</td></tr>
<tr><td>Answer</td><td>Guidance</td></tr>
<tr><td>Rectilinear propagation of light.</td><td>Light travels in a straight line or path.</td></tr>
</table>

Science6JS4

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
Science6JS41a	1	2			6.5.1	3
Science6JS41b	1				6.2.8, 6.5.1	1
Science6JS41c		1			6.2.8	1
Total marks	2	3				5

Item purpose

The question assesses learners' understanding of the scientific reason behind the phenomena occurring in his environment.

Source(s)

5	It was a bright sunny day. Rajat was returning back from his school. He was tired. He sat under a tree covered with a very large number of leaves. There were tiny gaps between the leaves that light could pass through. He saw bright circular patches of light on the ground under the tree. Suddenly, there was a loud noise of an aeroplane in the sky and rushed to see the aeroplane. He was surprised to see that there was no shadow of the aeroplane on the ground. But he had studied that when there is sun and opaque object, shadow is formed on the screen. He was puzzled.

Source information: self-created

Question(s)

1

1 (a) What are the bright patches on the ground? Explain in brief to Rajat about the patches of light under the tree.

(3 marks)

1 (b) In what way are images formed by such holes different from shadows?

A. Shadows are colourful but images are always black.
B. Shadows are erect but images are inverted.
C. Shadows are inverted but images are erect.
D. Shadows are real but images are not real.

(1 mark)

1 (c) Why could Rajat not find any shadow of the aeroplane on the ground?

A. The object was transparent.
B. The object was very small.
C. The screen was very far from the object.
D. There was no screen on which a shadow could form.

(1 mark)

(Total marks 5)

Mark scheme

<table>
<tr><td colspan="2">1(a) What are the bright patches on the ground? Explain in brief to Rajat about the patches of light under the tree.</td></tr>
<tr><td>Answer</td><td>Guidance</td></tr>
<tr><td>• These bright circular patches are the pinhole images of the sun.
• Small gaps between the leaves act as pinholes.
• Sunlight passes through these pinholes to form bright circular images of the sun on the ground.</td><td>Accept the answer with keywords:
• pinhole images of the sun
• object – sun
• pinhole - tiny gaps between leaves
• screen – ground</td></tr>
<tr><td colspan="2">1(b) In what way are images formed by such holes different from shadows?

A. Shadows are colourful but images are always black.
B. Shadows are erect but images are inverted.
C. Shadows are inverted but images are erect.
D. Shadows are real but images are not real.</td></tr>
</table>

Answer	Guidance
B. Shadows are erect but images are inverted.	B. Shadows are erect but images are inverted.

1(c) Why could Rajat not find any shadow of the aeroplane on the ground?

A. The object was transparent.

B. The object was very small.

C. The screen was very far from the object.

D. There was no screen on which a shadow could form.

Answer	Guidance
C. The screen was very far from the object.	Accept C. The screen was away from the object.

Science6JS1

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
Science6JS1	1				6.3.3	1

Item purpose

The question assesses the learner's understanding of laws of reflection of light rays.

Question(s)

1 If the angle between the incident ray and normal is doubled, how will the angle between the reflected ray and normal be affected?

E. Doubled.
F. Halved.
G. Tripled.
H. Unchanged.

(1 mark)

Mark scheme

1. If the angle between the incident ray and normal is doubled, how will the angle between the reflected ray and normal be affected? A. Doubled. B. Halved. C. Tripled. D. Unchanged.	
Answer	Guidance
A. Doubled.	Accept A or Doubled. (1)

Science6SPA3

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
Science6SPA31a	2				6.1.12	2
Science6SPA31b	2				6.4.5	2
Science6SPA31c				1	6.4.5	1
Total marks	**4**			**1**		**5**

Item purpose

The question assesses the student understanding, analysis and application of experimental investigation for filtration, evaporation and distillation.

Source(s)

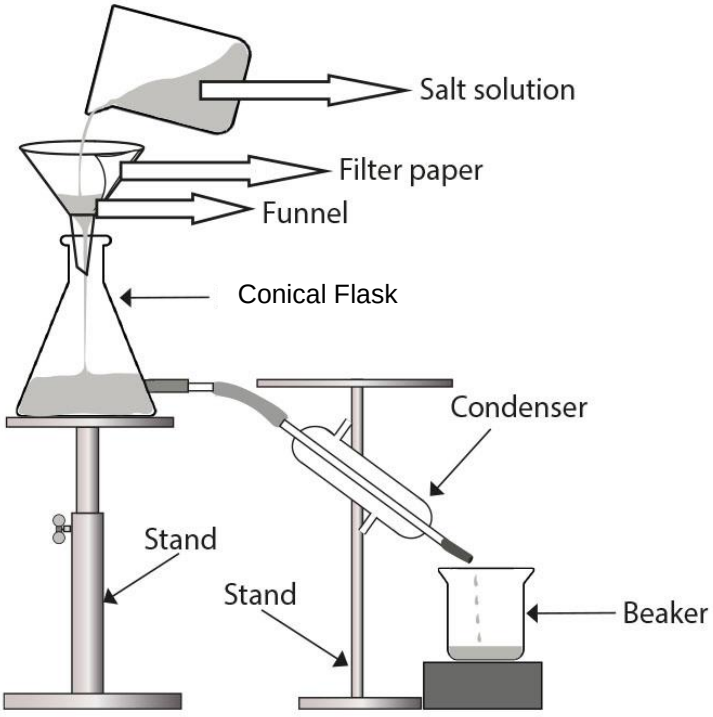


Fig (a) Fig (b)

Question(s)

1 A group of students were given a salt solution and were asked to separate the respective components. They set up the apparatus as shown in the figure above.

1 (a) Name the solute and solvent for the given solution.

(2 marks)

1 (b) Identify the two processes for which the apparatus has been setup in the above figures.

(2 marks)

1 (c) Identify the error in the set-up of the apparatus for the separation of a salt solution.

(1 mark)

(Total marks 6)

Mark scheme

1. 1 (a) Name the solute and solvent for the given solution.	
Answer	Guidance
Solute – salt Solvent – Water	Accept only salt as solute and water as solvent
1 (b) Identify the two processes for which the apparatus has been setup in the above figures.	
Answer	Guidance
Fig (a) - Filtration Fig (b) – Distillation	Allow condensation for fig b
1 (c) Identify the error in the apparatus for the separation of salt solution.	
Answer	Guidance
Any one from: Salt cannot be separated from water through the process of filtration as shown in Fig The filtration is not necessary	

Science6SG1

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
SCIENCE6SG1	1				6.1.13	1

Item purpose

The question assesses the students' ability to distinguish between magnetic and non-magnetic substances.

Question(s)

1 (a) Which of the following gets attracted to a magnet:

A. Plastic comb
B. Iron clip
C. Paper notebook
D. Silver cup

(1 mark)

Mark scheme

1. Which of the following gets attracted to a magnet:

A. Plastic comb
B. Iron clip
C. Paper notebook
D. Silver cup

Answer	Guidance
Iron clip	1m for the correct option

Science6SG3

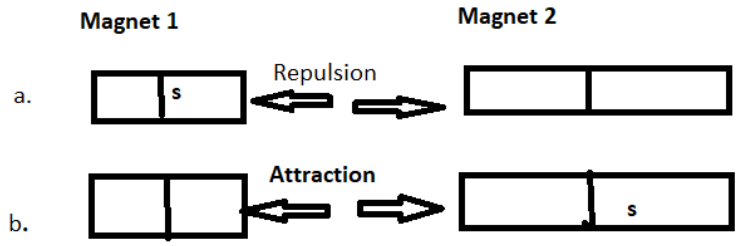
Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
SCIENCE6SG3a		2			6.2.12	2
SCIENCE6SG3b	1				6.2.12	1
SCIENCE6SG3c				2	6.1.13	2
Total marks	1	2		2		5

Item purpose

The question assesses the students ability to understand and analyse the properties of a magnet.

Source(s)

Figure 1:



Question(s)

1 (a) Observe the picture given above and mark the missing poles of the magnets in the table given below:

	Poles of magnet 1		Poles of magnet 2		Interaction
a.		S			Repulsion
b.				S	Attraction

(2 marks)

1 (b) Out of the two properties shown above in figure 1, which property is considered a sure test of magnetism.

(1 mark)

1 (c) A student is given two metal bars which look identical. Suggest how the student could identify which bar is a magnet.

(2 marks)

(Total marks 5)

Mark scheme

1 (a) . Observe the picture give above and mark the missing poles of the magnets in the table given below:

	Poles of magnet 1		Poles of magnet 2		Interaction
A		S			Repulsion
B				S	Attraction

Answer	Guidance
a. N (S) S N b. N S N (S)	1 mark for each correct row.

1 (b) Out of the two properties shown above in the figure 1, which property is considered a sure test of magnetism.

Answer	Guidance
Repulsion	

1 (c) A student is given two metal bars which look identical. Suggest how the student could identify which bar is a magnet.

Answer	Guidance
Magnets can be identified in following two ways**-(any 1 to be mentioned)** i. Using iron fillings: the iron filings will be attracted to the magnet while no iron fillings will be attracted to the other metal bar. **Or** ii. Repulsion test: • Take a magnet and bring it near both the metal bars one by one. • The bar which either attracts or repels the magnet is itself a magnetic bar while the other is not. (1m)	Student must name the right method(1m) and write in brief about any one method and whatever the **observation** helped to conclude the result(1m) i.e., 1+1=2m

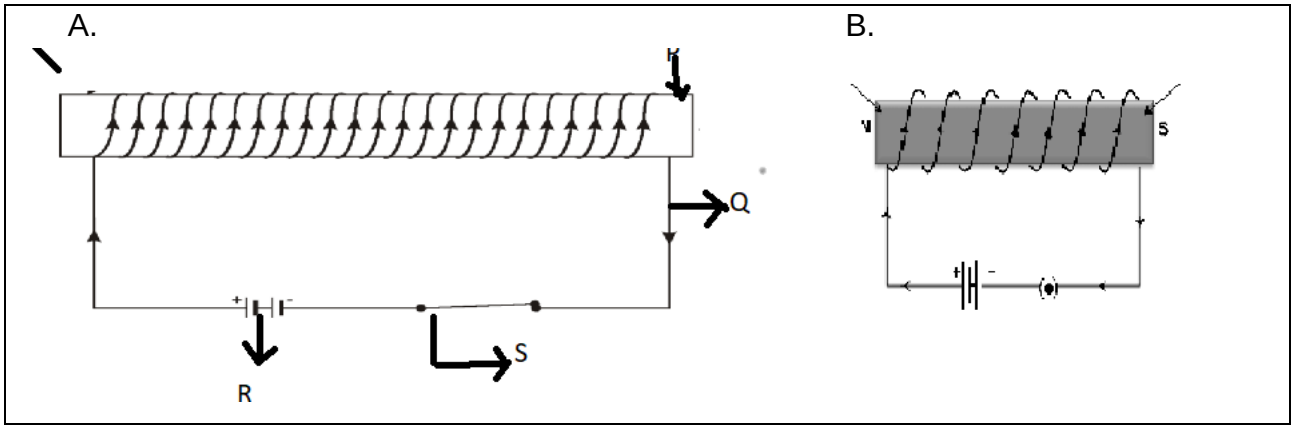
Science6SG4

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
SCIENCE6SG4a	2				6.2.12	2
SCIENCE6SG4b	1				6.2.12	1
SCIENCE6SG4ci				1	6.2.12	1
SCIENCE6SG4cii			1		6.2.12	1
SCIENCE6SG4ciii	3				6.2.12	3
Total marks	5	2	1	1		9

Item purpose

The question assesses the students' understanding about the magnetic effects of electric current.

Source(s)



Source Information: Reference Science Textbook-Science Voyage (Google images: https://tutormate.in/cbse-class-10-physics/electromagnet-and-permanent-magnet/)

Question(s)

1 (a) What is an electromagnet?

(2 marks)

1 (b) State one difference between permanent magnets and electromagnets

(1 mark)

1 (c) Study the image (figure 1) given above and answer the following questions.

i. Which of the images would be the stronger electromagnet?

(1 mark)

ii. Give reason to support your answer (question i).

(1 mark)

iii. Label the parts shown in the figure as p, q and r.

(3 mark)

(Total marks 9)

Mark scheme

1 (a) What is an electromagnet?	
Answer	Guidance
An electromagnet is a temporary magnet which behaves like a magnet when an electric current is passed through it It has a soft iron piece called the core with an insulated copper wire wound on it.	Award marks for the use of the keywords (in bold) in a correct sentence. Note: student can define in their own way using the key words highlighted.

1 (b) State one difference between permanent magnets and electromagnets	
Answer	Guidance
Electromagnet requires a continuous supply of electricity to maintain its magnetic field, but a permanent magnet does not An electromagnet can be switched on and off.	Well labelled diagrams can also be considered as valid difference.

1 (c) Study the image (figure 1) given above and answer the following question. i. Which of the images would be the stronger electromagnet? ii. Give reason to support your answer (question i). iii. Label the parts shown in the figure as p, q and r.	
Answers	Guidance
i. Image A considered to be the strong electromagnet. ii. More turns in the coil iii. Label P- Iron core Q- Insulated wire R-Power source/cell	Only correct options will be awarded marks as per the marking scheme. (The student must mention number of turns to be awarded with complete marks (according to the source). **Note**: No other factor will be accepted Label: (1+1+1) P- Nail/Iron core- either of the answers-1m Q- Insulated wire-1m R- Power source/ Cell/Battery/ Energy source are valid answers, hence must be awarded 1 mark.

Science6SG2

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
SCIENCE6SG2		1			6.2.12	1

Item purpose

The question assesses the student's ability to understand the properties of magnets.

Source(s)

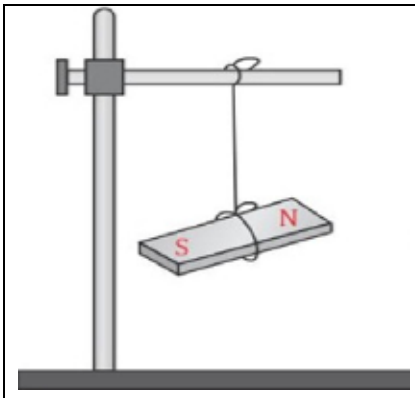


Fig. 1

Source information: Science Voyage textbook (Cambridge edition)

Question(s)

1 (a) How would the suspended magnet move if the North pole of a second magnet was brought towards the North pole of this magnet?

(1 mark)

Mark scheme

1 How would the suspended magnet move if the North pole of a second magnet was brought towards the North pole of this magnet?	
Answer	Guidance
Would rotate so N faces away from second magnet	Accept: move away Accept: South pole moves towards second magnet

Science6SG5

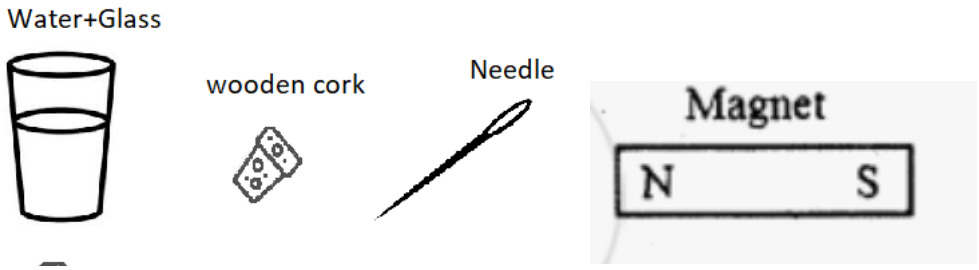
Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
SCIENCE6SG5a		2			6.2.12	2
SCIENCE6SG5b			1		6.2.12	1
SCIENCE6SG5c		1			6.2.12	1
Total marks		3	1			4

Item purpose

The question assesses the students' understanding about the process of magnetisation and magnetic properties.

Source(s)

Materials Provided: figure 1-



Source information: Reference Science Voyage Cambridge edition, (Drawn using GOOGLE IMAGES and snipping tool.)

Question(s)

1 Observe the set up given above and answer the following questions:

1 (a) Describe how to make a magnetic compass using the set up shown above.

(2 marks)

1 (b) Which step in the procedure describe above causes the needle to become magnetised?

(1 mark)

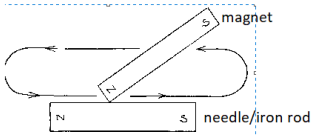
1 (c) Using a well labelled diagram illustrate the process of magnetising an iron nail/iron bar using a bar magnet.

(1 mark)

(Total marks 4)

Mark scheme

1 (a) Describe how to make a magnetic compass using the set up shown above and describe what would be observed.	
Answer	Guidance
• Rub the magnet along the needle (1) • Piece the needle through the cork (1) • Float the cork on the water (1) • Needle aligns N-S (1)	Students can explain the same in their own way any valid explanation to be considered as long as it includes all the materials provided.

1 (b) Which step in the procedure describe above causes the needle to become magnetised?	
Answer	Guidance
Stroking/rubbing	Only correct answer to be awarded 1mark.
1(c) Using a well labelled diagram illustrate the process of magnetising an iron nail/iron bar using a bar magnet.	
Answer	Guidance
	Neatly drawn appropriate diagram to be awarded 1 mark as per the scheme.

Science6DP1

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
Science6DP1	1				6.1.10	1

Item purpose

The question assesses the understanding of the child and his/her observation skills.

Source(s)

Question(s)

1 Identify the **incorrect** statement among the following.

A. Salt is soluble in water, whereas camphor is not
B. Lemon juice is soluble in water, whereas the cooking oil is not
C. Wheat flour is soluble in water, whereas sugar chunks are not
D. Vinegar is soluble in water whereas Kerosene is not

(1 mark)

Mark scheme

1. Identify the **incorrect** statement among the following.	
Answer	Guidance
C Wheat flour is soluble in water, whereas sugar chunks are not	• Substances be it solid or liquid whichever is soluble in water is to be identified. • Observation and application skills are being tested here. • Solutions with liquid solutes also to be normalised at par with solid solutes.

Science6DP2

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
Science6DP21a		1			6.1.10	1
Science6DP21b	1				6.1.10	1
Science6DP21c			1	1	6.1.10	2
Science6DP21d		1			6.1.10	1
Total marks		2	2	1		5

Item purpose

The question assesses understanding, observation, analytical skills and evaluation.

Question(s)

1 Read the given passage carefully and answer the following questions.

Rachel wants to make her brother John happy by performing magic.

She took a glass beaker and partially filled it with water. She then took a spoon full of white magical powder (X) and showed it to her brother. She then covered the beaker with her hand and mixed the contents of the spoon into it.

She then said some magical words and showed the beaker. John clapped happily and exclaimed that “the powder has vanished!”. She then took another powder (Y) and did the same.

This time as she said the magical words, the powder settled at the bottom of the beaker. She then explained to John how she could do it.

1 (a) If Rachel had common salt, wheat flour, sawdust and chalk powder, then which one do you think she would have selected as 'X'.

(1 mark)

1 (b) Substances like 'X' that mix well with water leaving no trace are called _____.

(1 mark)

1 (c) If Rachel had taken colourless vinegar instead of 'X', would it have given the same result? Justify your answer in a sentence.

(2 marks)

1 (d) The given substances were wheat flour, sugar and common salt. Identify the possible substance from the list that could be 'Y'.

(1 mark)

(Total marks 5)

Mark scheme

1(a) If Rachel had Common Salt, Wheat Flour, saw dust and Chalk Powder, then which one do you think she would have selected as 'X'	
Answer	Guidance
X is Common Salt	Common Salt is only soluble, and the others are insoluble in water as per the list.
1(b) Substances like 'X' that mix well with water leaving no trace are called _____.	
Answer	Guidance
Soluble substances	Only soluble substances can mix well in water, dissolve and leave trace behind.
1(c) If Rachel had taken colourless vinegar instead of 'X', would it have given the same result? Justify your answer in a sentence.	
Answer	Guidance
Yes. Vinegar will dissolve. Vinegar is a soluble liquid	
1(d) The given substances were wheat flour, sugar and common salt. Identify the possible substance from the list that could be 'Y'.	
Answer	Guidance
Wheat Four	Wheat flour is insoluble in water and hence remains suspended.

Science6DP3

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
Science6DP3	1				6.1.10	1

Item purpose

The question assesses the knowledge and understanding of the child.

Question(s)

1 Define a soluble substance.

(1 mark)

Mark scheme

1. Define soluble substance.	
Answer	Guidance
A substance that can be dissolved (in water)	• Do not accept- disappears (because of sense of 'disappear' to mean 'no longer exist' - a dissolved substance remains present). • At class 6 level, solubility is understood with respect to water and hence no ambiguity with other solvents.

Science6DP4

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
Science6DP41a	1				6.1.10	1
Science6DP41b		1			6.1.10	1
Science6DP41c	1				6.1.10	1
Science6DP41d		1			6.1.10	1
Science6DP41e		2			6.1.10	2
Total Marks	2	4				6

Item purpose

The question assesses understanding, observation, and knowledge.

Question(s)

1 (a) Between Glucose and Starch, which one is soluble in water?

(1 mark)

1 (b) If Rachel was given a choice to select from chalk powder, salt and sugar, which is the substance she should **not** choose to make a clear solution with water?

(1 mark)

1 (c) As per solubility in water, which substance among Glucose and Starch shares a property with wheat flour?

(1 mark)

1 (d) When water is poured into a vessel containing oil, which one floats on top?

(1 mark)

1 (e) Identify two soluble substances from the following list: Kerosene, Coconut oil, sugar syrup, lemon squash.

(2 marks)

(Total marks 6)

Mark scheme

1(a) Between Glucose and Starch, which one is soluble in water?	
Answer	Guidance
Glucose	Glucose is soluble and starch insoluble in water.
1 (b) If Rachel was given a choice to select from chalk powder, salt and sugar, which is the substance she should **not** choose to make a clear solution with water?	
Answer	Guidance
Chalk Powder.	Clear solution is formed by soluble substances. In the given list, salt and sugar are soluble whereas chalk powder is insoluble.
1 (c) As per solubility in water, which substance among Glucose and Starch shares a property with wheat flour?	

Answer	Guidance
Starch	Starch is insoluble in water like wheat flour.
1 (d) When water is poured into a vessel containing oil, which one floats on top?	
Answer	Guidance
Oil	Oil is insoluble in water and floats on top of it
1 (e) Identify two soluble substances from the following list: Kerosene, Coconut oil, sugar syrup, lemon squash.	
Answer	Guidance
Sugar syrup Lemon squash	Sugar syrup and lemon squash are soluble whereas kerosene and coconut oil are insoluble.

Science6SPA4

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
Science6SPA41a	2				6.1.10	2
Science6SPA41b	1				6.1.11	1
Science6SPA41c	1			2	6.2.10	3
Total marks	4			2		6

Item purpose

The question assesses the student's understanding, application, and evaluation of experimental investigation for soluble and insoluble substances and the effect of temperature on solids.

Source(s)

Material Used	Amount dissolved (teaspoon)	Amount of water taken	State
Sugar	1	50 ml	Dissolves completely
	2		Dissolves completely
	3		Some crystals remained undissolved
	4		Does not dissolve anymore

Question(s)

1 A group of students were given a few materials to test, such as sugar, chalk, sand, baking soda and Epsom salts in water. They were asked to mix the contents by adding a tablespoon of each material to different containers of water having equal amount of water.

1 (a) State the materials which are soluble in water.

(2 marks)

1 (b) Are changes which occurred by adding the material to water reversible or irreversible?

(1 mark)

1 (c) The students were now asked to add varying amounts of sugar solution and stir for 5 minutes. The changes observed were listed in the table as shown above.

i. State the term used to describe the solution formed after adding 3 teaspoons of sugar in water.

ii. Explain what will happen if you heat the solution with 3 teaspoons of sugar.

(3 marks)

(Total marks 6)

Mark scheme

<table>
<tr><td colspan="2">1 (a) State the materials which are soluble in water.</td></tr>
<tr><td>Answer</td><td>Guidance</td></tr>
<tr><td>Soluble materials – sugar, baking soda and Epsom salt</td><td>2 for all three
1 for two correct</td></tr>
<tr><td colspan="2">1 (b) Identify the changes which occurred by adding the material in water as reversible or irreversible?</td></tr>
<tr><td>Answer</td><td>Guidance</td></tr>
<tr><td>All are reversible</td><td>Accept only this answer for all.
If for any material answer provided as irreversible give 0M</td></tr>
<tr><td colspan="2">The students were now asked to add varying amounts of sugar solution and stir for 5 minutes. The changes observed were listed in the table as shown above.
(i) State the term used to describe the solution formed after adding 3 teaspoons of sugar in water.
(ii) Explain what will happen if you heat the solution with 3 teaspoons of sugar.</td></tr>
<tr><td>Answer</td><td>Guidance</td></tr>
<tr><td>(i) Saturated solution

(ii) The undissolved sugar crystals get dissolved.

Sugar is more soluble in warm water</td><td>Accept other words to that effect</td></tr>
</table>

Science6SPA2

Item identity	AO1 marks	AO2 marks	AO3 Marks	AO4 marks	Content Reference(s)	Marks
Science6SPA2		1			6.1.9	1

Item purpose

The question assesses the application of student's knowledge and understanding of procedure to the real-world situation.

Question(s)

1 A child saw his/her mother putting chocolate in a poacher and then she started warming the poacher gently. Identify the change that the chocolate will undergo due to the heat gain:

A. Dissolve
B. Evaporate
C. Freeze
D. Melt

(1 mark)

Mark scheme

1 A child saw his/her mother putting chocolate in a poacher and then she started warming the poacher gently. Identify the change that the chocolate will undergo due to the heat gain: A. Dissolve B. Evaporate C. Freeze D. Melt	
Answer	Guidance
C. Melt	Accept only option c or melt.

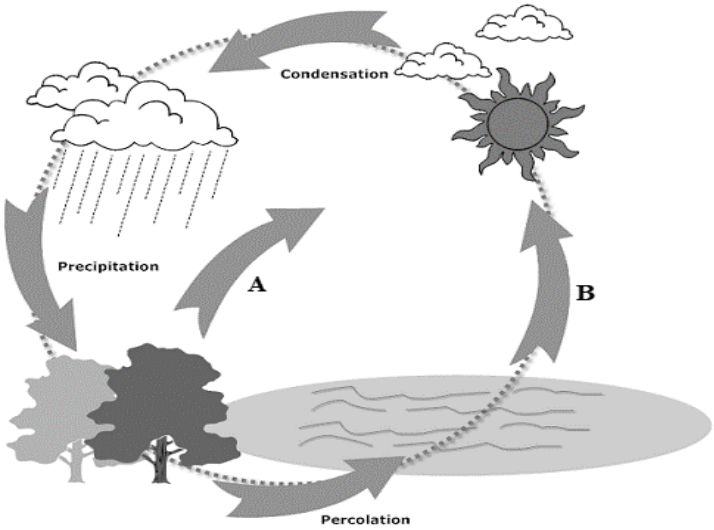
Science6SPA5

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
Science6SPA51a	1				6.4.4	1
Science6SPA51b	2				6.4.4	2
Science6SPA51c	2				6.2.11	2
Total marks	5					5

Item purpose

The question assesses the student's knowledge, application and understanding of procedures involved in water cycle in nature and uses of water.

Source(s)



Source : https://images.app.goo.gl/NbbERHeTxuS5dCZ3A

Question(s)

1

1 (a) State the name of the cycle depicted in the figure above.

(1 mark)

1 (b) State the names of processes A **and** B

(2 mark)

1 (c) State any two uses of water.

(2 marks)

(Total marks 5)

Mark scheme

1 (a) State the name of the cycle depicted in the figure above.	
Answer	Guidance
Water Cycle (1)	
1 (b) State the names of processes A **and** B	
Answer	Guidance
A -Precipitation B -Evaporation	Accept only these answers.

1 (c) State any two uses of water.	
Answer	Guidance
Any two uses from below: • Water is needed for drinking/bathing/ washing/cleaning of vessels/cleaning toilets. • Water helps animals and plants to cool. • Water is essential for the germination of seeds. • Water is required for irrigation of the crops. • Water is used to generate electricity. • Water wheel is used to run flour mills. • Water is used in many industries, like paper, rayon, petroleum refining, fertilizers, dyes, drugs and other chemical industries. • Water is used in car radiators to keep the engine cool. • In cold countries, people use water to warm their houses. • Water is used to keep things cool.	Max 2 marks

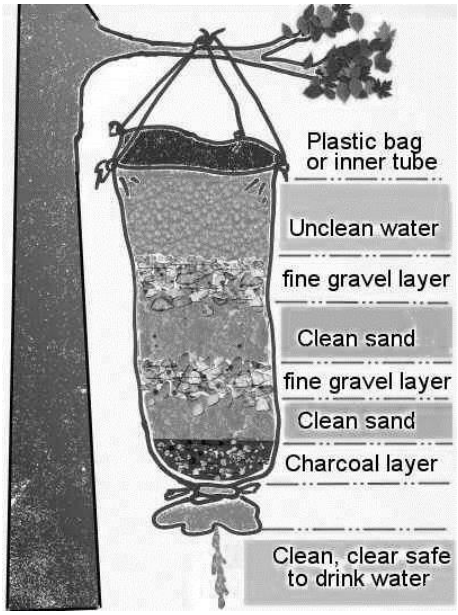
Science6SPA1

Item identity	AO1 marks	AO2 marks	AO3 Marks	AO4 marks	Content Reference(s)	Marks
Science6SPA1		1			6.5.3	1

Item purpose

The question assesses the application of student's knowledge and understanding of scientific technique to the real-world situation.

Source(s)



Source : https://images.app.goo.gl/ZFzBkWg3uCkWVnws6

Question(s)

1 A student made her own water-purification device using naturally available materials as shown in the picture above. Identify the layer which the student has used to remove the bad taste and odour from the impure water.

(1 mark)

Mark scheme

1. 1. A student made her own water-purification device using naturally available materials as shown in the picture above. Identify the layer which the student has used to remove the bad taste and odour from the impure water.	
Answer	Guidance
Charcoal	Accept only this option.