BRITISH COUNCIL

CBSE

Competency-based education for CBSE

Item Bank:

Science Class 8

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 8. There are 36 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
Science8VS61a	1				8.1.7	1
Science8VS61b	1				8.1.7	1
Total marks						2

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 7) 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	Page
8.1.7	Agricultural methods	Science8VS6	Science8VS61a	1				**10**
8.1.7	Agricultural methods	Science8VS6	Science8VS61b	1				**10**
8.2.10	Agricultural methods	Science8VS8	Science8VS8	1				**12**
8.2.11	Agricultural methods	Science8VS7	Science8VS71b	1				**13**
8.2.12	Agricultural methods	Science8VS7	Science8VS71a	1				**13**
8.2.13	Agricultural methods	Science8VS5	Science8VS51a	1				**15**
8.2.13	Agricultural methods	Science8VS5	Science8VS51b	1				**15**
8.1.1	Cells and reproduction	Science8GS2	Science8GS2	1				**17**
8.1.2	Cells and reproduction	Science8JS4	Science8JS41a	2				**18**
8.2.1	Cells and reproduction	Science8JS4	Science8JS41b		2			**18**
8.2.2	Cells and reproduction	Science8RD1	Science8RD1a	1				**21**
8.2.2	Cells and reproduction	Science8RD1	Science8RD1b	1				**21**
8.1.7	Agricultural methods	Science8VS6	Science8VS61a	1				**10**
8.2.2	Cells and reproduction	Science8PW3	Science8PW31c		2			**23**
8.2.2	Cells and reproduction	Science8JS4	Science8JS41c			2		**18**
8.2.3	Cells and reproduction	Science8JS2	Science8JS2	1				**25**
8.2.4	Cells and reproduction	Science8GS3	Science8GS31a	1				**27**
8.2.4	Cells and reproduction	Science8GS3	Science8GS31b		1			**27**
8.2.5	Cells and reproduction	Science8GS5	Science8GS51c	1				**29**
8.2.5	Cells and reproduction	Science8GS5	Science8GS51d		1			**29**
8.2.5	Cells and reproduction	Science8GS5	Science8GS51e		1			**29**
8.2.6	Cells and reproduction	Science8JS5	Science8JS5	3				**32**

8.4.3	Cells and reproduction	Science8GS1	Science8GS1	1				**34**
8.4.4	Cells and reproduction	Science8GS5	Science8GS51a	1				**29**
8.4.4	Cells and reproduction	Science8GS5	Science8GS51b		1			**29**
8.6.1	Cells and reproduction	Science8GS6	Science8GS61a	1				**35**
8.6.1	Cells and reproduction	Science8JS3	Science8JS31a	1				**37**
8.6.1	Cells and reproduction	Science8JS3	Science8JS31b	2				**37**
8.6.1	Cells and reproduction	Science8GS6	Science8GS61b		1			**35**
8.6.1	Cells and reproduction	Science8GS6	Science8GS61c		2			**35**
8.6.2	Cells and reproduction	Science8GS4	Science8GS41a	1				**39**
8.6.2	Cells and reproduction	Science8GS4	Science8GS41b		1	2		**39**
8.6.3	Cells and reproduction	Science8GS3	Science8GS31c		1			**27**
8.6.3	Cells and reproduction	Science8JS3	Science8JS31c		2			**37**
8.1.8	Forces	Science8SB4	Science8SB41d	2				**41**
8.1.9	Forces	Science8RD5	Science8RD5	1				**44**
8.1.9	Forces	Science8SB3	Science8SB31b	1				**45**
8.1.9	Forces	Science8SB1	Science8SB1		1			**48**
8.2.15	Forces	Science8SB2	Science8SB2	1				**50**
8.2.15	Forces	Science8SB5	Science8SB51b			2		**52**
8.2.16	Forces	Science8SB3	Science8SB31c	2				**45**
8.2.16	Forces	Science8SB3	Science8SB31a		2			**45**
8.2.18	Forces	Science8SB5	Science8SB51a	2				**52**
8.4.7	Forces	Science8SB4	Science8SB41a	1				**41**
8.4.7	Forces	Science8SB4	Science8SB41c		1			**41**
8.4.8	Forces	Science8SB4	Science8SB41b		2			**41**
8.6.12	Forces	Science8SB5	Science8SB51c		2			**52**
8.1.4	Metals and combustion	Science8RB2	Science8RB21a	2				**55**
8.1.4	Metals and combustion	Science8RB2	Science8RB21d	2				**55**
8.1.4	Metals and combustion	Science8RB2	Science8RB21b		1			**55**
8.1.4	Metals and combustion	Science8PW2	Science8PW2		1			**58**
8.1.5	Metals and combustion	Science8RB1	Science8RB1a	1				**59**

8.1.5	Metals and combustion	Science8PW4	Science8PW41a	1				**63**
8.1.5	Metals and combustion	Science8RB1	Science8RB1b		2			**59**
8.1.5	Metals and combustion	Science8RB1	Science8RB1d		2			**59**
8.1.6	Metals and combustion	Science8PW1	Science8PW1	1				**66**
8.2.7	Metals and combustion	Science8PW3	Science8PW31b	1				**23**
8.2.7	Metals and combustion	Science8RB3	Science8RB3		1			**68**
8.2.7	Metals and combustion	Science8RB2	Science8RB21c		2			**55**
8.2.8	Metals and combustion	Science8PW4	Science8PW41c	2				**63**
8.2.9	Metals and combustion	Science8RB4	Science8RB4	1				**69**
8.2.9	Metals and combustion	Science8PW4	Science8PW41b		2			**63**
8.6.6	Metals and combustion	Science8PW3	Science8PW31a	1	1			**23**
8.6.7	Metals and combustion	Science8RB1	Science8RB1c	2				**59**
8.6.7	Metals and combustion	Science8PW5	Science8PW51a		2			**71**
8.6.7	Metals and combustion	Science8PW5	Science8PW51b			2		**71**
8.6.8	Metals and combustion	Science8RB1	Science8RB1e				3	**59**
8.6.9	Metals and combustion	Science8PW6	Science8PW61a	2				**74**
8.6.9	Metals and combustion	Science8PW6	Science8PW61b		2			**74**
8.1.11	Sound and sight	Science8VS3	Science8VS31b	1				**77**
8.1.11	Sound and sight	Science8VS3	Science8VS31a			1		**77**
8.3.4	Sound and sight	Science8VS2	Science8VS21B	1				**79**
8.3.4	Sound and sight	Science8VS2	Science8VS21a		2			**79**
8.4.10	Sound and sight	Science8RD4	Science8RD41a	1				**81**
8.4.10	Sound and sight	Science8RD4	Science8RD41b	1				**81**
8.4.9	Sound and sight	Science8VS1	Science8VS1b	1				**83**
8.4.9	Sound and sight	Science8VS1	Science8VS1c		1			**83**

8.4.9	Sound and sight	Science8VS1	Science8VS1a		2	**83**
8.6.16	Sound and sight	Science8VS4	Science8VS4	1		**85**

Science8VS6

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
Science8VS61a	1				8.1.7	1
Science8VS61b	1				8.1.7	1
Total marks						2

Item purpose

The question assesses the knowledge of the student of the topic fibres and fabrics.

Question(s)

1

1 (a) Which of these is a natural fibre?

A. Cotton
B. Nylon
C. Polyester
D. Rayon

(1 mark)

1 (b) Which of these is a fibre derived from chemicals?

A. Rayon
B. Cotton
C. Nylon
D. Silk

(1 mark)

(Total marks 2)

Mark scheme

1(a) Which of these is a natural fibre? A. Cotton B. Nylon C. Polyester D. Rayon	
Answer	Guidance
Cotton (1)	
1 (b) Which of these is a fibre derived from chemicals? A. Rayon B. Cotton C. Nylon D. Silk	
Answer	Guidance
Nylon (1)	

Science8VS8

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
Science8VS8	1				8.2.10	1

Item purpose

The question assesses the recalling skill of the student.

Question(s)

1 State the meaning of the word ‘fertilizer’

(1 mark)

Mark scheme

1 (a) State the meaning of the word ‘fertilizer	
Answer	Guidance
a chemical or natural substance added to soil or land to increase its fertility.	

Science8VS7

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
Science8VS71a	1				8.2.12	1
Science8VS71b	1				8.2.11	1
Total marks	2					2

Item purpose

The question assesses the skill of the student to assess scientific information and make judgement.

Question(s)

1

1 (a) State any one negative impact of modern agricultural practices on ecological health.

(1 mark)

1 (b) State any one way in which the modern agricultural practices have boosted agricultural yields.

(1 mark)

(Total marks 2)

Mark scheme

1(a) State any one negative impact of modern agricultural practices on ecological health.	
Answer	Guidance
Habitat destruction (1) Release of atmospheric and water pollutants (1) Contribution to climate change (1) Contamination of air, water and soil(1mark) Entry of harmful non-biodegradable chemicals into the food chain leading to biomagnification. (1 mark)	Accept any valid point
1 (b) State any one way in which the modern agricultural practices have boosted the agricultural yield.	
Answer	Guidance
Use of HYV seed variety/fertilizers to enhance soil fertility/use of disease resistant crop variety/use of pesticides for crop production/use of more mechanised farm machinery (1 mark)	Any one of these or any other relevant points

Science8VS5

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
Science8VS51a	1				8.2.13	1
Science8VS51b	1				8.2.13	1
Total marks						2

Item purpose

The question assesses the retaining skill of the student.

Question(s)

1 Define the following terms:

1 (a) Protected area

(1 mark)

1 (b) Biodiversity

(1 mark)

(Total marks 2)

Mark scheme

1 Define the following terms 1(a) Sanctuary.	
Answer	Guidance
geographical <u>space</u> that is protected for <u>conservation</u> goals	Accept any valid definition

1(b) Biodiversity	
Answer	Guidance
It refers to the variety of organisms existing on the earth (1)	Accept any valid definition

Science8GS2

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
Science8GS2	1				8.1.1	1

Item purpose

The question assesses students understanding of the methods of reproduction.

Question(s)

1 X is an organism which lives in water and reproduces by budding. Identify the organism X.

A. Amoeba
B. Coral
C. Paramecium
D. Planaria

(1 mark)

Mark scheme

1. X is an organism which lives in water and reproduces by budding. Identify the organism X.	
Answer	Guidance
B Coral (1 mark)	Accept only B Coral (1 mark)

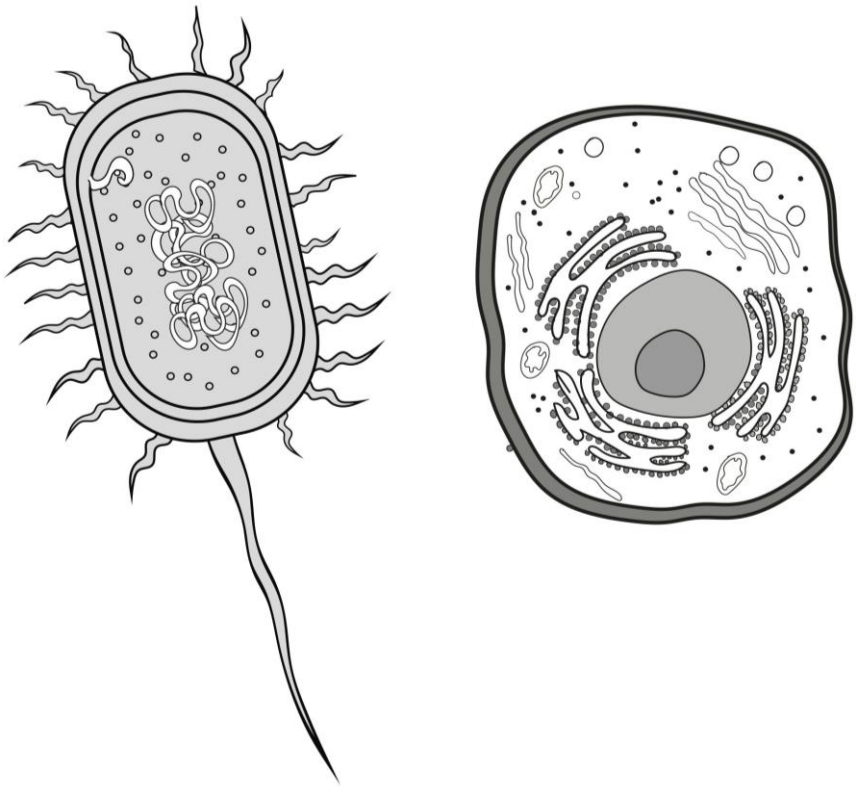
Science8JS4

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
SCIENCE8JS41a	2				8.1.2	2
SCIENCE8JS41b		2			8.2.1	2
SCIENCE8JS41c			2		8.2.2	2
Total marks	2	2	2			6

Item purpose

The question assesses the learners' understanding of the role of microorganisms in our lives.

Source(s)



Bacterial cell Animal Cell

Source information: NCERT Class 8 Textbook

Question(s)

1

1 (a) State two points of difference between the bacterial and the animal cell.

(2 marks)

1 (b) Addition of salt a is a well-known method of food preservation. Explain how it prevents food spoilage.

(2 marks)

1 (c) Justify with the help of two examples that microorganisms can be beneficial for humans.

(2 marks)

(Total marks 6)

Mark scheme

1(a) Identify two structural differences between a bacterial and an animal cell.	
Answer	Guidance
• Bacterial cells have a cell wall which is absent from animal cells. • Bacterial cells do not have a well-defined nucleus like animal cells.	• Bacterial cells do not have membrane bound cell organelles like mitochondria which are present in animal cells. • Bacterial cells are smaller in size. (Any two valid structural differences, 1 mark for each difference)
1(b) Addition of salt is a well-known method of food preservation. Explain how it prevents food spoilage.	

Answer	Guidance
Salt draws out water from the cells of the food and bacteria through the process of osmosis. (1) The growth of bacteria is prohibited due to the absence of an optimum amount of water. (1)	The cells of the food and bacteria lose water through osmosis due to difference in concentration of salt. Bacteria needs optimum water, temperature and air to grow. (1)
1 (c) Justify with the help of two examples that microorganisms can be beneficial for humans.	
Answer	Guidance
Any two from: Yeast is used in baking industry (1) Lactobacillus Bacteria is used to make curd (1) Yeast is used in the production of alcohol, wine, vinegar. (1) Some bacteria and fungi are used to produce antibiotics eg Streptomycin. (1) Production of vaccines (1) Rhizobium bacteria fixes atmospheric Nitrogen. (1) Microorganisms are decomposers and thus help in cleaning the environment. (1)	(Any two valid points, 1 point for each point)

Science8RD1

Item identity	AO1 marks	AO2 Marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
SCIENCE8RD1a	1				8.2.2	1
SCIENCE8RD1b	1				8.2.2	1
Total marks	2					2

Item purpose

The question assesses the importance of microorganisms.

Question(s)

1 (a) Alcohol is produced with the help of

A. Bacteria
B. Yeast
C. Nitrogen
D. Amoeba

(1 mark)

1 (b) The gas released during the preparation of bread is

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

(1 mark)

Mark scheme

1 (a) Alcohol is produced with the help of-	
Answer	Guidance
B. Yeast (1)	Yeast is the microorganism can convert sugar into alcohol (1 Mark)
1 (b) The gas released during the preparation of bread is-	
Answer	Guidance
C. Carbon dioxide (1)	When carbohydrate decomposed in absence of oxygen by the action of yeast carbon dioxide is produced. (1 Mark)

Science8PW3

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
Science8PW31a	1	1			8.6.6	2
Science8PW31b	1				8.2.7	1
Science8PW31c		2			7.2.2	2
Total marks	2	3				5

Item purpose

The question assesses the learner's understanding of physical and chemical properties of metals and non-metals.

Question(s)

1 An element X is soft and can be cut with knife. It is stored in kerosene as it reacts vigorously with water and oxygen. Its compounds are used in making soaps.

1 (a) State the name of element X **and** say if it is a metal or a non-metal?

(2 marks)

1 (b) Write a word equation to show the reaction of element X with oxygen.

(1 mark)

1 (c) State whether the reaction between element X and oxygen is a Physical or Chemical change. Give a reason for your answer.

(2 marks)

(Total marks 5)

Mark scheme

1. 1 (a) Identify the element X. Is it a metal or a non-metal?	
Answer	Guidance
The element X is Sodium. (1) It is a metal. (1)	Accept symbol of sodium i.e., Na also in place of sodium. (1)
1 (b) Write a word equation to show the reaction of element X with oxygen.	
Answer	Guidance
Sodium + Oxygen → Sodium oxide (1)	Accept Metal + Oxygen → Metal oxide (1)
1 (c) State whether the reaction between element X and oxygen is a Physical or Chemical change. Give reason for your answer.	
Answer	Guidance
Chemical change (1) Reason – New substance is formed. (1)	In Reason - Accept the explanation with example also. (1)

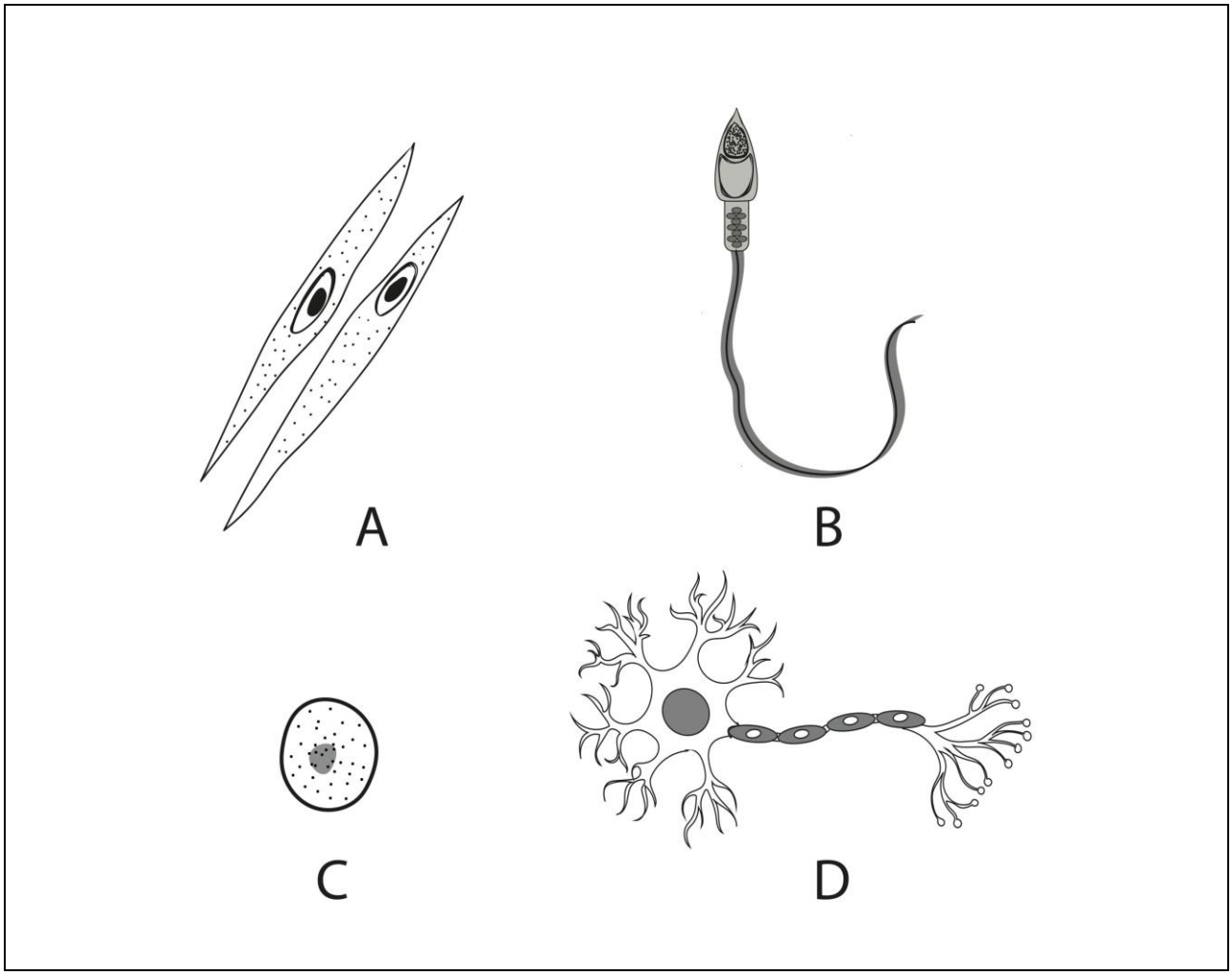
Science8JS2

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
SCIENCE8JS2	1				8.2.3	1

Item purpose

The question assesses learner's knowledge about different specialized animal cells.

Source(s)



Question(s)

1 Which of the cells given in the above image is a human nerve cell?

A. A
B. B
C. C
D. D

(1 mark)

Mark scheme

1(a) Which of the cells given in the above image is a human nerve cell? A. A B. B C. C D. D	
Answer	Guidance
D. D (1)	D. D (1)

Science8GS3

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
Science8GS31a	1				8.2.4	1
Science8GS31b		1			8.2.4	1
Science8GS31c		1			8.6.3	1
Total marks	1	2				3

Item purpose

The question assesses students understanding about the changes taking place during menstruation cycle and the importance of personal hygiene in reproductive growth.

Question(s)

1 When Sudha reached a certain age her vaginal bleeding started occurring after regular interval of time. Her mother told her to take special care of her personal hygiene during this period.

1 (a) Name the process occurring after regular intervals.

(1 mark)

1 (b) What does the onset of this process in females signify?

(1 mark)

1 (c) Give a reason why her mother told her to take special care of her personal hygiene during this period.

(1 mark)

(Total marks 4)

Mark scheme

<table>
<tr><td colspan="2">1 (a) Name the process occurring after regular intervals.</td></tr>
<tr><td>Answer</td><td>Guidance</td></tr>
<tr><td>Menstruation (1 mark)</td><td>Also accept periods or monthly period or menstruation cycle

1 mark for any one of them</td></tr>
<tr><td colspan="2">1 (b) What does the onset of this process in females signify?</td></tr>
<tr><td>Answer</td><td>Guidance</td></tr>
<tr><td>It signifies that the reproductive system of the female has started working. (1 mark)</td><td>Reproductive system has developed
The start of reproduction cycle.
Ova begin to mature with the onset of menstruation

1 mark for any one point</td></tr>
<tr><td colspan="2">1 (c) Give reason why her mother told her to take special care of her personal hygiene during this period.</td></tr>
<tr><td>Answer</td><td>Guidance</td></tr>
<tr><td>• If personal hygiene is not maintained during this period, then there are chances of bacterial infections. (1)</td><td>Accept other valid responses, such as
• It can increase chances of urinary tract infections which can lead to bacterial growth. (1)
• Poor genital hygiene negatively affects her health (1)
1 mark each for any two points</td></tr>
</table>

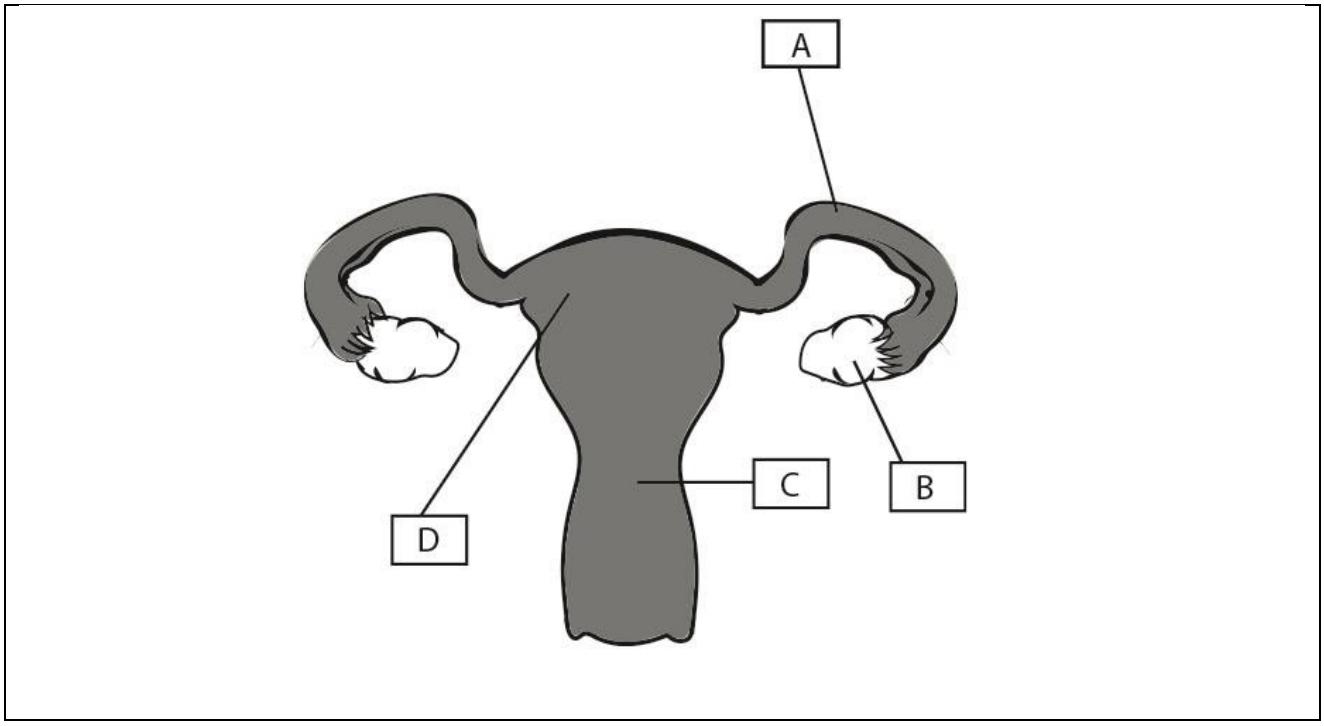
Science8GS5

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
Science8GS51a	1				8.4.4	1
Science8GS51b		1			8.4.4	1
Science8GS51c	1				8.2.5	1
Science8GS51d		1			8.2.5	1
Science8GS51e		1			8.2.5	1
Total marks	2	3				5

Item purpose

The question assesses the students understanding about human reproductive organs and development of a human foetus during pregnancy.

Source(s)



Question(s)

1 Observe the diagram and answer the following questions.

1 (a) Identify the organ B.

(1 mark)

1 (b) Where does fertilisation occur in the above diagram?

A. A
B. B
C. C
D. D

(1 mark)

1 (c) Define ovulation.

(2 mark)

1 (d) In which female reproductive organ does the embryo get embedded?

(1 mark)

1 (e) After how many weeks of development is a human embryo said to become a foetus?

(1 mark)

(Total marks 6)

Mark scheme

<table>
<tr><td colspan="2">1 (a) Identify the organ B.</td></tr>
<tr><td>Answer</td><td>Guidance</td></tr>
<tr><td>Ovary (1)</td><td>Accept ovaries (1)</td></tr>
<tr><td colspan="2">1 (b) Where does fertilisation occur in the above diagram?</td></tr>
<tr><td>Answer</td><td>Guidance</td></tr>
<tr><td>A (1)</td><td>Accept only A
(1)</td></tr>
<tr><td colspan="2">1 (c) Define ovulation.</td></tr>
<tr><td>Answer</td><td>Guidance</td></tr>
<tr><td>Ovulation is a process when an egg is released from the ovary into the fallopian tube (where it can become fertilized by sperm.)
(1)</td><td>• Ovulation is the release of an egg from one of a woman's ovaries.
• Ovulation is the process and usually happens once in every menstrual cycle and causes the release of the mature egg from the ovary.
1 mark for any correct definition
I</td></tr>
<tr><td colspan="2">1 (d) In which female reproductive organ does the embryo get embedded?</td></tr>
<tr><td>Answer</td><td>Guidance</td></tr>
<tr><td>Uterus (1)</td><td>Accept wall of uterus (1)</td></tr>
<tr><td colspan="2">1 (e) After how many weeks of development, a human embryo is said to become a foetus?</td></tr>
<tr><td>Answer</td><td>Guidance</td></tr>
<tr><td>About 8 Weeks
(1)</td><td>Accept about 56 days or at the end of 8th week
(1)</td></tr>
</table>

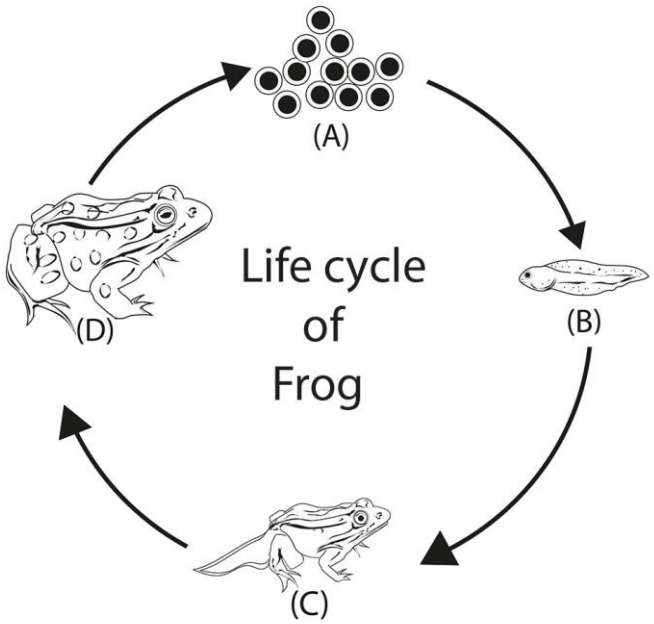
Science8JS5

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
SCIENCE8JS5	3				8.2.6	3

Item purpose

The question assesses the learners' understanding of the stages of the lifecycle of an amphibian (example, a frog).

Source(s)



Question

1 Identify the different stages of the lifecycle of a frog as represented by A, B and C in the above figure.

(3 marks)

(Total marks 3)

Mark scheme

1. 1. Identify the different stages of the lifecycle of a frog as represented by A, B and C in the above figure.	
Answer	Guidance
A – frogspawn / eggs of frogs (1) B – Tadpole (1) C – Froglet / tadpole with legs (1)	

Science8GS1

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
Science8GS1	1				8.4.3	1

Item purpose

The question assesses students understanding of the experimental observation of the organelles of the cells seen under a microscope.

Question(s)

1 The cellular components seen under a compound microscope while observing human cheek cells are...

A. Cell membrane, protoplasm, lysosomes
B. Cell wall, mitochondria, vacuole
C. Chloroplast, nuclear membrane, nucleolus
D. Cytoplasm, nucleus, plasma membrane

(1 mark)

Mark scheme

1 (a) The cellular components seen under a compound microscope while observing human cheek cells are A. Cell membrane, protoplasm, lysosomes B. Cell wall, mitochondria, vacuole C. Chloroplast, nuclear membrane, nucleolus D. Cytoplasm, nucleus, plasma membrane	
Answer	Guidance
D Cytoplasm, nucleus, plasma membrane (1Mark)	Accept only D Cytoplasm, nucleus, plasma membrane (1mark)

Science8GS6

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
Science8GS61a	1				8.6.1	1
Science8GS61b		1			8.6.1	1
Science8GS61c		2			8.6.1	2
Total marks	1	3				4

Item purpose

The question assesses students understanding of the development of secondary sexual characteristics during puberty.

Question(s)

1 Rohan and Seema were childhood friends. When Seema became eleven years old her breasts started developing. Rohan's voice became deeper his shoulder and chest became wider.

1 (a) Give a word for the characteristics that are developed in Rohan and Seema?

(1 mark)

1 (b) Name the hormone which is responsible for these sexual characteristics in Seema.

(1 mark)

1 (c) After a few years Rohan observed a bulge in his neck. What could be the possible reason for this bulge in his neck?

(2 mark)

(Total marks 4)

Mark scheme

1 (a) Name the type of sexual characteristics were developed in both of them	
Answer	Guidance
Secondary Sexual characteristics (1)	Accept only Secondary Sexual characteristics (1)
1 (b) Name the hormone in which is responsible for these sexual characteristics in Seema.	
Answer	Guidance
Estrogen (1)	Accept oestrogen (1)
1 (c) After few years Rohan developed slight bulge at the front of neck. Explain what the bulge is and the reason for the bulge.	
Answer	Guidance
The bulge in front of the neck was due to Adam's apple. (1) It is formed because male's larynx grows bigger during puberty. (1)	Adam's apple (1) It is formed because of bigger voice box in the throat. (1)

Science8JS3

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
SCIENCE8JS31a	1				8.6.1	1
SCIENCE8JS31b	2				8.6.1	2
SCIENCE8JS31c		2			8.6.3	2
Total marks	3	2				5

Item purpose

The question assesses the learners' understanding and analysis of the growth process in males and females during adolescence and how to maintain one's reproductive health.

Source(s)

5	Sanjay and Seema were childhood friends. When Seema became 12 years old, she developed a little swelling in her neck. She visited a doctor who prescribed some medicines and asked her to take an iodine rich diet. After some time she felt better. Later, her friend Sanjay also developed a little protrusion on his throat. He got worried. But when he went to the doctor, he assured him that it was absolutely normal. It was just the development of secondary sexual characteristics in him.

Source information: self-created

Question(s)

1

1(a) Describe in brief the meaning of 'secondary sexual characteristics'.

(1 mark)

1(b) Explain the change that Sanjay was experiencing.

(2 marks)

1(c) Recommend any two measures to Sanjay and Seema to maintain their

reproductive health during adolescence.

(2 marks)

(Total marks 7)

Mark scheme

1. 1(a) Describe in brief the meaning of phrase 'secondary sexual characteristics'.	
Answer	Guidance
The external features that distinguish a male from a female are called secondary sexual characters. (1)	Those features that are dimorphic and are not directly related to reproduction are called secondary sexual characters. (1)
1(b) Explain the change that Sanjay was experiencing.	
Answer	Guidance
Due to the enlargement of voice box (1)	Credit answers that cover some aspect of: the little protrusion in Sanjay's neck was due to growth of larynx which can be seen as protruding part of the throat called Adam's apple. The larynx is hardly visible in girls. (1)
1(c) Recommend any two measures to Sanjay and Seema to maintain their reproductive health during adolescence.	
Answer	Guidance
Wear a condom during sexual intercourse Maintain personal hygiene Take balanced and nutritious diet.	Accept any valid point about reproductive health

Science8GS4

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
Science8GS41a	1				8.6.2	1
Science8GS41b		1	2		8.6.2	3
Total marks	1	1	2			4

Item purpose

The question assesses the students understanding about the errors and misconception about the human sexuality.

Question(s)

1. Shobha gave birth to a healthy baby girl. Her husband was unhappy with the news and held her responsible for the baby to be a girl.

1 (a) Was her husband justified in blaming her for the birth of a baby girl?

(1 mark)

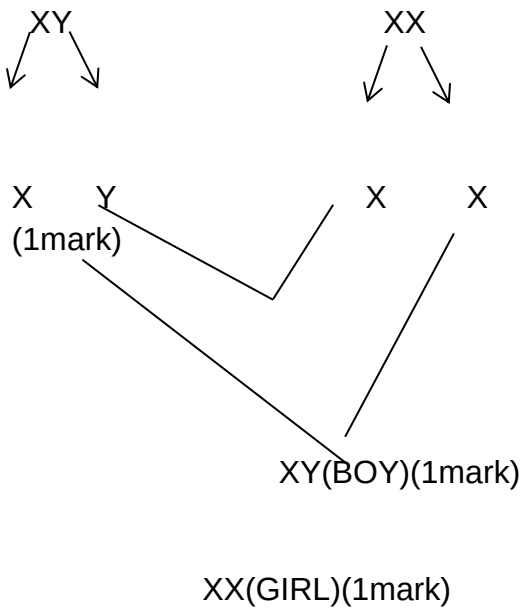
1 (b) Draw a diagram to show how the sex of a foetus is determined.

(3 marks)

(Total marks 4)

Mark scheme

<table>
<tr><td colspan="2">1 (a) Was her husband justified in blaming her for the birth of a baby girl?</td></tr>
<tr><td>Answer</td><td>Guidance</td></tr>
<tr><td>No, the husband was not justified in blaming her for the birth of a baby girl. (1mark)</td><td>No

Accept only no (1mark)</td></tr>
<tr><td colspan="2">1 (b) Draw a diagram to show how the sex of a foetus is determined.</td></tr>
<tr><td>Answer</td><td>Guidance</td></tr>
<tr><td>Father Mother
 
</td><td>Accept anyway of drawing this diagram with the correct X and Y chromosomes.

1 mark for each step.</td></tr>
</table>

Science8SB4

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
Science8SB41a	1				8.4.7	1
Science8SB41b		2			8.4.8	2
Science8SB41c		1			8.4.7	1
Science8SB41d	2				8.1.8	2
Total marks	3	3				6

Item purpose

The question assesses the students' understandings of balanced and unbalanced forces and ability to interpret distance-time graph.

Source(s)

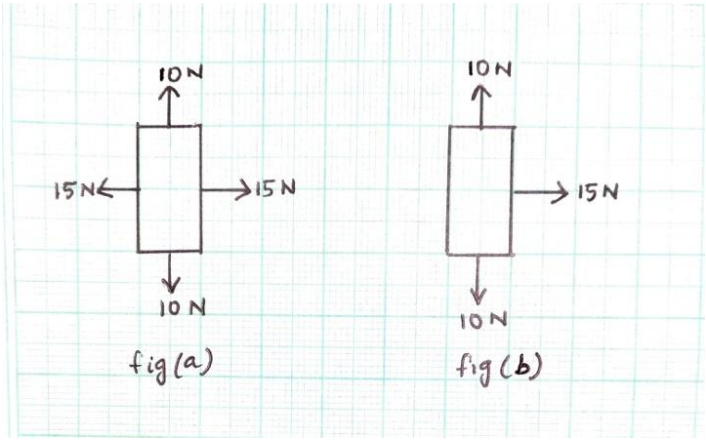


Fig- Forces

Source information: Hand drawn diagram

Question(s)

1

1 (a) Which of the above diagrams show unbalanced forces? {(fig (a) or fig (b)}

(1 mark)

1 (b) Draw a distance-time graph for a car which is stationary.

(2 marks)

1 (c) Explain why a car at rest exhibits balanced forces.

(1 mark)

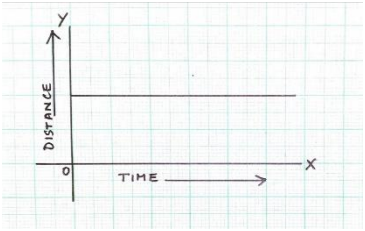
1 (d) Name the force which is exerted by the earth on the stationary car.

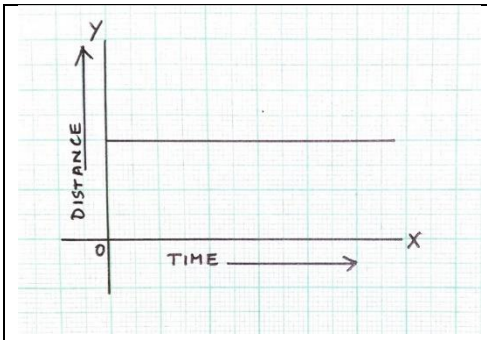
Classify the force as a contact or non-contact force.

(2 marks)

(Total marks 6)

Mark scheme

1. 1 (a) Which of the above diagrams show unbalanced forces?	
Answer	Guidance
Diagram fig (b). (1 mark)	Accept only fig (b) (1 mark)
1 (b) Draw a distance-time graph for a car which is stationary?	
Answer	Guidance
Straight line parallel to X-axis (1) Axes labelled and correct orientation (1) (2 marks)	2 marks for diagram as below 

	
1 (c) Explain why a car at rest exhibits balanced force.	
Answer	Guidance
upward force of reaction exerted by the ground= downward acting weight of the car (1 mark)	Accept- when explained with free body diagram or if mentioned that upward force of reaction exerted by the ground= downward acting weight of the car (1 mark)
1 (d) Name the force which is exerted by the earth on the stationary car to pull towards itself. Classify the force as contact or non-contact force	
Answer	Guidance
Gravitational force (1 mark) Non-contact force (1 mark)	Accept only gravitational force or the force of gravity (1 mark) Non-contact force (1 mark)

Science8RD5

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
SCIENCE8RD5	1				8.1.9	1

Item purpose

The question assesses the effects of friction.

Source(s)

FRICTION - Any object, moving over the surface of another objects slows down when no external force is applied on it. If force is applied along the left, friction acts along the right. The force of friction always opposes the applied force. Friction is caused by the irregularities on the two surfaces in contact. The force of friction is greater if a rough surface is involved.

Question(s)

1 Explain using ideas of friction why it is difficult to move on a wet marble floor.
(1 mark)

Mark scheme

1. Why it is difficult to move on a wet marble floor?	
Answer	Guidance
On a wet marble floor, frictional force between the foot and floor decreases making it slippery, thus we feel difficult to move on a wet marble floor. (1)	Rolling friction is smaller than all the given frictions. (1 Mark)

Science8SB3

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
Science8SB31a		2			8.2.16	2
Science8SB31b	1				8.1.9	1
Science8SB31c	2				8.2.16	2
Total marks	3	2				5

Item purpose

The question assesses the students' understandings of experimental investigation of the effects of force and surface area on pressure.

Question(s)

1

1 (a) A metal block was allowed to drop from the same height onto different wooden blocks of same mass but different contact area.
Using your knowledge of pressure, explain the relationship between the contact area of the wooden block and how deep the wooden block would sink into the soft ground?

(2 marks)

1 (b) Name the force which is exerted by all matter on all other matter.

(1 mark)

1 (c) A force of 100 Newton is applied on an area of 4 square metre.
Calculate the pressure applied on the area.

(2 marks)

(Total marks 5)

Mark scheme

<table>
<tr><td colspan="2">1. 1 (a) By studying the results mentiones above, predict how deep a wooden block with contact area of 9.0 cm^2 would sink into the ground ?</td></tr>
<tr><td>Answer</td><td>Guidance</td></tr>
<tr><td>5.1cm (1 mark)</td><td>Accept only 5.1 cm. (1 mark)</td></tr>
<tr><td colspan="2">1 (b) Using the knowledge of pressure, explain the relationship between the contact area of the wooden block and how deep the wooden block would sink into the soft ground?</td></tr>
<tr><td>Answer</td><td>Guidance</td></tr>
<tr><td>As Pressure is equal to force divided by area, hence as the contact area of the wooden block increases, the depth to which block would sink into the soft ground decreases.
(2 mark)</td><td>Accept
Pressure= Force/ Area (1)
The area of the wooden block increases, the depth to which it will sink decreases.
(1)
Also accept – If the area of the wooden block decreases the depth to which it will sink increases.</td></tr>
<tr><td colspan="2">1 (c) Name the force which is exerted by all matter on all other matter.</td></tr>
<tr><td>Answer</td><td>Guidance</td></tr>
<tr><td>Gravitational force (1 mark)</td><td>Accept gravitational force or universal force of attraction on all matter.
(1 mark)</td></tr>
<tr><td colspan="2">1 (d) A force of 100 Newton is applied on an area of 4 square metre. Calculate the pressure applied on the area.</td></tr>
<tr><td>Answer</td><td>Guidance</td></tr>
<tr><td>Force = 100 Newton, Area = 4 square metre
(1 mark)
∴ Pressure =Force / Area =100 / 4 = 25Pascal.</td><td>Accept-
Force = 100 Newton, Area = 4 square metre
(1 mark)
∴ Pressure =Force / Area =100 / 4 = 25Pascal.</td></tr>
</table>

(1 mark)	(1 mark)

Science8SB1

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
Science8SB1		1			8.1.9	1

Item purpose

The question assesses the students' understandings of frictional force that impedes motion.

Source(s)

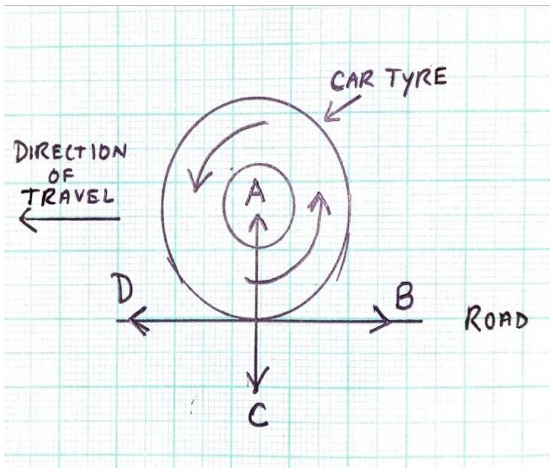


Fig: Wheel of a moving car

Source information: Hand drawn diagram

Question

1 The wheel of a moving car is driven by the engine. The car is moving in the direction shown in the above diagram. In which direction does the frictional force act on the wheel?

A. A
B. B
C. C
D. D

(1 mark)

Mark scheme

1 The wheel of a moving car is driven by the engine. The car is moving in the direction shown in the above diagram. In which direction does the frictional force act on the wheel?	
Answer	Guidance
Direction of B (1 mark)	Accept-Frictional force acts in a direction opposite to the direction of force applied. (1 mark)

Science8SB2

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
Science8SB2		1			8.2.15	1

Item purpose

The question assesses the students understandings of the effects of force.

Source(s)

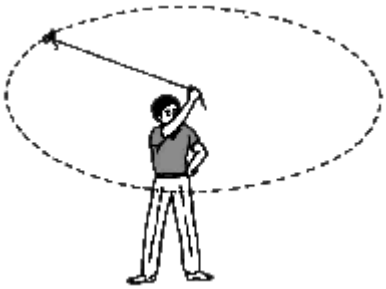


Fig: A stone rotated on a circular path

Source information: Class 9 NCERT book

Question

1 When a stone is rotated on a circular path uniformly, the effect of force will be

A. Change in direction and magnitude of motion
B. Change in shape of object
C. Change in direction of motion only
D. Change in magnitude only

(1 mark)

Mark scheme

1 When a stone being rotated on a circular path uniformly, the effect of force will be A. Change in direction and magnitude of motion B. Change in shape of object C. Change in direction of motion only D. Change in magnitude only	
Answer	Guidance
(c) Change in direction of motion only	Accept only (c) (1 mark)

Science8SB5

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
Science8SB51a	2				8.2.18	2
Science8SB51b			2		8.2.15	2
Science8SB51c		2			8.6.12	2
Total marks	2	2	2			6

Item purpose

The question assesses the students' understandings of experimental investigation of how different materials affect friction and its positive and negative impact in our everyday life.

Source(s)

Sonakshi investigated how a pencil cell travels on a ramp when the table is covered with different surfaces (wood, cotton cloth and silk cloth). She noted the time taken by the pencil cell to travel on each surface three times. Her results are mentioned below.

Surface	Time (seconds)	Time (seconds)	Time (seconds)
Wooden	5.01 seconds	4.99 seconds	5.21 seconds
Cotton cloth	7.20 seconds	7.25 seconds	7.20 seconds
Silk cloth	4.20 seconds	4.20 seconds	4.25 seconds

Source information: Table made by item author (Sharmila Basu)

Question(s)

1 (a) Name the two factors on which the magnitude of a frictional force depends.

(2 marks)

1 (b) From the chart given above, state which travelled fastest **and** find the average time it took.

(2 marks)

1 (c) Explain with one example how friction can be both a positive and a negative part in our everyday life

(2 marks)

(Total marks 6)

Mark scheme

1. 1 (a) Name the two factors on which the magnitude of frictional force depends?	
Answer	Guidance
Weight of the body (1 mark) Nature of the surface in contact (1 mark)	Weight of the body (1 mark) Nature of the surface in contact (1 mark)
1 (b) From the chart given above, state which travelled fastest **and** find the average time it took.	
Answer	Guidance
In silk cloth, it travelled fastest. (1 mark) Average time=4.20+4.20+4.25=12.65/3=4.21 seconds	Accept- In silk cloth, it travelled fastest. (1 mark) Average time=4.20+4.20+4.25=12.65/3=4.21 seconds

(1 mark)	(1 mark)
1 (c) Explain how friction can be both a positive and a negative part in our everyday life	
Answer	Guidance
Positive- Friction helps us in walking and running. (1 mark) Negative-The soles of shoes wear out due to friction. (1 mark)	Accept any other valid points.

Science8RB2

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
Science8RB21a	2				8.1.4	2
Science8RB21b		1			8.1.4	1
Science8RB21c		2			8.2.7	2
Science8RB21d	2				8.1.4	2
Total marks	4	3	0	0		7

Item purpose

The question assesses the knowledge about the chemical properties of metals and non-metals…

Question(s)

1 Study the given table and answer the questions given below:

1 (a) Identify one metal and one non-metal from the table given above.

(2 marks)

1 (b) As per the table metal/non-metal reacts with HCl and H_2SO_4 to give hydrogen gas. How will we confirm that the gas released is Hydrogen gas?

(1 mark)

1 (c) Write a word equation for the reaction between hydrochloric acid and aluminium foil.

(2 marks)

1 (d) Compare any two physical properties of metals and non-metals.

(2 marks)

(Total marks 8)

Mark scheme

1. 1 (a) Identify one metal and one non-metal from the above given table.	
Answer	Guidance
Magnesium / Aluminium / iron / copper / Metal Sulphur / charcoal	1 mark each for any one metal and one non-metal
1 (b) As per the table metal/non-metal reacts with HCl and H2SO4 to give hydrogen gas. How will we confirm that the gas is released is Hydrogen gas? Explain.	
Answer	Guidance
1 (b) When we bring a burning matchstick near the mouth of the test tube it will be put off with a POP sound.	If the child writes POP sound award 1 mark
1 (c) What happens when: Hydrochloric acid is added to Aluminium foil? write word equation for the reaction involved.	
Answer	Guidance
Hydrochloric acid + aluminium --> Aluminium chloride + Hydrogen	Ignore ‘foil’.
1 (d) Compare any two physical properties of metals and non-metals.	
Answer	Guidance

1 (d) Metals	Non-metals	Any two physical properties or any other correct answer like
They are malleable	Non malleable	Metals are generally solids
They are ductile	they are not	Non -metals are poor conductors of heat and electricity etc
They are sonorous	they are not	

Science8PW2

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Mark
Science8PW2		1			8.1.4	1

Item purpose

The question assesses the learner's understanding of properties of metals and their application to real life.

Question(s)

1 A student is given a hammer and asked to make a rectangular shaped object from any one of the given raw materials. Which raw material should he choose?

A. A piece of Chalk
B. Aluminium can
C. Common salt
D. Carbon rod

(1 mark)

Mark scheme

1. A student is given a hammer and asked to make a rectangular shaped object from any one of the given raw materials. Which raw material should he choose? A. A piece of Chalk B. Aluminium can C. Common salt D. Carbon rod	
Answer	Guidance
B. Aluminium can (1)	

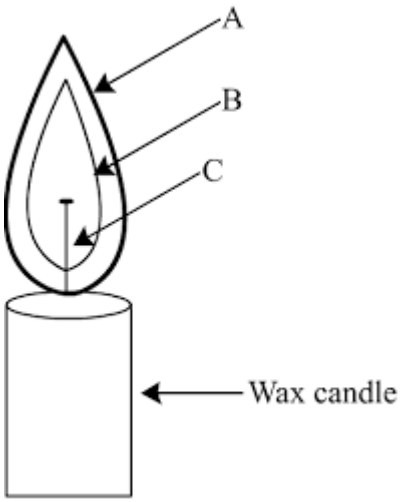
Science8RB1

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
Science8RB1a	1				8.1.5	1
Science8RB1b		2			8.1.5	2
Science8RB1c	2				8.6.7	2
Science8RB1d		2			8.1.5	2
Science8RB1e				3	8.6.8	3
Total marks	3	4		3		10

Item purpose

The question assesses knowledge and understanding of different parts of a flame and combustion

Source(s)



Parts of a flame

	Compressed Natural Gas	Diesel
Carbon monoxide production	2.97 g/km	1.09 g/km
Greenhouse gas emissions	2,364 g/mi	2,680 g/mi
Energy density	47.2 MJ/kg	45.8 MJ/kg

Question(s)

1. 1 Observe the given picture and answer the following questions

1 (a) Which is the hottest part of the flame in the given figure of a candle.

(1 mark)

1 (b) Why does the middle zone of the candle flame glow with yellow colour?

(2 marks)

1 (c) State any two conditions under which combustion takes place.

(2 marks)

1 (d) In an experiment 6.5 kg of a fuel was completely burnt. The heat produced was measured to be 1,90,000 KJ. Calculate the calorific value of the fuel in KJ per kg.

(2 marks)

1 (e) “CNG is a better fuel when compared to petrol or diesel.” With reference to the data in the table, evaluate this statement.

(3 marks)

(Total marks 10)

Mark scheme

1 (a) Which is the hottest part of the flame in the given picture of the candle.	
Answer	Guidance
I A or the outermost	No credit for any other answer 1 M
1 (b) Why does the middle zone of the candle flame glow with yellow colour?	
Answer	Guidance
Incomplete combustion It is cooler It is non-luminous Unburnt carbon particles give the flame its yellow colour.	
1 (c) State any two conditions under which combustion takes place.	
Answer	Guidance
Presence of a combustible substance Presence of oxygen Ignition temperature 1 mark each for any two points	Presence of fuel Presence of supporter of combustion Heating the substance to its ignition temperature One mark each for one point Any two points can be accepted
1 (d) In an experiment 6.5 Kg of a fuel was completely burnt. The heat produced was measured to be 1,90,000 KJ. Calculate the calorific value of the fuel. (2M)	
Answer	Guidance
Energy/mass =190,000/6.5	2 marks for correct answer 1 mark if answer wrong but working correct

=29230 KJ/kg	No need for units (given in question)
1 (e) “CNG is a better fuel when compared to diesel. “Justify the statement.	
Answer	Guidance
CNG produces more CO than diesel (1) But produces less GHGs than diesel (1) And CNG has (slightly) higher energy density than diesel (1)	Any other relevant point also may be considered like reduces global warming

Science8PW4

Item identity	AO1 marks	AO2 marks	AO3 Marks	AO4 marks	Content Reference(s)	Marks
Science8PW41a	1				8.1.5	1
Science8PW41b		2			8.2.9	2
Science8PW41c	2				8.2.8	2
Total marks	3	2				5

Item purpose

The question assesses the learner's understanding of combustion reactions under different conditions of air and their representation in the form of word equations.

Source(s)

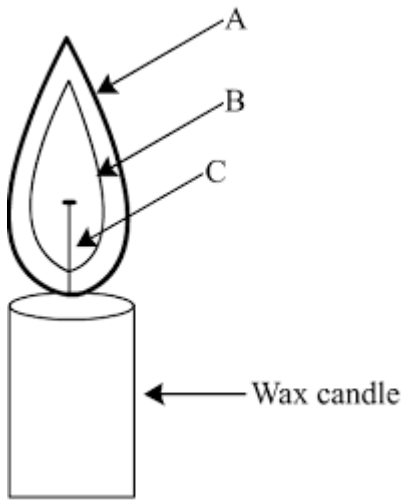


Fig. - Zones of Candle Flame

Question(s)

1 Observe the figure given above and answer the following questions:

1 (a) Out of A, B and C zones of candle flame, where does complete combustion occur?

(1 mark)

1 (b) Explain why complete combustion is generally preferred over incomplete combustion?

(2 marks)

1 (c) Complete the word equations for partial **and** complete combustion reactions.

Partial

Fuel + _____--> _____+_____

Complete

Fuel + _____--> _____+ _____

(2 marks)

(Total marks 5)

Mark scheme

1 (a) Out of A, B and C zones of candle flame, where does complete combustion occur?	
Answer	Guidance
Complete combustion occurs in zone A. (1)	

1 (b) Explain why complete combustion is preferred over incomplete combustion?	
Answer	Guidance
Complete combustion has the following advantages over incomplete combustion – • Fuel is completely burnt without leaving any residue. (1) • Less polluting. (1) • Poisonous gas carbon monoxide is not produced (1) • More heat energy is released. (1) (1 mark for each valid point. 2 marks to be given for writing any 2 valid points.)	Accept any 2 valid points stating the advantages of complete combustion over incomplete combustion. 1 mark is to be given for each valid point.
1 (c) Write the word equations representing Partial and Complete combustion reactions.	
Answer	Guidance
Word Equation for Partial combustion – (Fuel) + Oxygen → Carbon monoxide + Carbon +Water (1) Word Equation for Complete combustion – (Fuel) + Oxygen → Carbon dioxide + Water vapours. (1)	1 mark is to be given for each correct word equation. 1 mark will be awarded to each equation if **all** the reactants and products are correct.

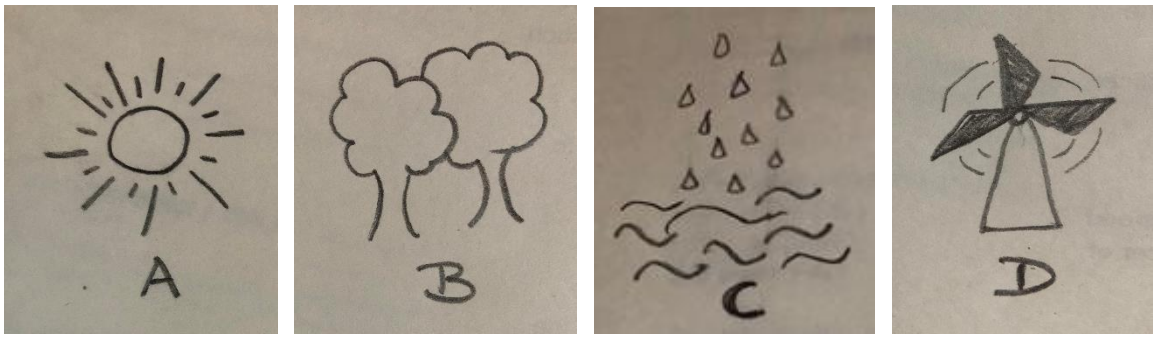
Science8PW1

Item identity	AO1 mark	AO2 marks	AO3 Marks	AO4 marks	Content Reference(s)	Mark
Science8PW1	1				8.1.6	1

Item purpose

The question assesses the learner's understanding of exhaustible and inexhaustible natural resources with examples.

Source(s)



Source information: Self-created figures.

Question(s)

1 Identify the exhaustible resource from the figures given above.

E. Figure A
F. Figure B
G. Figure C
H. Figure D

(1 mark)

Mark scheme

1. Identify the exhaustible resource from the figures given above. A. Figure A B. Figure B C. Figure C D. Figure D	
Answer	Guidance
B. Figure B (1)	

Science8RB3

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
Science8RB3		1			8.2.7	1

Item purpose

The question assesses the knowledge and understanding of metal oxides and non- metallic oxides.

Question(s)

1 Generally metallic oxides are basic and non-metallic oxides are acidic in nature.

The solution of _____ in water will change the colour of blue litmus to red.

A. Sulphur Dioxide
B. Magnesium oxide
C. Iron oxide
D. Copper oxide

(1 mark)

Mark scheme

1 (a) Generally, metallic oxides are basic and non-metallic oxides are acidic in nature. The solution of _____ in water will change the colour of blue litmus to red. A. Sulphur Dioxide B. Magnesium oxide C. Iron oxide D. Copper oxide	
Answer	Guidance
Option A (1)	No credit for any other answer 1Mark for correct option

Science8RB4

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
Science8RB4	1				8.2.9	1

Item purpose

The question assesses the knowledge a variety of pollutants formed as a result of combustion reactions.

Question(s)

1 Our beautiful Taj mahal is suffering from ‘marble cancer’. Acid rain reacts with marble and limestone to form calcium sulphate. It causes damage to big sculptures and marble constructions.

Identify the gases that contribute to the formation of acid rain.

A. Nitrogen oxides and carbon oxides
B. Carbon dioxide and carbon monoxide
C. Sulphur oxides and carbon oxides
D. Nitrogen oxides and sulphur oxides

(1 mark)

Mark scheme

1. Our beautiful Taj Mahal is suffering from ‘marble cancer’. Acid rain reacts with the marble and limestone to form Calcium Sulphate. It causes damage to big sculptures, marble constructions, flora and fauna on the earth.
Identify the gases that contribute to the formation of acid rain.

A. Nitrogen oxides and carbon oxides
B. Carbon Dioxide and carbon monoxide

C. Sulphur oxides and carbon oxides D. Nitrogen oxides and sulphur oxides	
Answer	Guidance
Option D Nitrogen oxides and sulphur oxides	The correct answer is D 1 mark No credit for any other option

Science8PW5

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
Science8PW51a		2			8.6.7	2
Science8PW51b			2		8.6.7	2
Total marks		2	2			4

Item purpose

The question assesses the learner's understanding of applying the concept of fire triangle in the given scenario to control the fire.

Source(s)

Fig. – Fire Triangle

Source information: Self-created handmade figure.

Question(s)

1 On the basis of Fire triangle given above, answer the following questions:

1 (a) Which part of the fire triangle is removed to control fire in the following cases?

i) Putting a fire blanket on fire.
ii) Mowing grass and removing dead leaves.

(2 marks)

1 (b) Ramya's mother kept a container with cooking oil on the gas stove to heat. Suddenly she found that cooking oil caught fire. Analyse the given situation and suggest measures that may be taken by Ramya's mother to prevent the spread of fire.

(2 marks)

(Total marks 4)

Mark scheme

1 (a) Which part of Fire triangle should be removed to control fire in following cases? i) By putting a fire blanket on fire. ii) By mowing the grass and removing the leaves.	
Answer	Guidance
1(a)(i) Oxygen (1) (ii) Fuel (1)	
1 (b) Ramya's mother kept a container with cooking oil on the gas stove to heat. Suddenly she found that cooking oil caught fire. Analyse the given situation and suggest measures that may be taken by Ramya's mother to prevent the spread of fire.	

Answer	Guidance
Cover the flames with a metal lid. (1) Turn off the heat source. (1) If it's small and manageable, pour baking soda or salt on it to smother the fire. (1) As a last resort, spray the fire with a dry chemical fire extinguisher. (1) Do not try to extinguish the fire with water. (1) (1 mark for each valid point. 2 marks MAX to be given for writing any 2 valid points.)	Accept any 2 valid points. 1 mark is to be given for each valid point.

Science8PW6

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
Science8PW61a	2				8.6.9	2
Science8PW61b		2			8.6.9	2
Total marks	2	2				4

Item purpose

The question assesses the learner's understanding of the impact of improper methods of extraction and disposal of metals on the environment and health of individuals.

Source(s)

Electronic waste, or e-waste, is an emerging problem with developed nations as with developing nations. They contain a substantial amount of metal value, including precious metals. Personal computers are the biggest contributors to e-waste, followed closely by televisions and mobile phones.

Source information : https://www.intechopen.com/books/e-waste-in-transition-from-pollution-to-resource/a-review-of-technology-of-metal-recovery-from-electronic-waste

Question(s)

1 (a) State any two harmful effects on the health of persons who are involved in extracting metals from e-waste.

(2 marks)

1 (b) Suggest how recycling of metals can reduce threats to our environment.

(2 marks)

(Total marks 4)

Mark scheme

1 (a) State any two harmful effects on the health of persons who are involved in extracting metals from e – waste.	
Answer	Guidance
1(a) Causes damage to the nervous system, circulatory system, and kidney. (1) Also affects brain developments in children. (1) Causes bronchitis and DNA damage. (1) Affects the reproductive system and immune system and lead to hormonal disorder. (1) Causes muscle weakness and damage to heart, liver, and spleen. (1) Carcinogenic in nature causing skin diseases. (1) (1 mark for each valid point. 2 marks to be given for writing any 2 valid points.)	Accept any 2 valid points explaining the effect on health of people involved in the extraction of metals from e waste. 1 mark is to be given for each valid point.
1 (b) Suggest how recycling of metals can reduce threats to our environment.	
Answer	Guidance
• It prevents mining and thus the destruction of homes of wild animals is prevented. (1) • Chemical pollution is also reduced as it cuts down on the amount of transport that is used. If the metal if recycled then it doesn't have to be imported from other countries via boat or train, therefore cutting back on emissions and the amount of fuel that that could have been used. (1)	1 mark is to be given for each valid point. 2 marks to be given for writing any 2 valid points.

• Recycling metal uses less energy than smelting ore to create new metals. (1) • Due to recycling less Greenhouse gases such as Carbon Dioxide, Carbon Monoxide, Nitrous Oxide and Water vapours are being produced each year. (1) (1 mark for each valid point. 2 marks to be given for writing any 2 valid points.)	

Science8VS3

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
Science8VS31a			1		8.1.11	1
Science8VS31b	1				8.1.11	1
Total marks	1					2

Item purpose

The question assesses the knowledge and understanding of scientific processes.

Question(s)

1 (a) Draw a diagram to show diffused reflection.

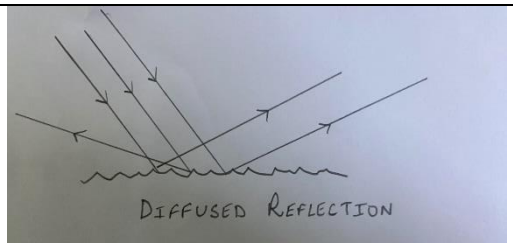
(1 mark)

1 (b) Explain what causes diffused reflection to take place.

(1 mark)

(Total marks 2)

Mark scheme

<table>
<tr><td colspan="2">1 (a) Draw a diagram to show diffused reflection.</td></tr>
<tr><td>Answer</td><td>Guidance</td></tr>
<tr><td> 
</td><td>No marks for labelling but incident and reflected rays should be clearly marked.</td></tr>
<tr><td colspan="2">1 (b) Explain what causes diffused reflection to take place.</td></tr>
<tr><td>Answer</td><td>Guidance</td></tr>
<tr><td>Irregularities in the surface of an object (1)</td><td>Accept alternative wording</td></tr>
</table>

Science8VS2

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
Science8VS21a		2			8.3.4	2
Science8VS21b	1				8.3.4	1
Total marks	1	2				3

Item purpose

The question assesses the knowledge and understanding skills of the student.…

Question(s)

1

1 (a) A girl hears the echo of her own voice from a distant cliff 0.10 seconds after shouting. If the speed of sound in air is 340m/s calculate the distance of cliff from the girl. Show your working

(2 marks)

1 (b) What is the effect of temperature on speed of sound?

(1 mark)

(Total marks 3)

Mark scheme

1 (a) A girl hears the echo of his own voice from a distant cliff after 0.10 second. If the speed of sound in air is 340m/s calculate the distance of cliff from the girl	
Answer	Guidance
Let S be the distance between cliff and girl And t be the time taken by sound to travel to and fro Distance =Velocity X Time 2 S =vt (1) S =340 X0.10=34m (1)	1 mark for formula in words or numerals 1 mark for correct answer with unit
1 (b) What is the effect of temperature on speed of sound?	
Answer	Guidance
The speed of sound increases with temperature (1)	

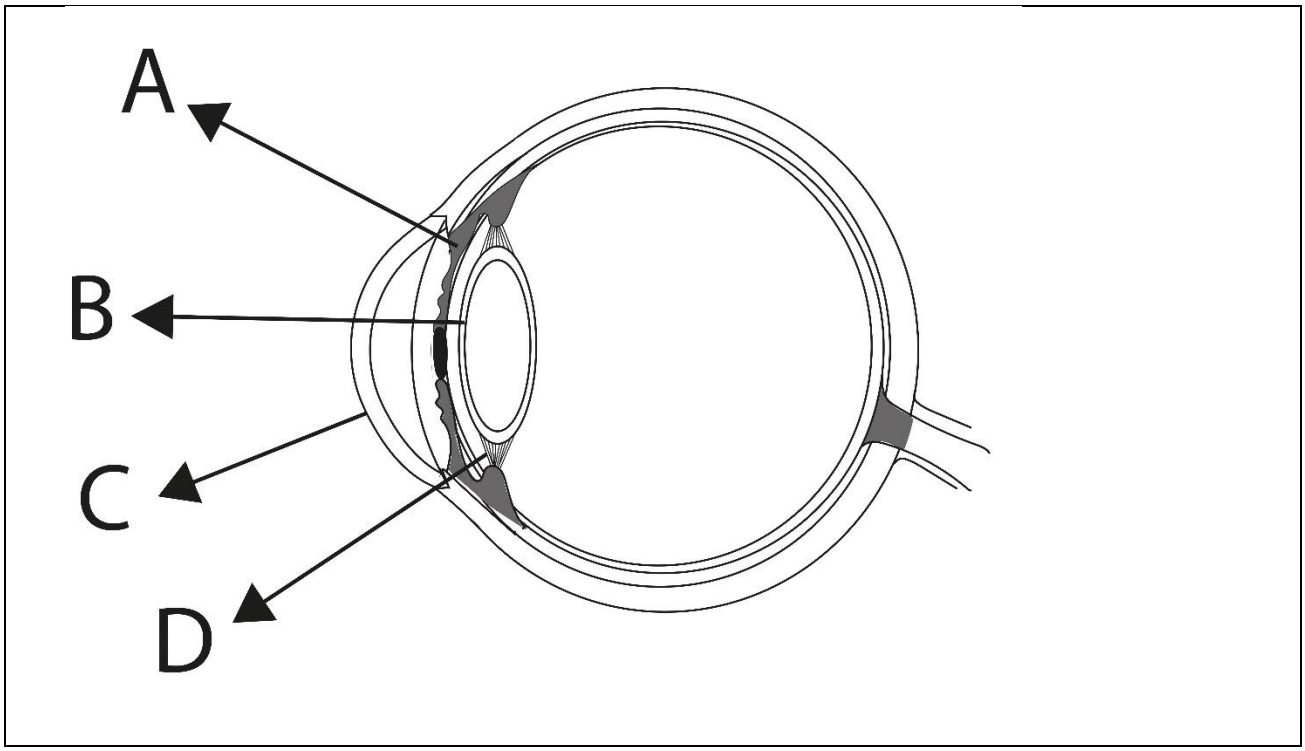
Science8RD4

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
Science8RD41a	1				8.4.10	1
Science8RD41b	1				8.4.10	1
Total Marks	2					2

Item purpose

The question assesses information on eye structure.

Source(s)



Question(s)

1 (a) In the figure above of the human eye, the cornea is represented by the letter:

A. A
B. B
C. C
D. D

(1 mark)

1 (b) The change in converging power of an eye lens is caused by the action of the:

A. Retina
B. Optic nerve
C. Ciliary muscle
D. Iris

(1 mark)
(Total marks 2)

Mark scheme

1(a) In the figure of the human eye, the cornea is represented by the letter:	
Answer	Guidance
C (1)	
1(b) The change in converging power of an eye lens is caused by the action of the:	
Answer	Guidance
C. Ciliary muscle (1)	

Science8VS1

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
Science8VS1a			2		8.4.9	2
Science8VS1b	1				8.4.9	1
Science8VS1c		1			8.4.9	1
Total marks						4

Item purpose

The question assesses the understanding and interpretation skill of the topic sound.

Question(s)

1 (a) Draw a graph representing wave disturbance and time for a sound changing from low pitch to high pitch, keeping the amplitude of the sound same.

(2 marks)

1 (b) Define the term amplitude.

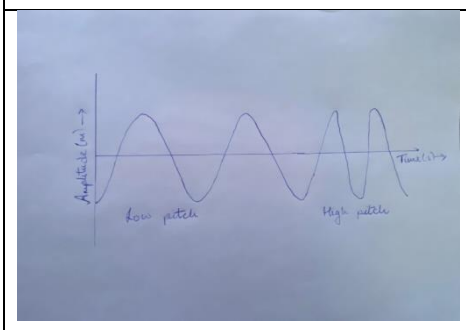
(1 mark)

1 (c) Which characteristic of sound is determined by amplitude?

(1 mark)

(Total marks 4)

Mark scheme

<table>
<tr><td colspan="2">1 (a) Draw a graph representing wave disturbance and time for a sound changing from low pitch to high pitch, keeping the amplitude of the sound same.</td></tr>
<tr><td>Answer</td><td>Guidance</td></tr>
<tr><td> 
</td><td>Correct labelling of X and Y axis 1mark
Correct diagram 1 mark
Total =2marks</td></tr>
<tr><td colspan="2">1 (b) Define the term amplitude.</td></tr>
<tr><td>Answer</td><td>Guidance</td></tr>
<tr><td>The maximum displacement of the particles of medium from their normal position is known as amplitude. (1 mark)</td><td>Accept ‘the height of a wave’</td></tr>
<tr><td colspan="2">1 (c) Which characteristic of sound is determined by amplitude?</td></tr>
<tr><td>Answer</td><td>Guidance</td></tr>
<tr><td>Loudness (1 mark)</td><td></td></tr>
</table>

Science8VS4

Item identity	AO1 marks	AO2 marks	AO3 marks	AO4 marks	Content Reference(s)	Marks
Science8VS4	1				8.6.16	1

Item purpose

The question assesses the application skill of the student of the eye defects.

Question(s)

1 A person can see objects close to him clearly but cannot see distant objects clearly. Name the defect of the eye the person is suffering from.

(1 mark)

Mark scheme

1 (a) A person can see objects close to him clearly but cannot see distant objects clearly. Name the defect of the eye the person is suffering from.	
Answer	Guidance
Myopia/Near sightedness/short sightedness (1 mark)	correct answer handling