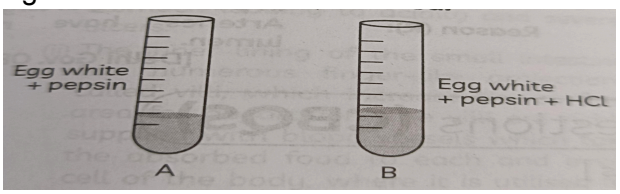
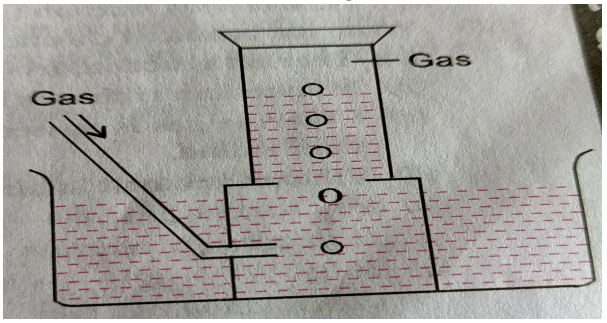
BCM SCHOOL Basant Avenue Dugri Road Ludhiana
Class- X Subject - Science Date- May 19, 2026

General Instructions
Section -A is Biology & Chemistry and Section -B is Physics
A - Both the Assertion and the Reason are correct and the Reason is the correct explanation of the Assertion.
B - The Assertion and the Reason are correct but the Reason is not the correct explanation of the Assertion.
C - Assertion is true but the Reason is false.
D - The statement of the Assertion is false but the Reason is true.

Section - A (Biology and Chemistry)

Q1.	Sahil set up an experiment to study the role of enzymes in digestion of food.  In which test tube, the digestion of protein will occur? (a) Test tube A as pepsin will breakdown into simple molecules. (b) Test tube B as HCl will breakdown protein into simple molecules. (c) Test tubes A as pepsin will breakdown protein into simple molecules. (d) Test tube B as HCl will activate pepsin for breakdown of protein into simple molecules.	1
Q2.	Assertion (A): Following is a balanced chemical equation for the action of steam on iron. $3Fe(s) + 4H_2O(g) \longrightarrow Fe_3O_4(s) + 4H_2(g)$ Reason (R): The law of conservation of mass holds good for a chemical equation.	1
Q3.	The pancreas of a person suddenly stopped functioning. How will digestion be affected in such a person	2
Q4.	A metal is treated with dil. H_2SO_4. The gas evolved is collected by the method shown in the figure.  Answer the following: (i) Name the gas.	2

	(ii) Name the method of collection of the gas. (iii) Is the gas soluble or insoluble in water ? (iv) Is the gas lighter or heavier than air ?	
Q5.	(A) Design an experiment to demonstrate the thermal decomposition of lead nitrate. (B) Potassium chlorate is heated in the presence of manganese dioxide (catalyst) to give potassium chloride and oxygen. Write a balanced chemical equation for the same. (C) Write balanced chemical equation for the reaction in part (A) stating the physical state of the reactant and the products.	3
Q6.	Decomposition reactions require energy either in the form of heat or light or electricity for breaking down the reactants. Write one equation each for decomposition reactions where energy is supplied in the form of heat, light and electricity.	3
Q7.	Give reason for the following: (i) Glottis is covered by epiglottis (ii) Lung alveoli are covered with blood capillaries (iii) the wall of trachea is supported by cartilage rings. (iv) A piece of bread taste sweet when chewed for some time ? (v) Cellulose acts as a roughage in man but serves as a source of nutrient in cow. Justify the statement.	5
Section - B (Physics)		
Q1.	If the magnification produced by a mirror is -3 , then the mirror and position of the object will be (a) Convex mirror, at infinity (b) Convex mirror, between infinity & P (c) Concave mirror, beyond C. (d). Concave mirror, between C & F	1
Q2.	Assertion: When a pencil is partly immersed in water and held obliquely to the surface, the pencil appears to bend at the water surface. Reason: The apparent bending of the pencil is due to the refraction of light when it passes from water to air.	1
Q3.	A ray of light travel from diamond to Kerosene oil the speed of light increase by 25% . Calculate the refractive index of kerosene oil relative to diamond.	2
Q4.	**Case study:** An optical engineer is designing a specialized sensor system that requires a small concave mirror to project a real image of a micro-LED onto a receiver. The micro-LED (object) is placed	2+1+ 1=4

	perpendicularly on the principal axis of the concave mirror. When the LED is positioned at a distance u1 from the pole of the mirror, a real and inverted image is formed at a distance 60cm , with a linear magnification of 2. Due to a thermal expansion in the mounting bracket, the micro-LED accidentally shifts 10 cm closer to the mirror along the principal axis to a new position u2. (a)What is the focal length of the concave mirror used in this sensor system? (b)At what position v2 is the new image formed after the micro-LED shifts 10 cm closer to the mirror? (c) Draw ray diagrams in each of the above case to show the image formation.	