CLASS VIII - BASIC SCIENCE

First Term Summative Assessment 2026-27

Detailed Answer Key

Maximum score	Subjects	Use of choices
60	Physics, Chemistry and Biology	Answer one option only where a choice is given.

How to use this key

The wording below gives the expected answer and the points that earn the allotted score. Equivalent scientifically correct wording should also be accepted. Calculations must show the stated steps and units.

PHYSICS

Total: 20 scores

Q1	Choose the correct method of writing a unit: (M, cm, CM, Cm).	**1**
	Expected answer / marking points **cm**. Unit symbols are written in the correct lower-case form where applicable.	

Q2	Evaluate Statements A and B about distance.	**1**
	Expected answer / marking points **Option (c):** A is correct, but B is incorrect. The SI unit of distance is metre. Statement B defines speed, not distance.	

Q3 A	Different tumblers give different numerical values when measuring the same bucket of water. Explain; then state the correct method.	**2**
	Expected answer / marking points **(a)** Different tumblers have different volumes/capacities; changing container size changes the count. **(b)** Measure liquids using standard calibrated measuring containers.	

Q3 B	Show that length is the only fundamental quantity required to find the volume of a rectangular measuring jar.	**2**
	Expected answer / marking points **V = l x b x h.** Breadth and height are also measurements of length. Therefore volume depends only on the fundamental physical quantity length.	

Q4	A rubbed plastic comb attracts paper pieces. Name and explain the force.	**2**
	Expected answer / marking points **(a)** Electrostatic force. **(b)** It is exerted by an electrically charged body on another charged or uncharged body.	

Q5	State the changes caused by force in squeezing a toothpaste tube and catching a cricket ball.	**2**
	Expected answer / marking points **Activity A:** Force changes the shape and size of the toothpaste tube. **Activity B:** Force changes the state of motion by bringing the moving ball to rest.	

Q6	Sawdust and sand of equal volume have different masses. Identify the quantity and equation.	**2**
	Expected answer / marking points **(a)** Density. **(b)** Density = mass / volume.	

Q7	A stone displaces 0.02 L water. What quantity does it show? Convert to cm^3.	**2**
	Expected answer / marking points **(a)** Volume of the stone. **(b)** 1 L = 1000 cm^3; hence 0.02 L = 0.02 x 1000 = **20 cm^3**.	

Q8 A	Explain how a wooden plank in a moving lorry may be at rest and in motion.	**2**
	Expected answer / marking points It is **at rest with respect to the lorry** because its position does not change relative to the lorry. It is **in motion with respect to a stationary observer on the ground** because its position changes as the lorry moves.	

Q8 B	An object is tied to a tree. Explain how it can be argued to be in motion.	**2**
	Expected answer / marking points With respect to Earth it is at rest. But relative to an observer in space, Earth rotates on its axis and revolves around the Sun; therefore the tree and tied object are in motion.	

Q9	Define least count, state the least count of a 15 cm scale, and assess direct measurement of paper thickness.	**3**
	Expected answer / marking points **(a)** The smallest value that can be accurately measured using an instrument. **(b)** 1 mm. **(c)** No. A single sheet is much thinner than the scale's least count.	

Q10 A	From the position-time path A to F, decide whether speed is uniform. Show calculations.	**3**
	Expected answer / marking points **AB:** (100 - 0) m / (2 - 0) s = 50 m/s. **BC:** (400 - 100) m / (4 - 2) s = 150 m/s. **CD:** (450 - 400) m / (6 - 4) s = 25 m/s. **DE:** (700 - 450) m / (8 - 6) s = 125 m/s. **EF:** (750 - 700) m / (10 - 8) s = 25 m/s. Unequal distances are covered in equal time intervals; therefore speed is **non-uniform**.	

Q10 B	A person runs three times around a 400 m track in 5 minutes. Find distance and average speed.	**3**
	Expected answer / marking points **(a)** Distance = 3 x 400 = **1200 m**. **(b)** Time = 5 x 60 = 300 s; average speed = 1200 / 300 = **4 m/s**.	

CHEMISTRY

Total: 20 scores

Q1	Choose the correct statement about matter and changes.	**1**
	Expected answer / marking points **Option (d):** Rusting of iron is a chemical change.	

Q2	Match the scientists and their contributions.	**1**
	Expected answer / marking points **Option (B):** Lavoisier - metals and nonmetals; Dobereiner - triads; Newlands - law of octaves; Mendeleev - atomic mass.	

Q3	Quicklime is mixed with water in a steel cup. What is felt and why?	**2**
	Expected answer / marking points **(a)** The cup becomes hot / heat is felt. **(b)** Heat is liberated when quicklime reacts with water: $CaO + H_2O \rightarrow Ca(OH)_2$ + heat.	

Q4 A	Silver nitrate and sodium chloride are placed in sunlight. State observation and reason.	**2**
	Expected answer / marking points **(a)** A white precipitate of silver chloride forms and turns black in sunlight. **(b)** Silver chloride absorbs light energy and decomposes to form silver.	

Q4 B	Name the reactants for photosynthesis and the type of reaction.	**2**
	Expected answer / marking points **(a)** Carbon dioxide and water. **(b)** Photochemical reaction.	

Q5	State the energy change in a dry cell and during electrolysis.	**2**
	Expected answer / marking points **(a)** Chemical energy -> electrical energy. **(b)** Electrical energy -> chemical energy.	

Q6	Identify the statements that agree with Dalton's atomic theory.	**2**
	Expected answer / marking points **(a)** All matter is made of minute particles called atoms. **(c)** Atoms of different elements differ in size, property and mass.	

Q7 A	Complete the table on basis of nomenclature.	**2**
	Expected answer / marking points **(a)** Indium - colour. **(b)** Rutherfordium. **(c)** Europium - continent. **(d)** Neptunium.	

Q7 B	Write the symbols: Aluminium, Sulphur, Gold, Potassium.	**2**
	Expected answer / marking points Aluminium - **Al**; Sulphur - **S**; Gold - **Au**; Potassium - **K**.	

Q8	Differentiate 2N and N_2.	**2**
	Expected answer / marking points **2N:** two free nitrogen atoms. **N_2:** one nitrogen molecule containing two nitrogen atoms.	

Q9	Silver is coated on an iron bangle. Answer the electroplating questions.	**3**
	Expected answer / marking points **(a)** The iron bangle is connected to the negative terminal (cathode). **(b)** Silver cyanide + sodium cyanide solution. **(c)** Yes. Electrical energy is absorbed during the chemical reaction, so it is electrochemical.	

Q10 A	For $3C_2H_6$, find molecules and total atoms.	**3**
	Expected answer / marking points Number of molecules = **3**. Carbon atoms = 3 x 2 = 6. Hydrogen atoms = 3 x 6 = 18. Total atoms = **24**.	

Q10 B	Calcium carbonate decomposes to calcium oxide and carbon dioxide. Identify reactant, products and equation.	**3**
	Expected answer / marking points **(a)** Reactant: $CaCO_3$. **(b)** Products: CaO and CO_2. **(c)** $CaCO_3$ -> CaO + CO_2 (on heating).	

BIOLOGY

Total: 20 scores

Q1	Choose the correct statements about chemical evolution.	**1**
	Expected answer / marking points **Option (c):** i and iii are correct.	

Q2	Choose the correct pairing for smart farming.	**1**
	Expected answer / marking points **Option (b):** P-iii, Q-iv, R-i, S-ii. Hydroponics: plants grown in nutrient solutions; IoT: sensors identify soil/crop conditions; Aeroponics: roots receive water and nutrients in air; AI: image/information-based problem solving.	

Q3	Evaluate the statement: “Adopt integrated farming for better yields.”	**2**
	Expected answer / marking points It is appropriate. Rearing animals alongside crops lets losses in one activity be compensated by the other. By-products can become manure or feed, and food availability can be ensured in all seasons. *(Any two points)*	

Q4	Complete the comparison of cells based on nuclear membrane.	**2**
	Expected answer / marking points **A:** Prokaryotic cell. **B:** Eukaryotic cell. **C:** Nucleus and cell organelles do not have a membrane covering. **D:** Nucleus and cell organelles have a membrane covering.	

Q5 A	Evaluate GM crops and differentiate tissue culture from GM crops.	**2**
	Expected answer / marking points **(i)** True. Pest-resistant GM crops reduce pesticide use; e.g., Bt cotton resists pests. **(ii)** GM crops are made by altering genes to add desired traits. Tissue culture produces plants with the same characteristics as the parent using plant tissues.	

Q5 B	Evaluate: “Integrated pest management is an important part of sustainable agriculture.”	**2**
	Expected answer / marking points True. IPM minimizes chemical pesticide use and controls pests using organic, biological and mechanical methods.	

Q6 A	Classify plant nutrients by requirement, with examples.	**2**
	Expected answer / marking points **Macronutrients:** required in larger quantities - nitrogen, potassium, phosphorus, calcium, magnesium and sulphur. **Micronutrients:** required in smaller quantities - boron, zinc, copper, manganese, iron, molybdenum, chlorine and nickel. (Any suitable examples.)	

Q6 B	Explain the importance of soil testing and fertilisation.	**2**
	Expected answer / marking points Soil testing identifies deficient nutrients, allowing suitable fertilisers to be selected. Ensure water/moisture is present when fertiliser is applied, because lack of moisture affects nutrient absorption and soil decomposers.	

Q7	Write the stages in the formation of mitochondria.	**2**
	Expected answer / marking points A eukaryotic cell engulfed a small aerobic bacterium. Instead of digesting it, the cell protected it; over time the bacterium transformed into a mitochondrion.	

Q8	List support systems that can attract the new generation into agriculture.	**2**
	Expected answer / marking points Support may be obtained from family members, online systems, cooperative societies, local self-governing bodies and Krishi Bhavan - for problem solving, subsidies, financial assistance, planting materials and encouragement. *(Any appropriate points)*	

Q9	State conditions that helped form simple organic molecules on early Earth, and assess the Urey-Miller experiment.	**3**
	Expected answer / marking points **(a)** Any two: high temperature; no free oxygen; sunlight/lightning/UV rays; volcanic eruptions; long continuous rain after water vapour condensed; primitive ocean with dissolved substances. **(b)** Yes. The experiment produced organic molecules such as amino acids, providing evidence for chemical evolution.	

Q10 A	Answer about nano-, organic and biofertilisers.	**3**
	Expected answer / marking points **(a)** Nano-fertilisers are needed in very small quantities, so they harm soil structure and decomposers less than artificial fertilisers. **(b)** Organic fertilisers release nutrients slowly through decomposers and have comparatively low nutrient content. **(c)** Microorganisms such as Rhizobium, Azospirillum and Mycorrhiza help increase nitrogen in the soil.	

Q10 B	Evaluate water-saving irrigation methods and name a farming method suitable for a flat.	**3**
	Expected answer / marking points **(a)** Drip and wick irrigation minimise water loss and provide uniform water to plants. Wick irrigation can use even less water than drip irrigation. **(b)** Vertical farming. It can use hydroponics/aeroponics, drip or wick irrigation, and even slanting light effectively. *(Any one advantage)*	