



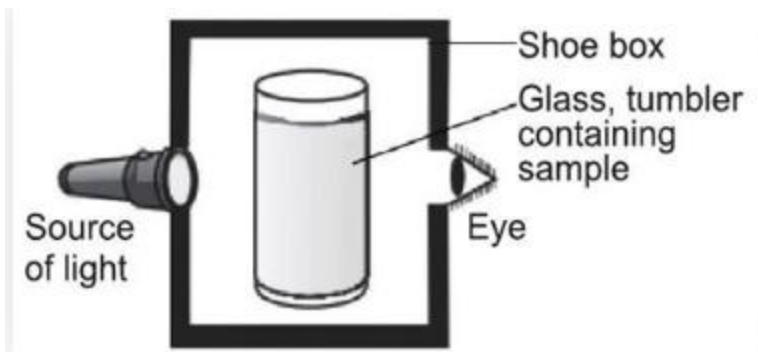
Chapter -2: Is Matter Around Us Pure

Multiple Choice Questions:

1. Ordinary starch stirred with cold water will result in:
(a) colloid (b) true solution (c) suspension (d) none of these
2. The zig-zag movement of colloidal particles is called :
(a) dipole movement (b) tyndall effect (c) electrolysis (d) brownian movement
3. The compound FeS is not attracted by magnet because :
(a) it is a mixture (b) It is black in colour
(c) it does not contain iron (d) iron has lost magnetic properties
4. Which of the following are homogeneous in nature ?
(i) ice (ii) wood (iii) soil (iv) air
(a) (i) & (iii) (b) (ii) & (iv) (c) (i) & (iv) (d) (iii) & (iv)
5. Tincture of iodine has antiseptic properties. This solution is made by dissolving
(a) iodine in potassium iodide (b) iodine in vaseline (c) iodine in water (d) iodine in alcohol
6. Rusting of an article made up of iron is called
(a) corrosion and it is a physical as well as chemical change (b) dissolution and it is a physical change
(c) corrosion and it is a chemical change (d) dissolution and it is a chemical change
7. A mixture of sulphur and carbon disulphide is
(a) heterogeneous and shows Tyndall effect (b) homogeneous and shows Tyndall effect
(c) heterogeneous and does not show Tyndall effect (d) homogeneous and does not show Tyndall effect

Case Study based question:

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 tumbler in the box as shown in the figure below. 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.



Read the given passage carefully and give the answer of the following questions:

- Q1. Explain why the milk sample was illuminated? Name the phenomenon involved.
- Q2. Same results were not observed with a salt solution. Explain.
- Q3. Can you suggest two more solutions which would show the same effect as shown by the milk solution?
- Q4. Give one example of above phenomenon observed in our surroundings.

Assertion –Reason questions:

Note – Read the assertion and reason statements carefully and write the correct option out of the following options:

- (a) If both assertion and reason are true and the reason is the correct explanation of the assertion.
- (b) If both the assertion and reason are true but the reason is the correct explanation of the assertion.
- (c) If assertion is true but reason is false.
- (d) If both assertion and reason are false.

- Assertion:** Hydrogen is colourless, odourless and non-combustible gas.
Reason: Constituents of a mixture cannot be separated easily by physical methods.
- Assertion:** Carbon and silicon are non-metals.
Reason: Non-metals conduct heat and electricity.
- Assertion:** A solution of table salt in a glass of water is homogeneous.
Reason: A solution having different composition throughout is homogeneous.
- Assertion:** True solution exhibits Tyndall effect.
Reason: Particles of a true solution are very large in size.

Answer the following questions:

- What are the components of a solution?
- List two points of difference between homogeneous and heterogeneous mixtures.
- Air is a chemical compound or mixture? Support your answer by suitable facts.
- Explain what happens when a beam of light is passed through a colloidal solution.
- What is meant by aqueous and non-aqueous solution? Give one example of each.
- State one instance in which water undergoes a physical change and one in which it undergoes a chemical change.
- Sucrose (sugar) crystals obtained from sugarcane and beetroot are mixed together. Will it be a pure substance or a mixture? Give reasons for the same.
- Give some examples of Tyndall effect observed in your surroundings?
- Can we separate alcohol dissolved in water by using a separating funnel? If yes, then describe the procedure. If not, explain.
- On heating calcium carbonate gets converted into calcium oxide and carbon dioxide.
 - Is this a physical or a chemical change?
 - Can you prepare one acidic and one basic solution by using the products formed in the above process? If so, write the chemical equation involved.
- Non-metals are usually poor conductors of heat and electricity. They are non-lustrous, non-sonorous, non-malleable and are coloured.
 - Name a lustrous non-metal.
 - Name a non-metal which exists as a liquid at room temperature.
 - The allotropic form of a non-metal is a good conductor of electricity. Name the allotrope.
 - Name a non-metal which is known to form the largest number of compounds.
 - Name a non-metal other than carbon which shows allotropy.
 - Name a non-metal which is required for combustion.

Chapter -3: Atoms and Molecules

Multiple Choice Questions:

- The unit in which atomic radius is measured is
 - metre
 - centimetre
 - nanometre
 - inch
- The number of moles present in 48g of He is:
 - 10
 - 11
 - 12
 - 6
- The atomicity of phosphorus is:
 - 4
 - 3
 - 2
 - 1
- Which is a monoatomic anion:
 - NO_3^-
 - Cl^-
 - SO_4^{2-}
 - PO_4^{3-}
- A change in the physical state can be brought about
 - only when energy is given to the system
 - only when energy is taken out from the system
 - when energy is either given to, or taken out from the system
 - without any energy change
- Which of the following statements is not true about an atom?
 - Atoms are not able to exist independently
 - Atoms are the basic units from which molecules and ions are formed

- (c) Atoms are always neutral in nature
 (d) Atoms aggregate in large numbers to form the matter that we can see, feel or touch
7. Which of the following has maximum number of atoms?
 (a) 18g of H₂O (b) 18g of O₂ (c) 18g of CO₂ (d) 18g of CH₄

Case Study based question:

Read the following passage and answer the questions based on the passage and related studied concept. Chemical reactions follow laws of chemical combination such as law of conservation of mass, law of constant (definite) proportion. Atom is smallest particle of an element that retains all its chemical properties and takes part in chemical reaction. Molecule is made of elements or compounds, capable of independent existence. It shows all properties of substance. A chemical formula of compound shows its elements and number of atoms of each element. Cluster of atoms act as polyatomic ions having fixed charge on them and value helps to decide chemical formula. Atoms of C-12 are assigned relative atomic mass-12 and relative mass of all other atoms are determined with the help of C-12. The Avogadro's number 6.022×10^{23} is defined as the number of atoms in exactly 12 g of carbon-12. Mole is amount of substance that contains same number of atoms as 12 g of C-12. Mass of 1 mole of substance is called its molar mass.

1. Calculate the percentage of oxygen in CO₂. [Atomic mass of C = 12 u, O = 16 u]
2. How many mole of atoms are present in 10 g of calcium atom? [Ca = 44u]
3. Write the law of constant proportion?
4. 0.25 mole of an element 'X' is 9.75 g. What is X?

Assertion –Reason Questions:

Note – Read the assertion and reason statements carefully and write the correct option out of the following options:

- (a) If both assertion and reason are true and the reason is the correct explanation of the assertion.
- (b) If both the assertion and reason are true but the reason is not the correct explanation of the assertion.
- (c) If assertion is true but reason is false.
- (d) If both assertion and reason are false.

1. **Assertion :** The valency of phosphate radical is 4.
Reason : 2g of hydrogen contains 6.022×10^{23} atoms.
2. **Assertion :** The formula for sodium carbonate is Na₂CO₃.
Reason : While writing the formula of a compound, the valencies of the cation and anion are crossed.
3. **Assertion:** Atoms always combine to form molecule and ions.
Reason: Atoms of most elements are not able to exist independently.
4. **Assertion:** Atomicity of ozone is three while that of oxygen is two.
Reason: Atomicity is the number of atoms constituting a molecule.
5. **Assertion:** 1 amu equals to 1.66×10^{-24} g.
Reason: 1.66×10^{-24} g equals to 1/12th mass of a C-12 atom.

Answer the following questions :

1. You are provided with a fine white coloured powder which is either sugar or salt. How will you identify it without tasting?
2. What do you understand by radical?
3. Write the chemical formula of : (i) Nitrogen oxide (ii) Calcium nitride (iii) Sodium phosphide
4. Calculate the number of molecules in 4g of methane.
5. Arrange the following in the increasing order of mass in grams:
 (i) one atom of silver (ii) two grams atom of N
 (iii) one mole of calcium (iv) two grams of sodium
6. Calculate the number of particles in each of the following :
 (i) 46g of Na atoms (number from mass)
 (ii) 8g O₂ molecules (number of molecules from mass)

- (iii) 0.1 mole of carbon atoms (number from given moles)
- Give the formulae of the compounds formed from the following sets of elements
 (a) Calcium and fluorine (b) Hydrogen and sulphur (c) Nitrogen and hydrogen
 (d) Carbon and chlorine (e) Sodium and oxygen (f) Carbon and oxygen
 - Give the chemical formulae for the following compounds and compute the ratio by mass of the combining elements in each one of them. (You may use appendix-III).
 (a) Ammonia (b) Carbon monoxide (c) Hydrogen chloride
 (d) Aluminium fluoride (e) Magnesium sulphide
 - Compute the number of ions present in 5.85 g of sodium chloride.
 - A gold sample contains 90% of gold and the rest copper. How many atoms of gold are present in one gram of this sample of gold?
 - What are ionic and molecular compounds? Give examples.
 - Compute the difference in masses of one mole each of aluminium atoms and one mole of its ions. (Mass of an electron is 9.1×10^{-28} g). Which one is heavier?
 - A silver ornament of mass 'm' gram is polished with gold equivalent to 1% of the mass of silver. Compute the ratio of the number of atoms of gold and silver in the ornament.

Ch- Animal Tissue

Tick the correct option.

- One of the following is not true about Cardiac muscles
 (a) They can be controlled (b) They lack mitochondria (c) Cells are bi-nucleate
 (b) Found outside the heart such as the digestive tract (e) All of the above
- Which of the following is connective tissue?
 (a) Ligament (b) Tendon (c) Blood (d) All of the above
- The Nodes of Ranvier are found in:
 (a) Nerve cells (b) Heart cells (c) Liver cells (d) All of the above
- A person met with an accident in which two long bones of his hand were dislocated. Which among the following may be the possible reason for this?
 (a) Tendon breaks (b) Break of skeletal muscles tissue (c) Ligament breaks
 (d) Areolar tissue breaks
- Simple epithelium is a tissue, which form the outer protective layer of the skin of the animal body, is composed of cells which are
 (a) Hardened and provide support to organs (b) Continuously dividing to provide to form an organ
 (c) Cemented directly to one another to form an irregular layer
 (d) Loosely connected to one another to form an irregular layer

Directions: In each of the following questions, a statement of Assertion is given and a corresponding statement of Reason is given just below it. Of the statements, given below, mark the correct answer as:

- Both assertion and reason are true and reason is the correct explanation of assertion.
 - Both assertion and reason are true but reason is not the correct explanation of assertion.
 - Assertion is true but reason is false.
 - Both Assertion and Reason are false.
- Assertion :** The inner lining of intestine has tall epithelial cells.
Reason : Columnar epithelium facilitates absorption and secretion.
 - Assertion :** Ciliated epithelium helps in movement of particles.
Reason : Cilia help in movement.
 - Assertion-**The supportive tissue is generally made up of dead cells.
Reason- Dead cells always present in liver.
 - Assertion-** Animal cell do not face demarcation of dividing and non-dividing regions.
Reason-The animal cell growth is more uniform.
 - Assertion-**Animal cell do not face demarcation of dividing and non-dividing regions.
Reason- Animal cell consume more energy as compare plants.

Answer the following questions:

- Name the tissue that forms the inner lining of blood vessels.

2. Mention any two functions of epithelial tissue.
3. Write the functions and components of blood.
4. Mention the characteristic features of connective tissues.
5. Mention the functions of neuron.
6. Which kind of muscle is involved in the following processes?
 - a. Movement of the arm
 - b. Contraction of blood vessels
 - c. Movement of food along the alimentary canal
 - d. Movement of heart
7. Give any three differences between bone and cartilage.
8. How is tendon different from ligament?
9. How does cardiac muscle differ from both voluntary muscle and smooth muscle in its structure and its function?
10. Describe the structure of a neuron giving a well labeled diagram.
11. Diagrammatically show the difference between the three types of muscular tissues.
12. Mention the characteristic features of columnar epithelium.
13. Describe the following tissue with suitable diagrams
 - a) Areolar connective tissue
 - b) Adipose connective tissue
 - c) Cartilage
 - d) Bone
14. Name one place in a living organism where the following tissues are located.
 - a) Squamous epithelium
 - b) Columnar epithelium
 - c) Areolar connective tissue
 - d) Cardiac muscle

Case study based question:

Connective tissue is specialised to connect various body with each other, for example it connects two or more bones to each other ,muscles to bones, bind different tissues together and also gives support to various parts of the body. The cells of connective tissue are loosely packed, living and embedded in an intercellular matrix that may either be jelly like fluid, dense or rigid in nature. The nature of matrix differs in concordance with the function of the particular connective tissue . The various types of the connective tissue are blood, bones, ligaments, tendons, cartilage, areolar tissue, adipose tissue.

1. Connective tissue is
 - (a) Ectodermal in origin with intercellular spaces
 - (b) Ectodermal in origin without intercellular spaces
 - (c) Mesodermal in origin with intercellular spaces
 - (d) Ectodermal in origin with intercellular spaces
2. Which among the following is not correct?
 - (a) Blood has matrix containing proteins ,salts and hormones
 - (b) Two bones are connected with ligament
 - (c) Tendons are non fibrous tissue and fragile
 - (d) Cartilage is a form of connective tissue
3. Which of the following help in repair of tissue and fill up the space inside the organ?
 - (a) Tendon
 - (b) Adipose tissue
 - (c) Areolar tissue
 - (d) Cartilage tissue
4. Tip of nose and the external ears have
 - (a) areolar tissue
 - (b) ligament
 - (c) cartilage
 - (d) bone

FORCE AND LAWS OF MOTION

Multiple Choice Questions:

1. Which of the following statement is not correct for an object moving along a straight path in an accelerated motion?

(a) Its speed keeps changing	(b) Its velocity always changes
(c) It always goes away from the earth	(d) A force is always acting on it
2. The forces of action and reaction are

(a) always equal only	(b) always equal and opposite
(c) always equal but in same direction	(d) always unequal and opposite.
3. According to the third law of motion, action and reaction

(a) always act on the same body	(b) always act on different bodies in opposite directions
(c) have same magnitude and directions	(d) act on either body at normal to each other
4. The inertia of an object tends to cause the object

(a) to increase its speed	(b) to decrease its speed
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(c) to resist any change in its state of motion (d) to decelerate due to friction

5. A passenger in a moving train tosses a coin which falls behind him. It means that motion of the train is

(a) accelerated (b) uniform (c) retarded (d) along circular tracks

Assertion-Reason Type Questions:

Two statements are given—one labelled as Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below:

(a) Both 'A' and 'R' are true and 'R' is correct explanation of the Assertion.

(b) Both 'A' and 'R' are true but 'R' is not correct explanation of the Assertion.

(c) 'A' is true but 'R' is false.

(d) 'A' is false but 'R' is true.

1. Assertion-The unbalanced force acting on an object which brings it in motion.

Reason-force is nothing but the energy present inside the body.

2. Assertion-A small children push heavy box, but it cannot move easily.

Reason-when the friction force balances pushing force at that time heavy box cannot move by small force.

3. Assertion-We feel fall backward due to sudden start bus.

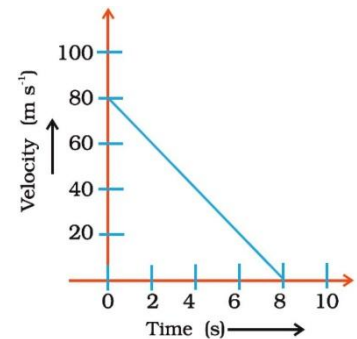
Reason-Our body opposes motion of bus due to inertia.

Short Answer type Questions:

1. There are three solids made up of aluminium, steel and wood, of the same shape and same volume. Which of them would have highest inertia?

2. Two identical bullets are fired one by a light rifle and another by a heavy rifle with the same force. Which rifle will hurt the shoulder more and why?

3-Velocity versus time graph of a ball of mass 50 g rolling on a concrete floor is shown in below Figure. Calculate the acceleration and frictional force of the floor on the ball.



NUMERICAL:

1. What is acceleration produced by a force of 12 Newton exerted on an object of mass 3 kg?

2. What force would be needed to produce an acceleration of 4m/s^2 on a ball of mass 6 kg?

3. A force of 5 N gives a mass m_1 , an acceleration of 8 m/s^2 and a mass m_2 , an acceleration of 24 m/s^2 . What acceleration would give if both the masses are tied together?

4. Calculate the force required to impart a car a velocity of 30m/s in 10 seconds. The mass of the car is 1500 kg.

5. A feather of mass 10 g is dropped from a height. It is found to fall down with a constant velocity. What is the net force acting on it?

Case study based question:

The third law of motion states that when one object exerts a force on another object, the second object instantaneously exerts a force back on the first. These two forces are always equal in magnitude but opposite in direction. These forces act on different objects and never on the same object. It is important to note that even though the action and reaction forces are always equal in magnitude; these forces may not produce accelerations of equal magnitudes, this is because each force acts on a different object that may have a different mass. The two opposing forces are also known as action and reaction forces. Answer the following questions.

(i) Action reaction forces are always

(a) Equal and in the same direction (b) Equal and in the opposite direction

(c) Unequal and in the same direction (d) None of the above

(ii) Which of the following is correct about action reaction forces?

(a) They act on different objects (b) They are equal in magnitude and opposite in direction

(c) Both forces acted on different object simultaneously (d) All the above

(iii) State third law of motion.

(iv) What is the S.I. & C.G.S unit of force.