BCM SCHOOL BASANT AVENUE, DUGRI ROAD, LUDHIANA

CLASS – IX

SCIENCE ASSIGNMENT

CHAPTER – IS MATTER AROUND US PURE (CHEMISTRY)

CHAPTER - FORCE & LAWS OF MOTION (PHYSICS)

MCQs

1. **Two substances, A and B were made to react to form a third substance, A2B according to the following reaction: $2A + B \rightarrow A_2B$**
   Which of the following statements concerning this reaction are incorrect?
   (i) The product A_2B shows the properties of substances A and B.
   (ii) The product will always have a fixed composition.
   (iii) The product so formed cannot be classified as a compound.
   (iv) The product so formed is an element.
   (a) (i), (ii) and (iii)
   (b) (ii), (iii) and (iv)
   (c) (i), (iii) and (iv)
   (d) (iii) and (iv)

2. **The rate of change of momentum of an object is equal to:**
   (a) Force.
   (b) Impulse.
   (c) Power.
   (d) Energy.

ASSERTION/REASON

Directions: In the following questions, a statement of assertion (A) is followed by a statement of reason (R). Mark the correct choice as:
(a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).
(b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).
(c) Assertion (A) is true but reason (R) is false.
(d) Assertion (A) is false but reason (R) is true

1. **Assertion (A): When a beam of light is passed through a colloidal solution, its path becomes visible**
   Reason (B): Light do not gets scattered by colloidal particles.
2. **Assertion (A) When a moving bus suddenly stops, the passengers fall forward.**
   Reason (R): Due to inertia of motion, the lower part of the passenger's body comes to rest with the bus but the upper part continues to move forward.

COMPETENCY BASED QUESTION

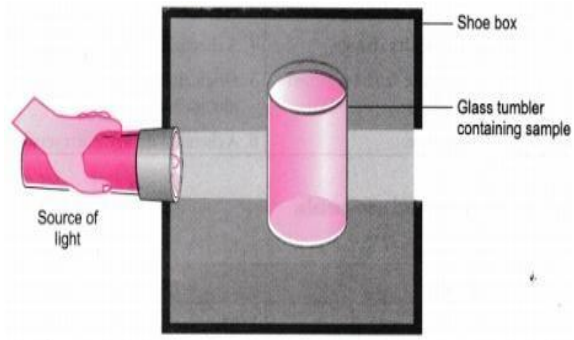
1. **A group of students took an old shoe box and covered it with a black paper from all sides. They fixed a source of light (a torch) at one end of the box by**

making a hole in it and made another hole on the other side to view the light. They placed a milk sample contained in a beaker/tumbler in the box as shown in the figure. They were amazed to see that milk taken in the tumbler was illuminated. They tried the same activity by taking a salt solution but found that light simply passed through it.

(a) Explain why the milk sample was illuminated. Name the phenomenon involved.

(b) Same results were not observed with a salt solution. Explain.

(c) Can you suggest two more solutions which would show the same effect as shown by the milk solution?



2. **During an experiment the students were asked to prepare a 10% (Mass/Mass) solution of sugar in water. Ramesh dissolved 10g of sugar in 100g of water while Sarika prepared it by dissolving 10g of sugar in water to make 100g of the solution.**
   (a) Are the two solutions of the same concentration
   (b) Compare the mass % of the two solutions.

3. **A cricket ball of mass 150 g moving at 20 m/s is hit by a bat and returned with a speed of 30 m/s in the opposite direction. Time of contact = 0.02 s.**
4. **Find:**
5. **(a) Change in momentum**
6. **(b) Force exerted by the bat**

EXPLANATION BASED QUESTION

1. Pragya tested the solubility of three different substances at different temperatures and collected the data as given below (results are given in the following table, as grams of substance dissolved in 100 grams of water to form a saturated solution).

(a) What mass of potassium nitrate would be needed to produce a saturated solution of potassium nitrate in 50grams of water at 313K?

(b) Pragya makes a saturated solution of potassium chloride in water at 353*K* and leaves the solution to cool at room temperature. What would she observe as the solution cools? Explain.

(c) Find the solubility of each salt at 293*K*. Which salt has the highest solubility at this temperature?

(d) What is the effect of change of temperature on the solubility of a salt?

Substance Dissolved	Temperature in K				
	283	293	313	333	353
Potassium nitrate	21	32	62	106	167
Sodium chloride	36	36	36	37	37
Potassium chloride	35	35	40	46	54
Ammonium chloride	24	37	41	55	66

REASONING BASED QUESTION

1. **When a bullet is fired from a gun, the gun recoils (moves backward).**

   Explain why this happens. Name the law involved.

CASE STUDY

1. **Rohit was traveling in a car with his family. He noticed that when the car suddenly started moving, everyone inside felt a jerk backward. Later, when the car stopped suddenly, they all felt a jerk forward. His father explained that these effects were due to Newton's Laws of Motion. Rohit became curious and started observing similar effects while riding a bus and playing cricket, where the fielder moves his hands backward while catching a fast-moving ball.**

   Read the case carefully and answer the following questions:

1. **Why did Rohit and his family feel a backward jerk when the car started suddenly, and a forward jerk when it stopped? Which law of motion explains both observations?**

2. **Rohit noticed that the fielder moves his hands backward while catching a fast-moving ball. How does this action relate to Newton's laws, and what would happen if the fielder didn't do this?**

3. **If the car Rohit was in had no seat belts, how could Newton's First Law pose a risk to passengers during sudden stops or starts?**

4. **Can you connect Rohit's observations in the car and on the cricket field to real-life safety equipment or sports techniques? Explain how Newton's laws help in designing them.**