

ANSWERKEY AND MARKING SCHEME

SERIES:

SUBJECT: SCIENCE

OCTOBER 2026

GRADE 9

SUBJECT CODE:

N 1 0 3 1

(ACCEPT ANY OTHER VALID ANSWER FOR ALL THE QUESTIONS)

Q. NO.	ANSWERS	TEXT BOOK PAGE NO. EDITION 2010	CH. NO.	SPLIT MARKS	TOTAL MARKS
1	(B) Continuously moving	1.2.2 pg. 2	1	1	1
2	(A) Sublimation	1.4.1 pg. 8	1	1	1
3	(C) 298 K	1.4.1 pg. 7	1	1	1
4	(B) DNA and proteins	5.2.3 pg. 58	5	1	1
5	(D) Chlorenchyma	6.2.2(i) pg. 66	6	1	1
6	(C) Cartilage	6.3.2 pg. 71	6	1	1
7	(B) Distance travelled and time taken	8.1.2 pg. 96	8	1	1
8	(C) The object is moving with non-uniform speed	8.4 pg.100	8	1	1
9	(A) Mitochondria	5.2.5(iv) pg. 61	5	1	1
10	(C) Both objects are at rest	8.4.1 pg. 99	8	1	1
11	(D) Mass and velocity	9.4 pg. 113	9	1	1
12	(A) 5 kg	9.4.1 pg. 113	9	1	1
13	(B) Decreases	10.1 pg. 126	10	1	1
14	(C) Endocytosis	5.2.1 pg. 56	5	1	1
15	(B) Xylem	6.2.2 pg. 68	6	1	1
16	(C) Both will reach the ground at the same time because they experience the same acceleration due to gravity.	10.2 pg. 129	10	1	1
17	(A)Both A and R are true and R is the correct explanation of A	10.6 pg. 136 / 134	10	1	1
18	(B) Both A and R are true, but R is the correct explanation of A.	8.3 pg. 98	8	1	1
19	Scientifically correct diagram . Fig. 1.7	1.4.1 pg. 8	1	$1 + \frac{1}{2} + \frac{1}{2}$	2

20	$u = 5 \text{ m/s}, a = 3 \text{ m/s}^2, t = 4 \text{ s}$ $v = u + at$ $= 5 + 3 \times 4 = 17 \text{ m/s}$ $s = ut + \frac{1}{2}at^2$ $= 5 \times 4 + \frac{1}{2} \times 3 \times 16$ $= 20 + 24 = 44 \text{ m}$	8.5.1/2 pg. 103	8	$\frac{1}{2} + \frac{1}{2}$ $\frac{1}{2} + \frac{1}{2}$	2
21	Scientifically correct diagram . Fig 5.4	5.2.3 pg. 58	5	$1\frac{1}{2} + \frac{1}{2} \rightarrow L$	2
22	(i) At higher temperature, particles move faster, so diffusion takes place more rapidly.	1.4.1 pg. 7	1	1	2
	(ii) Sanitizer contains alcohol, which evaporates quickly by absorbing heat from our skin. Therefore, our hands feel cool.	1.5.2 pg. 9/10	1	1	
23	(i) The cell will lose control over the movement of substances into and out of the cell.	5.2.1 pg. 55	5	1	2
	(ii) Worn-out organelles and cellular waste would accumulate inside the cell. cellular waste would not be properly digested and removed.	5.2.5 pg. 60	5	1	
23	OR Ribosomes are attached to rough ER because it is involved in protein synthesis, whereas smooth ER mainly helps in lipid synthesis and detoxification.	5.2.5(i)pg. 59/60	5	1	2
	It forms a network of interconnected membranes that helps transport materials within the cell			1	
24	An increase in pressure brings gas particles closer together, while a decrease in pressure allows them to move farther apart.	1.4.2 pg. 8	1	1	2
	When the surrounding air is dry, it contains less water vapour, so evaporation occurs faster and the cooling effect is greater.	1.5.1 pg. 9		1	
25	(i) Acceleration $a = \frac{v-u}{t} = \frac{15-0}{3}$ $a = 5\text{m/s}^2$	8.3 pg. 98	8	$1/2$ $1/2$	2
	(ii) Distance travelled $s = \text{Area of rectangle}$ $= l \times b$ $= (7 - 3) \times 15$ $= 4 \times 15$ $s = 60\text{m}$ OR Dist. travelled $s = v \times t = 15 \times (7 - 3)$ $= 15 \times 4$ $s = 60\text{m}$	8.4.2 pg. 100 8.2 pg. 96	8	$1/2$ $1/2$	

* Answers that can also be considered *

Q. 22 On heating diffusion become faster. OR
ON heating kinetic Energy increases, as a result diffusion become faster. (Any one)

Q. 23 (i) Cell loses osmotic pressure/undergoes complete breakdown/Loss of selective permeability through osmosis or diffusion. (Any one)
OR

Q. 23. For protein synthesis.

26	Apical meristem. The apical meristem contains actively dividing cells that increase the length of the shoot. Its removal reduces the formation of new cells at the shoot tip, so the plant's growth in height is significantly reduced.	6.2.1 pg. 65	6	1 1	2
27	When a cricketer moves his hands backwards while catching a fast-moving ball, the fielder increases the time. As a result, the force exerted on the hands decreases, making it easier and safer to catch the ball. A faster ball of the same mass has greater momentum. Therefore, a greater force is required to stop it compared with a slower ball.	9.4.1 pg. 114	9	1 1	2
28	On applying pressure, gas particles can be brought closer because of the large spaces between them. Solid particles are already closely packed, so they cannot be compressed easily.	1.4.2 pg. 8	1	1 1	2
28	OR When heated, the gas particles gain kinetic energy and move faster. They collide more frequently with the walls of the balloon and tend to occupy more space, causing the balloon to expand.	1.4.1 pg. 7	1	1 1	2
29	The cell wall gives support and strength to a plant cell. It protects the cell and prevents it from bursting when too much water enters it.	5.2.2 pg. 57	5	1 1	2
30	A rocket moves upward when the gases produced by burning fuel are expelled downward at high speed. The gases exert an equal and opposite force on the rocket, pushing it upward. This demonstrates Newton's Third Law of Motion. Eg: Walking: We push the ground backward with our feet, and the ground pushes us forward. OR Swimming: A swimmer pushes water backward, and the water pushes the swimmer forward. OR Jumping from a boat: A person jumps forward, and the boat moves backward. OR Releasing an inflated balloon: Air moves backward, and the balloon moves forward. (Any other suitable example)	9.5 pg. 116	9	1 1	2

* Answers to be considered *

26. stops vertical growth at the tip and triggers lateral branching instead.

OR

31	Accept Scientifically correct and conceptual based banner		9	2	2	
32	The acceleration due to gravity will ^{double} (increase) because g is directly proportional to the mass of the Earth when its radius remains constant.	10.2 pg. 129	10	1 1	2	
33	(i) $W_{moon} = \frac{1}{6} \times wt \text{ on earth}$ $= \frac{600}{6}$ $= 100N$	10.4.1 pg. 131	10	1	3	
	(ii) Mass on the Moon = 60 kg.			1		
	(iii) The astronaut's weight changes because the Moon has weaker gravitational force, but mass remains unchanged. Gravity of moon is one-sixth of the Earth.			1		
33	OR $u=0$ (stone is dropped) $s=80\text{ m}$ $g=10\text{m/s}^2$ On earth $v^2 = u^2 + 2gs$ $= 0 + 2(10)(80)$ $= 1600$ $v = \sqrt{1600}$ $v = 40\text{m/s}$ On moon ($g=1.6\text{m/s}^2$) $v = u^2 + 2gs$ $= 0 + 2(1.6)(80)$ $= 256$ $v = \sqrt{256}$ $v = 16\text{m/s}$ Difference = $40 - 16 = 24\text{m/s}$	10.2.2 pg. 129	10	$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2} + \frac{1}{2}$	3	
34	The cells are living and have thin cell walls. The cells have large intercellular spaces between them. (Or any other two) Aerenchyma is a type of parenchyma tissue with large intercellular air spaces. These air spaces make the plant light and buoyant, helping it float on water, and also facilitate the exchange of gases within the plant	6.2.2(i) pg. 66	6	1 1 1	3	
34	OR Bone i) It is hard and rigid ii) It forms the framework of the body (Any one)	Cartilage i) It is soft and flexible ii) It provides flexibility to body parts	6.3.2 pg. 71	6	1	3

	The red pigment is haemoglobin. It ^{binds} (combines) with oxygen and helps transport it to different parts of the body.			1 1	
35	Solution A: It is a hypotonic solution. The cell swells because water enters the cell by osmosis. Solution B: It is an isotonic solution. There is no net movement of water into or out of the cell, so its size remains unchanged. <i>Osmosis</i>	5.2.1 pg. 56	5	1 1 1	3
36	The stone feels lighter because water exerts an upward buoyant force (upthrust) on it. According to Archimedes' Principle, a body partially or completely immersed in a fluid experiences an upward force equal to the weight of the fluid displaced by it. This upward force reduces the apparent weight of the stone.	10.5 pg. 134 <i>Archimedes Principle</i> <i>Reason</i>	10	1 → 1 → 1	3
37	(A) Dendrites: Receive nerve impulses from receptors or other neurons. (B) Cell body: Controls the activities of the neuron. (C) Axon: Carries nerve impulses away from the cell body.	6.3.4 pg. 73 <i>Identify + label</i>	6	1 1 1	4
	Voluntary muscles work under our control, whereas involuntary muscles work automatically without our conscious control.	6.3.3.pg. 72		1	
38	(i) Momentum of a car $p = mv = 1000 \times 20 = 20000 \text{ kg m/s}$ (ii) Momentum of the truck $p = mv = 5000 \times 4 = 20000 \text{ kg m/s}$ (iii) Both the car and the truck have equal momentum, because momentum depends on the product of mass and velocity.	9.4.pg. 113	9	$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2} + \frac{1}{2}$ 2 1 1	4
39	(i) Final vel. $v = u + at = 10 + (1 \times 20) = 30 \text{ m/s}$ (ii) Dist. travelled $s = ut + \frac{1}{2}at^2$ $= (10 \times 20) + \frac{1}{2} \times 1 \times 20^2 = 200 + 200 = 400 \text{ m}$ (iii) The motion is non-uniform because the velocity changes with time due to the acceleration	8.3 pg. 98 8.5.2 pg. 103 <i>correct substn</i> <i>correct value</i> 8.3 pg. 98 <i>Non-uniform</i>	8	$\frac{1}{2} + \frac{1}{2}$ → 1 → 1 → 1	4

39	OR(i) $a = \frac{v-u}{t} = \frac{0-12}{4} = -3m/s^2$ (ii) The negative sign indicates that the cyclist's speed is decreasing. (iii) It is called negative acceleration because the acceleration is opposite to the direction of motion and the speed of the cyclist decreases.	Substnt correct value 8.3 pg. 98 8 ~ve acceleration/ Retardation →	1 1	4
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