Indian School Al Wadi Al Kabir

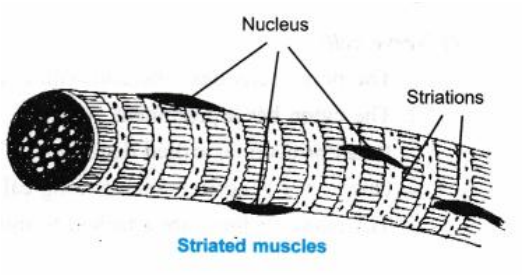
Post -Midterm Examination (2025-2026)

Marking scheme

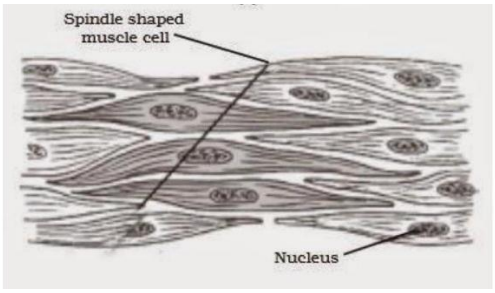
Class: IX Subject: SCIENCE (086) Max. marks: 80
Date: 02/12/2025 Set- I Time: 3hours

Section – A		MARKS
1	B. Gas exchange and transpiration	1
2	B. The skin has many layers of squamous cells to prevent wear and tear.	1
3	C. Parenchyma – Stores food and performs photosynthesis	1
4	D. Manufacture of fat molecules (lipids) and detoxification of drugs.	1
5	D. Lipids and proteins	1
6	B. Carbohydrate – Rice, Protein – Gram, Fat – Groundnut	1
7	A. A field of maize suffers low yield due to infestation by worms.	1
8	C. A is true, but R is false.	1
9	A. Both A and R are true, and R is the correct explanation of A.	1
10	(i) Nature of Matrix Bone: The matrix is hard and non-flexible because it contains calcium and phosphorus salts. Blood: The matrix is fluid (liquid) and is called plasma. (ii) Function Bone: Provides support and protection to the body and helps in movement. Blood: Helps in the transport of substances such as gases, nutrients, and wastes.	1+1=2
11	**<u>Students to attempt either option A or B.</u>** A. (i) They are considered strange because they have their own DNA and ribosomes, and therefore can make some of their own proteins. (ii) Meiosis reduces the number of chromosomes to half, producing gametes	1+1=2

<table>
<tr><td></td><td>(sex cells).
OR
B. (i) During the time of cell division, the chromatin fibres condense to form distinct, thick chromosomes.
(ii) The ER produces proteins and lipids, which are then transported to the Golgi apparatus.
The Golgi apparatus modifies, stores, and packages these materials for transport inside or outside the cell.</td><td></td></tr>
<tr><td>12</td><td>(i) Photoperiod is the duration of light that a plant receives in a day needed for flowering and growth.
(ii) Higher yield, Improved quality, Biotic and abiotic resistance, wider adaptability, and short duration, response to fertilisers (Any two)</td><td>1

½+½=1</td></tr>
<tr><td>13</td><td>(i)
 

(a) (Only drawing)

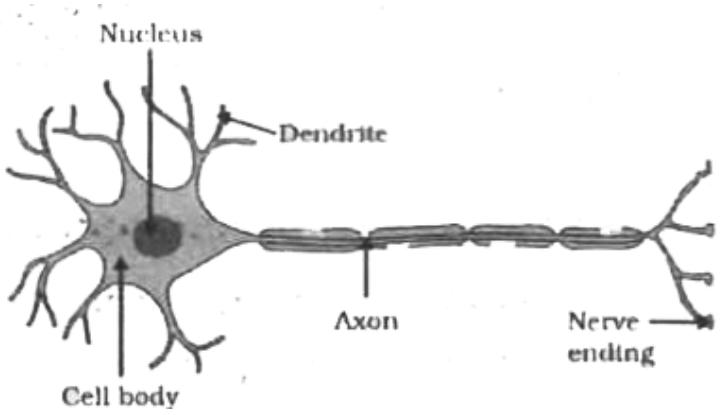
(b) (Only drawing)

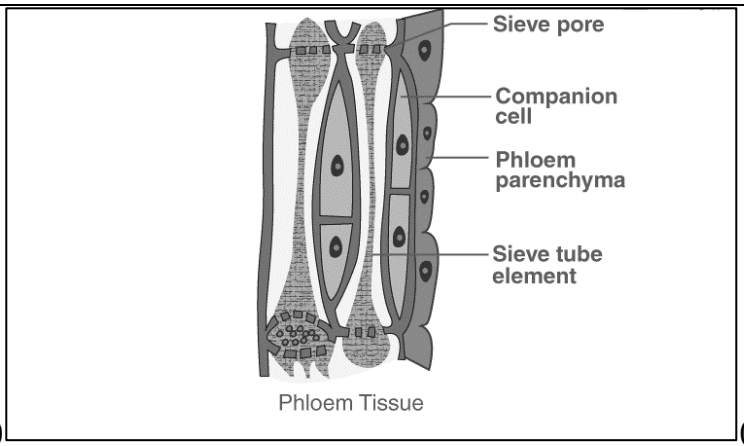
(ii)
<table>
<tr><th>Ligaments</th><th>Tendons</th></tr>
<tr><td>Connect bone to bone at a joint.</td><td>Connect muscle to bone.</td></tr>
</table></td><td>1+1

½+½=1</td></tr>
<tr><td>14</td><td>(i) Cell wall: Provides rigidity and structural support to the plant, helping it maintain shape and stand upright.

(ii) Large central vacuole: Stores water, nutrients, and waste, and helps maintain turgidity of the cell.

(iii) Chloroplasts: Contain chlorophyll and carry out photosynthesis, enabling the plant to produce its own food.</td><td>1X3=3</td></tr>
<tr><td>15</td><td>A. Red blood cells swelled and burst because water moved into the cells by osmosis from the hypotonic solution. This was dangerous as it damaged the</td><td>2</td></tr>
</table>

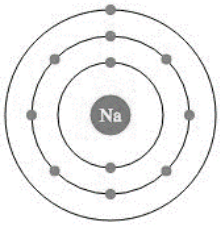
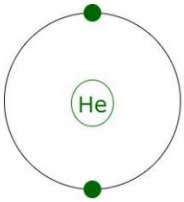
	cells. B. Hypertonic solution: Cells shrink as water moves out of the cells. Isotonic solution: Cells remain stable as there is no net water movement. C. The process is osmosis – the movement of water from a region of higher water concentration to a region of lower water concentration across a selectively permeable membrane. D. Isotonic saline is safest for patients.	 1 1
16	**<u>Attempt either option A or B.</u>** A. (i)  (Diagram + Label – Any two) Function: Neurons transmit messages (electrical impulses) from one part of the body to another. (ii) (a) Adipose tissue: Stores fat under the skin and around internal organs. Helps in keeping the body warm by acting as an insulator. (ii) (b) Cartilage: Found: In joints, nose, ear, trachea, and larynx. Function: Provides flexibility and support and reduces friction at joints. **OR**	5

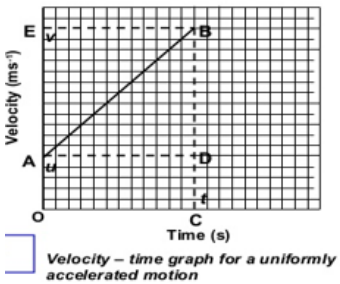
<table>
<tr><td></td><td>


Phloem Tissue
B. (i) (3)
(ii)
(2 points each- 2)
<table>
<tr><th>Xylem</th><th>Phloem</th></tr>
<tr><td>Transports water and minerals from roots to other parts of the plant (upward direction).</td><td>Transports food from leaves to other parts of the plant (both upward and downward directions).</td></tr>
<tr><td>Made up of tracheids, vessels, xylem fibres, and xylem parenchyma.</td><td>Made up of sieve tubes, companion cells, phloem fibres, and phloem parenchyma.</td></tr>
</table>
</td><td></td></tr>
<tr><td></td><td>Section – B</td><td></td></tr>
<tr><td>17</td><td>C. 17</td><td>1</td></tr>
<tr><td>18</td><td>C. (b) and (d)</td><td>1</td></tr>
<tr><td>19</td><td>D. The particles of matter are in a stationary state.</td><td>1</td></tr>
<tr><td>20</td><td>A. Neutrons and protons</td><td>1</td></tr>
<tr><td>21</td><td>A. A compound</td><td>1</td></tr>
<tr><td>22</td><td>B. Conversion of vapours into a solid without passing through the liquid state is called deposition.</td><td>1</td></tr>
<tr><td>23</td><td>D. 2</td><td>1</td></tr>
<tr><td>24</td><td>B. Both A and R are true, and R is not the correct explanation of A.</td><td>1</td></tr>
<tr><td>25</td><td>To test if a solution is saturated or unsaturated, add more solute: if it dissolves, the solution is unsaturated; if it remains undissolved, it is saturated.
When a hot saturated solution cools, the solubility decreases, causing excess solute to crystallise out of the solution.</td><td>1

1</td></tr>
<tr><td>26</td><td><u>Attempt either option A or B.</u>
A.(i) Particles of matter have spaces between them.
(ii) Substance 'A' is a gas. Any two properties of a gas.
OR
B.
(i) Diffusion
(ii) 303K, 398K</td><td>
1
2

1
2</td></tr>
<tr><td>27</td><td>(i) 2,8,1</td><td>1</td></tr>
</table>

	(ii) Valency-1, Valence electrons-1 (iii)  	1 1
28	A. Valence electrons-2, Valency-0 B.  He is stable as the K shell is fully filled. **OR** The element is Lithium. Electronic configuration- 2,1 Valency-1 C. (d) $2n^2$	1 2 1
29	**<u>Attempt either option A or B.</u>** A. (a) Milk is a colloid. Tyndall Effect. (b) Salt solution is a solution in which particles are very small in size. (c) Any two mixtures showing the Tyndall effect. (d) Dispersed phase- Liquid, Dispersing medium- Solid (e) Any 2 differences. **OR** B. (a) Highest-Y, Lowest-Z (b) Solubility increases with an increase in temperature. (c) Y. The solubility is the same at different temperatures. (d) $\text{Mass of solution} = \text{Mass of solute} + \text{Mass of solvent}$ $= 60\,g + 480\,g$ $= 540\,g$ $\text{Mass \%} = \frac{60}{540} \times 100 \quad = 11.11\%$ (e) Iodine in alcohol.	5
	Section – C	

30	D. v= u+ at	1
31	A. decreases	1
32	(d) A is false, but R is true.	1
33	Net force = Larger force - smaller force Net force = 8 N - 5 N = 3 N (in the direction of the 8 N force) Using F = ma a = F/m = 3/2 = 1.5 m/s² Therefore, the net force is 3 N and the acceleration is 1.5 m/s².	2
34	**Attempt either option A or B.** A. Body A moving with higher acceleration (1 mark) The acceleration is given by the slope of the velocity-time graph. Slope of body-A > Slope of body-B, as it forms a greater angle with the time axis than body B (1 mark) OR B. (i) Area under the v-t graph provides distance/displacement (ii) The object is under uniform motion/ constant velocity.	2
35	(i) W=Fs (ii) Work done 0 No work, No displacement	3
36	**(i)** Thrust is the force acting perpendicular to the surface. Here, the thrust exerted by the block on the table is equal to its weight. Thrust = Weight = m × g = 2 × 10 = 20 N **(ii)** Given: Thrust (Force) = 20 N Dimensions in contact = 0.10 m × 0.005 m Area = 0.10 ×0.05= 50 × 10^{-4} m² = 0.005 m² Using: Pressure = Thrust/Area Pressure = 20/0.005 Pressure = 4000 N m^{-2} or 4000 Pa Therefore, the pressure exerted by the block on the table is 4000 Pa (or 4000 N m^{-2}).	3
37	**(i)**  Velocity – time graph for a uniformly accelerated motion (ii) u= 0, a = 0.1 m/s² t = 120 sec = 2minutes equation of motion: v = u + a t	3

	$= 0 + 0.10 \times 120 = 12$ m/s $s = u\,t + 1/2\,a\,t^2$ $= 0 + 1/2 \times 0.10 \times 120^2 = 720$ m	
38	A. Newton's Third Law of Motion explains the upward motion of the rocket. B. Action: The Rocket exerts a downward force on the hot gases. Reaction: Hot gases exert an equal and opposite upward force on the rocket (or vice versa). **Attempt either subpart C or D.** C. Using Newton's Second Law: F = ma • Mass (m) = 5000 kg • Acceleration (a) = 15 m/s² Net upward force = 5000 × 15 = 75,000 N (or 75 kN) **OR** D. Momentum is the product of mass and velocity. Momentum of gases expelled in one second: • Mass of gases = 100 kg • Velocity = 1000 m/s (downward) • Momentum = mass × velocity = 100 × 1000 = 100,000 kg m/s (or 10^5 kg m/s) The rocket gains an equal momentum in the upward direction.	4
39	**Attempt either option A or B.** A. (i) According to the universal law of gravitation, the force between two objects is directly proportional to the product of their masses and is inversely proportional to the square of the distance between them. $F \propto m_1 \times m_2$ and $F \propto \frac{1}{r^2}$ Combining (1) and (2), we get $F \propto \frac{m_1 \times m_2}{r^2}$ or $F = G \times \frac{m_1 m_2}{r^2}$ (ii) where G is a constant known as universal gravitational constant. (iii) Gravitational force doubled (iv) It is a case of free fall under the gravity of the Earth. So the body would accelerate with 'g'. The initial velocity u=0 Distance travelled s=10 m. Therefore, $v^2 = u^2 + 2as$ (where a = g). Calculating, $v^2 = 0 + 2 \times 9.8 \times 10$, which gives $v^2 = 196$. Thus, $v = \sqrt{196} = 14$ m/s. **OR**	5

B (i) The acceleration due to the gravitational force of the Earth.

(ii)

Aspect	Mass	Weight
(a) Definition	Mass is the amount of matter contained in a body	Weight is the force with which the Earth attracts a body
SI Unit	kilogram (kg)	newton (N)
(b) Change with location	Mass remains constant everywhere (on Earth, the Moon, or in space)	Weight changes from place to place as it depends on the value of g

(iii) Given:

Mass (m) = 60 kg

g on Earth = 10 m s^{-2}

g on Moon = 1.67 m s^{-2}

Weight on Earth: W = m × g

W = 60 × 10 = 600 N

Weight on Moon: W = m × g

W = 60 × 1.67 = 100N

OR

Weight on Moon = (1/6) × Weight on Earth = 600/6 = 100 N

Explanation: The astronaut's weight is different on the Moon because weight depends on the acceleration due to gravity (g), which is different on different celestial bodies. The Moon has less mass and a smaller radius compared to Earth, so its gravitational pull (g) is only 1/6th of Earth's gravity. Since mass remains constant but g changes, the weight changes.