

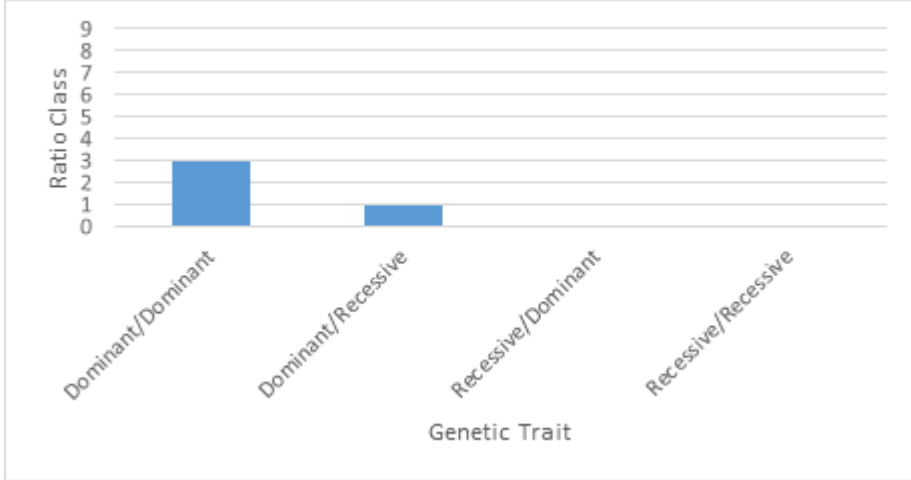
Marking Scheme

Class X

Science

Question no.	Key/Explanation	Marks
1	C	1 mark
2	B	1 mark
3	C	1 mark
4	B	1 mark
5	B	1 mark
6	A	1 mark
7	C	1 mark
8	- Suggests respectful engagement, use of evidence to settle disagreement and aim for shared understanding. Ex. A constructive way is to listen to both views and then check scientific sources, such as the textbook. Rusting can be explained as the oxidation of iron, which forms a new substance. - Limited link to evidence-based resolution - No constructive strategy	2 marks 1 mark No marks
9	- Identifies limitation of the claim: All metals may not show many bubbles even if they are reactive because factors like acid concentration, temperature, or oxide coating affect the reaction. - Relevant metal–acid example or balanced equation: For example, aluminium is reactive but reacts slowly with dilute HCl due to its oxide layer.	1 mark 1 mark
10	i. Writing correct balanced equation Writing equation but not balanced ii. Combination Reaction and acceptable justification iii. Explanation that during burning both elements combine to form a new product	1 mark 1 mark 1 mark
11	- Correct selection of reactions that must follow the logic of the reactivity series. Ex. $\text{Zn} + \text{CuSO}_4 \rightarrow \text{ZnSO}_4 + \text{Cu}$; or, $\text{Fe} + \text{CuSO}_4 \rightarrow \text{FeSO}_4 + \text{Cu}$; or, $\text{Mg} + \text{ZnSO}_4 \rightarrow \text{MgSO}_4 + \text{Zn}$ - Check on whether all written chemical equations are balanced or not. - Correct identification of displaced metal in the reaction.	1 mark 1 mark 1 mark
12	Recognizes disagreement about the reaction outcome Ex. First listen to both students and explain that bromine water is used to test unsaturated compounds. Correct scientific explanation Ex. Ethene has a double bond and undergoes an addition reaction, so it decolourises bromine water. Ethane has only single bonds and does not react.	1 mark 1 mark

	Conflict resolution approach Ex. I would suggest verifying this from the textbook or by doing the experiment carefully. This way, the decision is based on scientific evidence, and both students can agree on the correct conclusion.	1 mark
13	• Identification of marble as CaCO_3 and writing a balanced chemical equation for acid-carbonate reaction • Explanation of the acid-carbonate reaction • pH testing of rainwater and controlled testing with distilled water for comparison • Preventive methods such as protective coating, regular cleaning, and pollution control	1 mark 1 mark 2 marks 1 mark
14	A	1 mark
15	C	1 mark
16	A. Ask both to elaborate and check from the class notes on excretion. B. Keep both views in their final notes on their own and let the teacher choose the correct one later. C. Vote within the group to finalize the opinion chosen by the majority. D. Wait for the teacher to decide who is correct.	2 marks 0 mark 0 mark 1 mark
17	A. Suggest that both explain their reasoning and check it with the textbook before deciding together. B. Accept student B's answer because it sounds more scientific and completes the task quickly. C. Write student B's answer but tell student A that they can check it later themselves. D. Move ahead with other parts of the work and leave this part undecided.	2 marks 0 mark 1 mark 0 mark
18	A. Suggest examining the data carefully and revising the food web if evidence shows fish affect bird populations. B. Keep the original food web since birds eating insects already explains their survival. C. Accept both ideas as equal and submit the project without changing the diagram. D. Ignore the outside data because it comes from a different pond ecosystem.	2 marks 0 mark 1 mark 0 mark
19	Vacuole. It stores water, food, and waste substances in plant cells. This storage helps in life processes such as temporarily storing wastes before excretion.	1 mark 1 mark
20	The cell membrane is semi-permeable, so it allows only selected substances to pass in and out. During nutrition, it lets useful materials like nutrients and water enter the cell. During excretion, it helps wastes move out of the cell. This selective control maintains the cell's internal balance.	1 mark 1 mark
21	Hormones are necessary because they produce long-lasting and widespread effects that help regulate processes like growth, development, metabolism, and reproduction. Unlike nerve impulses, which give quick responses, hormones ensure sustained coordination in the body.	1 mark 1 mark
22	The phenotypic ratio for the cross between RRYy (Round-Yellow) and rrYy (Wrinkled-Yellow) pea plants is 3 : 1 (Round-Yellow : Round-Green).	1 mark

	 <table><thead><tr><th>Genetic Trait</th><th>Ratio Class</th></tr></thead><tbody><tr><td>Dominant/Dominant</td><td>3</td></tr><tr><td>Dominant/Recessive</td><td>1</td></tr><tr><td>Recessive/Dominant</td><td>0</td></tr><tr><td>Recessive/Recessive</td><td>0</td></tr></tbody></table>	Genetic Trait	Ratio Class	Dominant/Dominant	3	Dominant/Recessive	1	Recessive/Dominant	0	Recessive/Recessive	0	1 mark
Genetic Trait	Ratio Class											
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23	Considering both views respectfully and acknowledging both ideas without immediate rejection. Correctly states how plants prepare food by photosynthesis using the water and minerals from the soil. Shows reasoning led to the conclusion. Sample Answer: The first student may be confused because roots absorb water and minerals from soil, which are necessary for plant growth. However, plants do not take food from soil. The second student’s idea is scientifically correct because plants prepare their own food by photosynthesis using sunlight, carbon dioxide, and water. Minerals from soil support this process but are not food themselves. Therefore, by listening to both views and using scientific knowledge, we conclude that plants are autotrophic and make their own food.	1 mark 1 mark 1 mark										
24	Considering both views respectfully. Correctly explains the concept. Shows reasoning led to the conclusion. Sample answer: Beak size variation exists in populations. When food type changes, birds with suitable beaks survive and reproduce more. Over generations, this increases the frequency of those traits. This is natural selection, not coincidence. A learner should compare data across generations and see if patterns repeat.	1 mark 1 mark 1 mark										
25	- Comparing how each group measured waste and discussing possible reasons for differences - Re-measuring using a common method - Agreeing on a final value based on evidence and making decisions collectively Sample Answer: The groups should first discuss how each team collected and measured the waste. They can compare whether they used the same weighing scale, collected waste from the same locations, and measured at the same time of day. They should check if any group includes food waste or only plastic. After identifying these differences, they can agree on a common method and repeat the measurement together. They should record the new data in a table and compare the results. By sharing responsibilities and listening to each other’s observations, they can decide on a reliable final value and report it with reasons.	1 mark 1 mark 1mark										

26	I. Identification of Techniques • Layering • Grafting Explanation of Biological Process The first method is layering, where a grapevine branch is bent to the ground and covered with soil. Roots develop from the covered part, and it later grows into an independent plant. The second method is grafting, where the stem of one rose plant is joined to the rooted plant. Their vascular tissues unite, allowing them to grow as one plant. Role in Improving Quantity & Quality These methods increase quantity because many new plants can be produced from a single parent. They improve quality because grafting combines desirable traits like good flowers and strong roots. Preference over Seeds (Any Two) • Genetic uniformity • Faster growth and early maturity • Maintains desirable traits	1 mark 2 marks 1 mark 1 mark
27	B	1 mark
28	B	1 mark
29	C	1 mark
30	B	1 mark
31	D	1 mark
32	Electric Power: The rate at which electrical energy is consumed, or work is done, in an electric circuit. SI Unit: Watt (W)	1 mark 1 mark
33	Observation: If only red light is used, a single red patch will be seen on the screen instead of a spectrum. Reason: This happens because dispersion occurs due to different wavelengths bending by different amounts. Since red light has only one wavelength, it does not split into colours.	1 mark 1 mark
34	Identifies the cause of failure The candle is too close to the concave mirror, likely within the focal length. Explains image nature In this position, a concave mirror forms a virtual and erect image that cannot be captured on a screen. Correct procedural correction The student should move the candle beyond the focal length so that a real and inverted image forms. Then the screen should be moved back and forth to find the sharp image position. This process allows a real image to be formed on the screen.	1 mark 1 mark 1 mark
35	Distribute Load: Use appliances on separate circuits so the current is divided. High current in one circuit causes overheating and fuse melting. Use of MCB or properly rated fuse: Install a properly rated fuse or MCB. A fuse with a very low rating melts quickly when the current exceeds the safe limit. Avoid Overloading: Operate high-power appliances at different times to reduce total current drawn. (Any other relevant response, and one mark for each approach.)	1 mark 1 mark 1 mark
36	Correct near-view explanation	1 mark

	Ex. A low-cost vision aid can be made using convex lenses of different focal lengths. For reading small text, a short focal length convex lens can be held close to the object, so it lies within the focal length, producing a magnified erect image. Correct distant-view explanation Ex. For distant signboards, a longer focal length lens can be used so that parallel rays from distant objects form a clear image. Ray diagrams Clear, labelled and comprehensible ray diagrams for the explanation of both kinds of views An adjustable system is suggested, and a creative structure The device could have a sliding holder or interchangeable lenses. Logical and understandable reasoning Like by adjusting the lens position, users can switch between near and distant viewing based on image clarity.	1 mark 1 mark 1 mark 1 mark
37	Calculation of energy saved Energy consumed = Power (kW) × Time (h) Old bulb: 100 W = 0.1 kW Daily energy = $0.1 \times 5 = 0.5$ kWh LED bulb: 20 W = 0.02 kW Daily energy = $0.02 \times 5 = 0.1$ kWh Energy saved per day per bulb = $0.5 - 0.1 = 0.4$ kWh Environmental connection Lower electricity demand reduces the use of fossil fuels in power plants, which lowers CO₂ emissions and pollution. Social and scientific justification Use less current for the same brightness Converts more energy to light than heat Reduce electricity bills and promote sustainable living	2 marks 1 mark 2 marks