

ANSWER KEY AND MARKING SCHEME SERIES:

SUBJECT: SCIENCE
9

OCTOBER 2026

GRADE:

SUBJECT CODE: 1 0 3 1

(ACCEPT ANY OTHER VALID ANSWERS FOR ALL THE QUESTIONS)

Q. No.	ANSWERS	Text Book PAGE NO. Edition 1 Reprint 2024	Ch. No.	MARKS	TOTAL MARKS
SECTION A					
1	(A) 293K, 310K and 353K	1.4 Pg 7	1	1	1
2	(B) They are continuously moving randomly.	1.3.3 Pg 5	1	1	1
3	(C) Air	1.3.3 Pg 5	1	1	1
4	(A) Golgi apparatus	5.2.5 Pg 60	5	1	1
5	(C) Vessels	6.2.2 Pg 68	6	1	1
6	(C) Lateral meristem	6.2.1 Pg 65	6	1	1
7	(A) 2 m/s ²	8.3 Pg 98	8	1	1
8	(B) zero acceleration	8.3 Pg 98	8	1	1
9	(C) Mitochondria	5.2.5 Pg 60	5	1	1
10	(B) 8:20 am	8.2 Pg 96	8	1	1
11	(C) Rest	9.2 Pg 110	9	1	1
12	(B) Chloroplast	5.2.5 Pg 61	5	1	1
13	(B) Gravitation	10.1 Pg 125	10	1	1
14	(C) 4 m/s ²	9.4.1 Pg 113	9	1	1
15	(A) Squamous epithelium	6.3.1 Pg 70	6	1	1
16	(C) Measure both the mass (using a beam balance) and the weight (using a spring balance) of the same object at two different locations.	10.4 Pg 131	10	1	1
17	(A) Both A and R are true, and R is the correct explanation of A. Explanation: Newton's law of universal gravitation states that every object attracts every other object, and the magnitude of this force depends on their masses and the distance between them.	10.1.1 Pg 126	10	1	1
18	(D) A is false, but R is true. Explanation: Assertion is false because velocity depends on both magnitude and direction. Although the speed is constant, the direction changes continuously, so the velocity is not constant. Reason is true because the direction of velocity indeed changes continuously during circular motion.	8.6 Pg 105	8	1	1

SECTION B					
19	Figure 1.7	Pg 8	1	$1 + \frac{1}{2} + \frac{1}{2}$	2
20	Speed – i) Distance travelled by a body per unit time in any direction. ii) It is a scalar quantity. iii) It is always positive or zero but never negative. Velocity – i) Distance travelled by a body in a given direction. ii) It is a vector quantity. iii) It may be positive or negative or zero. Vector quantities - Displacement, Velocity, Acceleration, Force, Momentum, Weight	8.2.1 Pg 96	8	$1 + \frac{1}{2} + \frac{1}{2}$	2
21	Figure – 5.5	Pg 59	5	$1 + \frac{1}{2} + \frac{1}{2}$	2
22	Higher temperature increases the kinetic energy of water particles. More particles gain enough energy to escape into the vapour state, increasing evaporation.	1.5.1 Pg 9	1	1+1	2
23	Membrane-bound organelles compartmentalise the eukaryotic cell. Different reactions can occur efficiently in specialised organelles/controlled microenvironments, allowing division of labour and better regulation of cellular activities.	5.2.5 Pg 59	5	1+1	2
23	i) The plant cell undergoes plasmolysis; the cell contents/protoplast shrink away from the cell wall. ii) Water moves out of the cell by osmosis/exosmosis through the selectively permeable plasma membrane into the concentrated solution.	5.2.1 Pg 56	5	1+1	2
24	i) Low temperature and high pressure favour liquefaction of gases. ii) Gas particles have very weak intermolecular forces and large spaces between them, allowing them to move freely and flow; solid particles are held in fixed positions.	1.4.2 Pg 8	1	1+1	2
25	Total distance = 40 + 15 = 55 m. Final position = 40 – 15 = 25 m east of the starting point	8.1.1 Pg 94	8	1+1	2
26	Student A is correct. Squamous epithelium is thin and facilitates rapid diffusion of gases; cuboidal epithelium is thicker and suited for absorption and secretion.	6.3.1 Pg 70	6	1+1	2
27	i) Moving the hands backwards increases the time over which the ball's momentum becomes zero. Since $F = \text{change in momentum/time}$, the force of impact is	9.4.1 Pg 113	9	1+1	2

	reduced. ii) Walking requires friction between the foot and the ground. On a perfectly smooth surface, insufficient friction prevents the foot from obtaining the necessary grip.	9.1 Pg 109			
28	i) Water slowly seeps through the tiny pores of the earthen pot. This water evaporates by absorbing heat from the water inside and the pot. As heat is lost, the remaining water becomes cool. ii) Heating increases the kinetic energy of perfume vapour particles. The particles move faster and diffuse more rapidly through the air. Therefore, the fragrance spreads quickly throughout the room.	1.5.2 Pg 9 1.3.3 Pg 5	1	1+1	2
28	i) Spirit evaporates rapidly from the skin. During evaporation, it absorbs latent heat from the hand. As heat is removed from the skin, a cooling sensation is produced. ii) Naphthalene balls undergo sublimation. They change directly from the solid state to the vapour state. Therefore, the size of the mothballs gradually decreases without forming a liquid.	1.5.2 Pg 9 1.4.1 Pg 8	1	1+1	2
29	i) Lysosomes contain digestive enzymes that can digest worn-out cell organelles or even the entire cell if they burst. ii) The large vacuole stores water and cell sap and maintains turgor pressure, keeping the plant cell rigid.	5.2.5 Pg 60, Pg 61	5	1+1	2
30	.i) According to $F = ma$, for the same force acceleration is inversely proportional to mass. The empty trolley has lower mass and therefore gains greater acceleration. ii) The person pushes the boat backwards while jumping; the boat exerts an equal and opposite force on the person. By Newton's third law, the boat moves backwards.	9.4 Pg 112 9.5 Pg 116	9	1+1	2
31	(OPEN ENDED QUESTION) i) Ask students to kick a football gently and then kick it harder. ii) A greater force produces greater acceleration of the football. <i>(Any other relevant, correct and context specific answer that addresses the question should also be accepted)</i>	9.5 Pg 116	9	1+1	2
31	(OPEN ENDED QUESTION) a) Attach an inflated balloon to the toy car with its opening directed backwards. Release the opening so that air rushes backwards and the car moves forwards. b) Action: balloon pushes air backwards.				

	Reaction: escaping air exerts an equal and opposite force on the balloon-car system, moving the car forwards. <i>(Any other relevant, correct and context specific answer that addresses the question should also be accepted)</i>	9.5 Pg 116	9	1+1	2
32	a) The bottle sinks until the buoyant force/upthrust due to displaced water equals its weight. This balance is reached while only part of the bottle is submerged. b) The submerged portion increases. Adding stones increases the total mass and weight, so the bottle must displace more water to obtain a greater buoyant force equal to its new weight.	10.5.2 Pg 134	10	1+1	2
SECTION C					
33	Solution: $u = 29.4 \text{ m/s}$; $g = -9.8 \text{ m/s}^2$. i) At maximum height, $v = 0$. $v = u + at$; $0 = 29.4 - 9.8t$ $t = 3 \text{ s}$. ii) $v^2 = u^2 + 2as$ $0 = (29.4)^2 - 2(9.8)s$ $s = 44.1 \text{ m}$. iii) $v = u + at = 29.4 - 9.8(4) = -9.8 \text{ m/s}$. Therefore, velocity = 9.8 m/s downwards .	10.2.2 Pg 130	10	a) $\frac{1}{2} + \frac{1}{2}$ b) $\frac{1}{2} + \frac{1}{2}$ c) $\frac{1}{2} + \frac{1}{2}$	3
33	Solution: i) $s = ut + \frac{1}{2}gt^2 = 0 + \frac{1}{2}(9.8)(2^2) = 19.6 \text{ m}$. ii) $v = u + gt = 0 + 9.8(2) = 19.6 \text{ m/s}$ downwards. iii) Distance in 3 s = $\frac{1}{2}(9.8)(3^2) = 44.1 \text{ m}$. Distance in 2 s = 19.6 m. Distance during third second = $44.1 - 19.6 = 24.5 \text{ m}$.	10.2.2 Pg 130	10	a) $\frac{1}{2} + \frac{1}{2}$ b) $\frac{1}{2} + \frac{1}{2}$ c) $\frac{1}{2} + \frac{1}{2}$	3
34	i) Collenchyma. ii) Sclerenchyma provides mechanical strength/support to plant parts. iii) Xylem and phloem are called complex permanent tissues because each consists of more than one type of cell working together to perform a common function.	6.2.2 Pg 66,67, 68	6	1+1+1	3
34	i) Striated muscle: long/cylindrical fibres with striations; voluntary. Smooth muscle: spindle-shaped cells without striations; involuntary. ii) Any two: cardiac fibres are branched, striated, uninucleate, involuntary, interconnected and show rhythmic contraction.	6.3.3 Pg 71,72	6	1+1+1	3

	iii) Ligament.				
35	i) Leucoplast are organelles that stores food materials such as starch, oils and proteins. ii) ATP and Mitochondria iii) Synthesizes lipids (fats) (or detoxifies harmful drugs and poisons in liver cells).	5.2.5 Pg 60,61	5	$1 + \frac{1}{2} + \frac{1}{2} + 1$	3
36	i) The gravitational forces are equal, but acceleration $a = F/m$. Since the Earth's mass is enormously greater, its acceleration is negligibly small, whereas the stone shows noticeable acceleration. ii) With increase in height, distance from the Earth's centre increases. Since $g = GM/R^2$, the value of g decreases with increasing distance. iii) An iron nail displaces little water and its weight exceeds the buoyant force, so it sinks. A hollow iron ship has a large volume and lower average density; it displaces enough water for the buoyant force to balance its weight, so it floats.	10.1 Pg 126 10.2.1 Pg 129 10.5.3 Pg 134	10	$1 + 1 + 1$	3
SECTION D					
37	i) It increases the length of roots and shoots (primary growth). ii) Parenchyma. iii) It reduces water loss by evaporation (transpiration). iv) It protects the underlying tissues of the plant.	6.2.2 Pg 68	6	$1 + 1 + 1 + 1$	4
38	SOLUTION: Given: $F = 18\text{ N}$, $m = 3\text{ kg}$, $u = 0$, $t = 5\text{ s}$. i) $a = F/m = 18/3 = \mathbf{6\text{ m/s}^2}$. ii) $v = u + at = 0 + 6 \times 5 = \mathbf{30\text{ m/s}}$. iii) $s = ut + \frac{1}{2}at^2 = 0 + \frac{1}{2} \times 6 \times 25 = \mathbf{75\text{ m}}$. iv) Momentum gained $= m(v - u)/t = 3 \times 30 - 0 / 1 = \mathbf{90\text{ kg m/s}}$.	9.4.1 Pg 113, 114 9.6 Pg 117	9	$\frac{1}{2} + \frac{1}{2}$ $\frac{1}{2} + \frac{1}{2}$ $\frac{1}{2} + \frac{1}{2}$ $\frac{1}{2} + \frac{1}{2}$	4
39	SOLUTION: Formula used for speed: Speed = Change in Distance / Change in Time i) How much ahead of A is B when the motion starts?				

	Formula: Lead of B=Initial distance of B–Initial distance of A Calculation: Initial distance of B = 100 km Initial distance of A = 0 km 100–0=100 km Answer: 100 km (ii) What is the speed of B? Take two points on graph B: • P(0, 100) • Q(2, 150) Formula: Speed = Change in Distance / Change in Time Calculation: ={150-100} / {2-0} = {50} / {2} =25 km/h Answer: 25 km/h (iii) When and where will A catch B? A catches B at the point where the two graphs intersect. The intersection point is Q (2,;150). Therefore, • Time = 2 hours • Distance = 150 km Answer: A catches B after 2 hours at a distance of 150 km. (iv) What is the difference between the speeds of A and B? First find the speed of A. Take two points on graph A: • (0, 0) • Q(2, 150) Speed of A={150-0} / {2-0} = 75 km/h Speed of B = 25 km/h Difference between their speeds: 75–25=50 km/h Answer: 50 km/h	8.2.1 Pg 96, 97	8	$\frac{1}{2} + \frac{1}{2}$ $\frac{1}{2} + \frac{1}{2}$ $\frac{1}{2} + \frac{1}{2}$	4
39	SOLUTION: From the speed–time graph: • Initial speed at A = 10 km/h • Speed increases uniformly from 10 km/h to 35 km/h during the first 3 hours. • Speed remains constant at 35 km/h from B (3 h) to C (8 h). • Speed decreases from 35 km/h to 0 km/h between C (8 h) and D (10 h). (i) The highest point on the graph is 35 km/h.				

Answer: 35 km/h (ii) Acceleration is zero when the speed remains constant. The graph is horizontal from B to C. Answer: BC (iii) Retardation (deceleration) is shown where speed decreases. From C to D, the graph is curved, indicating the speed decreases at a changing rate (varying retardation). Answer: CD (iv) Since speed is constant along BC, Formula: Distance = Speed × Time Speed during BC = 35 km/h Time from B to C = 8 h – 3 h = 5 h Distance travelled = 35 × 5 = 175 km Answer: 175 km	8.2.1 Pg 96, 97	8	$\frac{1}{2} + \frac{1}{2}$ $\frac{1}{2} + \frac{1}{2}$ $\frac{1}{2} + \frac{1}{2}$ $\frac{1}{2} + \frac{1}{2}$	4
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