CLASS IX – SCIENCE PRACTICE PAPER (2026-27)

Chapter 1: Exploration – Entering the World of Secondary Science

Max. Marks: 40 **Time Allowed: 1 hour 30 minutes**

General Instructions:

(i) This question paper consists of **20 questions** in **5 sections (A to E)**. All questions are compulsory. Internal choice is given in some questions.

(ii) **Section A** has 10 questions of 1 mark each: Q1–8 are Multiple Choice Questions and Q9–10 are Assertion–Reason questions.

(iii) **Section B** has 4 Very Short Answer questions of 2 marks each (about 30–40 words).

(iv) **Section C** has 3 Short Answer questions of 3 marks each (about 50–60 words).

(v) **Section D** has 2 Case-Based questions of 4 marks each.

(vi) **Section E** has 1 Long Answer question of 5 marks with an internal choice.

(vii) Questions are competency-based and application-oriented. Show all steps in numerical and estimation questions.

(viii) **Questions 2, 8, 9, 12, 16 and 19 are figure-based** and refer to Fig. 1 to Fig. 6.

SECTION A – Objective Questions (10 × 1 = 10 marks)

1 Which of the following best describes a **scientific model**? **1**

(A) An exact copy of a real system showing every detail

(B) A simplified way of looking at a real system that keeps only what matters for the question

(C) A guess made without any observations

(D) A list of facts that must be memorised

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2 **[Figure-based]** Fig. 1 shows a simple model of a cricket ball hit for a six. The ball is treated as a point of mass *m*, launched with speed *v* at an angle θ to the ground. Which of the following details can be **ignored** without affecting the answer to "Will the ball cross the boundary without hitting the ground first?" **1**

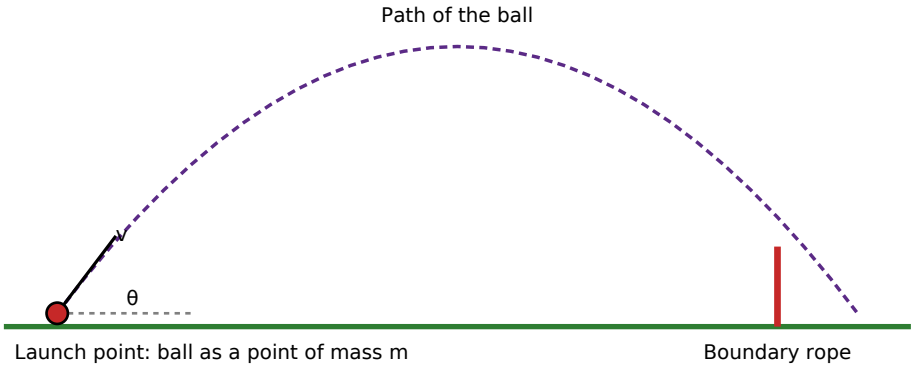


Fig. 1: A simple model of a cricket shot

(A) Mass of the ball

(B) Speed of the hit

(C) Direction of the hit

(D) Colour of the ball

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3 The speed of light is usually denoted by the symbol **c**. This symbol comes from the Latin word: **1**

(A) *celeritas*, meaning speed

(B) *lux*, meaning light

(C) *constans*, meaning constant

(D) *calor*, meaning heat

4 A passenger aircraft once ran out of fuel in mid-flight. The **main cause** of this incident was: **1**

(A) Failure of the aircraft engine
(B) A mix-up of units (pounds and kilograms) while calculating the fuel required
(C) Very bad weather during the flight
(D) A leak in the fuel tank caused by the pilot

5 In science, the word **theory** means: **1**

(A) An untested guess about nature
(B) An explanation of why patterns occur, based on careful testing and evidence
(C) The same thing as a scientific law
(D) A personal opinion of a scientist

6 At rest, a student takes about 15 breaths per minute and about 0.5 litre of air per breath. Using 1440 minutes in a day, the approximate volume of air breathed in one day is: **1**

(A) 1,080 litres
(B) 10,800 litres
(C) 1,08,000 litres
(D) 7.5 litres

7 A scientist makes a prediction using a well-established model, but the observation does not match the prediction. What do scientists do **first**? **1**

(A) Reject all of science
(B) Ignore the observation
(C) Re-examine their assumptions, model or measurements
(D) Change the observation to match the prediction

8 **[Figure-based]** Fig. 2 shows the Sun, Moon and Earth during a solar eclipse. A social media message claims, "Food becomes harmful if eaten during an eclipse." Which conclusion is best supported by the figure and scientific reasoning? **1**

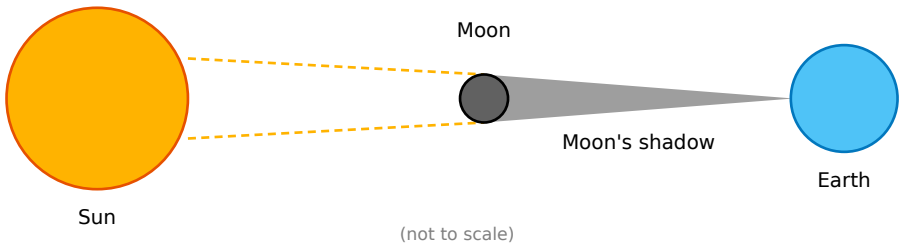


Fig. 2: Alignment of the Sun, Moon and Earth during a solar eclipse

(A) The Moon only casts a shadow on part of the Earth; no physical, chemical or biological change happens to food, so the claim is not supported
(B) The Sun's rays become poisonous when the Moon comes in front of them
(C) The Moon's shadow heats the Earth so strongly that food spoils
(D) The Earth's shadow falls on the Moon and makes food spoil

Questions 9 and 10 consist of two statements: Assertion (A) and Reason (R). Choose the correct option:
(A) Both A and R are true, and R is the correct explanation of A.
(B) Both A and R are true, and R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

9 **[Figure-based]** Fig. 3 (illustrative) shows how the reliability of a weather forecast changes as we look further ahead in time. **1**

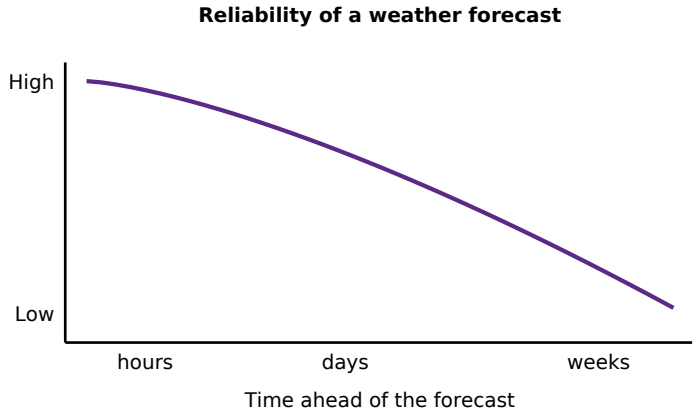


Fig. 3: Reliability of a weather forecast versus time ahead

Assertion (A): Weather forecasts are usually reliable for a few hours or days, but less certain for the far future.

Reason (R): Very tiny differences in conditions such as temperature, pressure, humidity and wind can grow over time and lead to a completely different outcome.

10 **Assertion (A):** Ignoring air resistance while studying a falling object is a mistake that makes the model useless. **1**

Reason (R): Building a model involves making assumptions and deliberately ignoring certain details.

SECTION B – Very Short Answer Questions (4 × 2 = 8 marks)

11 Define (a) a **scientific law** and (b) a **scientific principle**. Give one example of each. (1 + 1) **2**

12 **[Figure-based]** Fig. 4 shows a vegetable seller's pan balance. The beam is level when the vegetables are balanced against a standard 1 kg weight. **2**

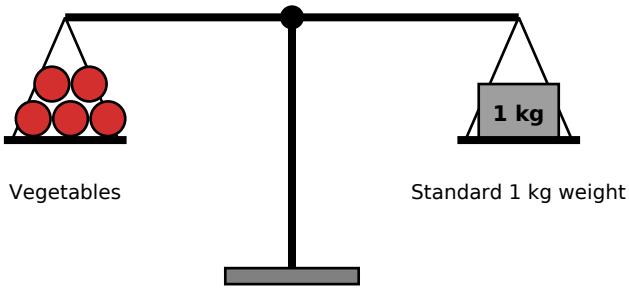


Fig. 4: A vegetable seller using a pan balance

(a) What does the level beam tell you about the vegetables? (1)

(b) Give one reason why a standard unit such as the kilogram, and not a local stone or object, is used everywhere. (1)

13 Varsha says, “It will rain this afternoon because the clouds look dark.” Write **two** questions her friend Meghna can ask to make this prediction scientifically testable. (1 + 1) **2**

14 *Attempt either option A or B.* **2**

A. When physicist Meghnad Saha studied light from stars, what details did he choose to ignore and what did he focus on? (1 + 1)

OR

B. While studying how the heart pumps blood, many individual cells are ignored. Why is this **not** a mistake? Explain in your own words. (2)

SECTION C – Short Answer Questions (3 × 3 = 9 marks)

15 **Estimate** the volume of air you breathe in one day. Assume that you take 14 breaths per minute and that it takes about 4 breaths to fill a party balloon whose inflated volume is about 2 litres. (Take 1 day = 1440 minutes.) **3**

(i) Find the approximate number of breaths in one day. (1)

(ii) Estimate the volume of one breath. (1)

(iii) Hence estimate the litres of air breathed in a day. (1)

16 **[Figure-based]** Fig. 6 shows the route of a student who rides a bicycle from school to home. You want to build a simple model of the time taken for the journey. **3**

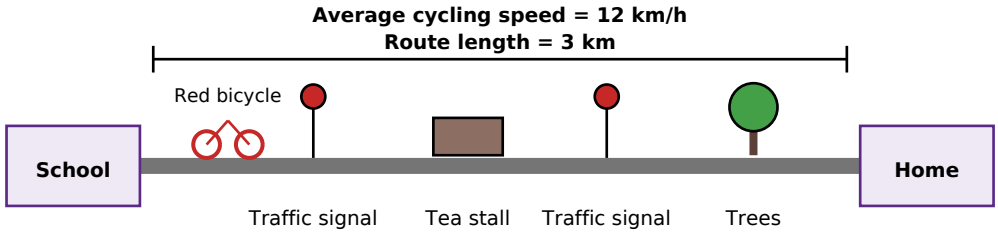


Fig. 6: Route from school to home

(i) From the figure, name **two** details you would keep in the model. (1)

(ii) From the figure, name **two** details you would ignore. (1)

(iii) Using time = distance ÷ speed, find the time taken in minutes. (1)

17 *Attempt either option A or B.* **3**

A. A family of four wants to know how much rice they need for a month (30 days). Assume that all their calories come from rice, each member needs 2000 kcal per day and 100 g of uncooked rice gives about 350 kcal. Make a rough estimate and check whether your answer is reasonable. (3)

OR

B. A viral message says that food must not be eaten during an eclipse. Using the idea that “an eclipse is just a play of shadows”, show how this claim can be checked scientifically. (3)

SECTION D – Case-Based Questions (2 × 4 = 8 marks)

18 **Case Study: The Fuel Mix-up** **4**

In a well-known incident, a passenger aircraft ran out of fuel mid-flight due to a mix-up in units. The flight needed 22,300 kg of fuel in total, but the ground crew miscalculated the fuel required because they used the density of fuel in pounds (lb) per litre instead of kilograms (kg) per litre. The aircraft was about 15,000 litres short of fuel and luckily could glide to an emergency landing, which damaged the aircraft though there were no casualties.

(i) What mistake caused the shortage of fuel? (1)

(ii) Name the SI unit of mass. Which unit of mass was wrongly used by the ground crew? (1)

(iii) Why is it helpful to use SI units everywhere? (1)

(iv) Suggest **one** practice that could help avoid such errors in future. (1)

19 **Case Study: How Does a Mask Really Work?** **4**

[Figure-based] During the COVID-19 pandemic, we all used masks for safety. Solving real problems requires knowledge from several branches of science. Fig. 5 shows the ideas from different branches that are needed to understand how a mask works.

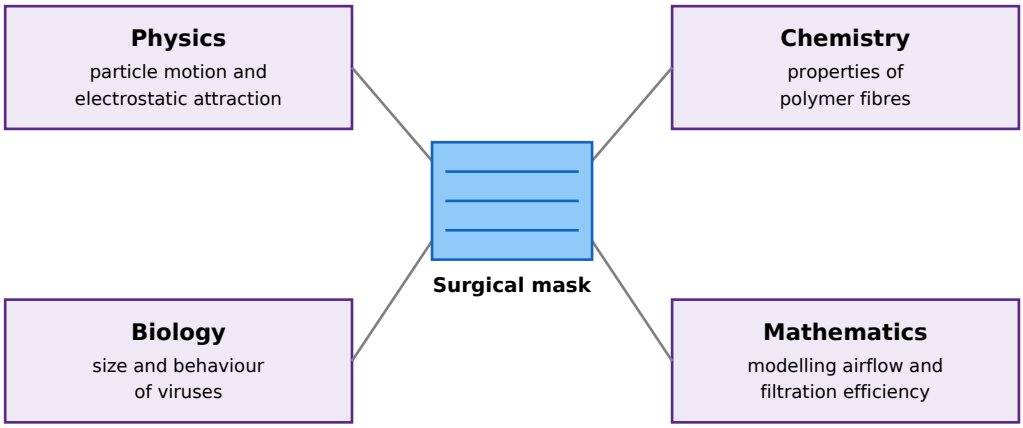


Fig. 5: Branches of science involved in understanding a mask

(i) Using Fig. 5, which branch of science explains the size and behaviour of viruses? (1)

(ii) Using Fig. 5, name **two** physics concepts needed to understand how a mask filters particles. (1)

(iii) The natural world has no boundaries between branches of science. Then why do we divide science into branches? (1)

(iv) Name **one** other real-world problem that needs ideas from several branches of science. (1)

SECTION E – Long Answer Question (1 × 5 = 5 marks)

20 *Attempt either option A or B.* **5**

A. A cricket ball is hit for a six and you want to build a simple model of this shot.

(i) State the key question your model must answer. (1)

(ii) Classify the following into "very important" and "can be ignored": brand of the bat, mass of the ball, colour of the ball, speed and direction of the hit, amount of grass on the field. (2)

(iii) Air resistance and the spin of the ball are ignored in a simple model. What happens as we build more complex models? (1)

(iv) A classmate says, "Ignoring details means the model is wrong." Do you agree? Justify. (1)

OR

B. "One of the most remarkable strengths of science is its ability to make predictions."

(i) How is a scientific prediction different from a guess? (1)

(ii) Give **one** example of a prediction that can be made using ideas about motion, chemical reactions or biology. (1)

(iii) What does it mean for the underlying science when predictions match observations? (1)

(iv) What do scientists do when predictions do not match observations? (1)

(v) Why are such failures called the "greatest strength" of science and not a weakness? (1)

***** END OF QUESTION PAPER *****