Sample Paper

General Instructions

(i) The question paper comprises four sections A, B, C, and D. There are 36 questions in the question paper. All questions are compulsory.

(ii) (Section–A - question no. 1 to 20 - all questions and parts thereof are of one mark each. These questions contain multiple-choice questions (MCQs), very short answer questions, and assertion - reason type questions. Answers to these should be given in one word or one sentence.

(iii) Section–B - question no. 21 to 26 are short answer type questions, carrying 2 marks each. Answers to these questions should be in the range of 30 to 50 words.

(iv) Section–C - question no. 27 to 33 are short answer type questions, carrying 3 marks each. Answers to these questions should be in the range of 50 to 80 words.

(v) Section–D – question no. - 34 to 36 are long answer type questions carrying 5 marks each. Answers to these questions should be in the range of 80 to 120 words.

(vi) There is no overall choice. However, internal choices have been provided in some questions. A student has to attempt only one of the alternatives in such questions.

(vii) Wherever necessary, neat, and properly labeled diagrams should be drawn.

Section A

1. The property to flow is unique to fluids. Which one of the following statements is correct?

   A. Only gases behave like fluids

   B. Gases and solids behave like fluids

C. Gases and liquids behave like fluids
D. Only liquids are fluids

OR

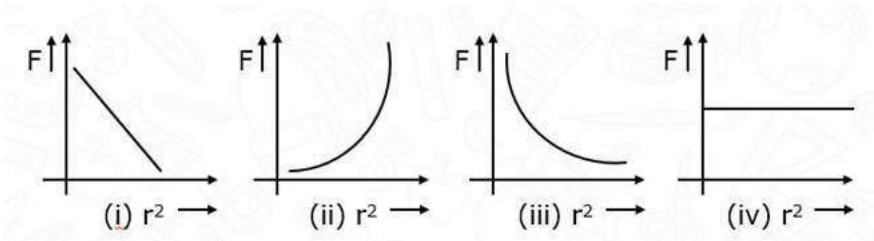
The tincture of iodine has antiseptic properties. This solution is made by dissolving _____

2. Identify the pair of isotopes from the following:
$^{16}_{8}X$, $^{16}_{7}X$, $^{17}_{8}X$
3. What is the formula for aluminum oxide?
A. AlO B. Al_2O
C. Al_2O_3 D. AlO_3
4. Give an example of a situation in which distance is equal to the displacement
5. Give one example of each uniform and non-uniform in our daily life.
6. Why is your foot hurt more when you kick a stone than when you hit a football?

OR

Why do sparks produced in a grinding stone move tangentially?

7. Which graph represents the relation between the force of gravitation and the distance between two bodies?



A. (i)
B. (ii)
C. (iii)
D. (iv)

8. When a bullet is fired from a gun, why does the gun recoil?
9. Calculate the work done when a force of 15 N moves a body by 5 m in its direction.

OR

Find the energy possessed by an object of mass 10 kg when it is at a height of 6m above the ground. [g = 9.8 ms^{-1}]

10. Rapid elongation of a bamboo stem is due to
a) Lateral meristem
b) Intercalary meristem
c) Apical meristem
D) Cambium
11. If the organization of a cell is destroyed due to some physical or chemical influence, what will happen?

12. Give the function of the antibiotic penicillin.
13. What is bad ozone and good ozone?
14. DIRECTION: In the following questions, a statement of assertion (A) is followed by a statement of the reason (R).
    Assertion: A solution of table salt in a glass of water is homogeneous.
    Reason: A solution having a different composition throughout is homogeneous.
    A. Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of the assertion
    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.
15. Assertion: The utilization of glucose to provide energy to living things involve the process of respiration in which oxygen may or may not be used to convert glucose back into carbon dioxide
    Reason: This carbon dioxide then goes back into the atmosphere
    Choose the correct alternative:
    a) Both A and R are true, and R is the correct explanation of A.
    b) Both A and R are true, R is not the correct explanation of A
    c) A is true but R is false
    d) A is false but R is true
16. Assertion: If the v-t graph is a straight line parallel to the time axis then it means the body is at rest.
    Reason: When the value on the time axis increases and that on the velocity axis remains the same then it means velocity is constant.
    A. Both assertion and reason are true and the reason is the correct explanation of the assertion
    B. Both assertion and reason are true but reason is not the correct explanation of the assertion
    C. Assertion is true but Reason is false.
    D. Assertion is false but reason is true
17. Answer question numbers (a) to (d) on the basis of your understanding of the following paragraph and related studied concepts:
    Complex tissues are made of more than one type of cell. All these cells coordinate to perform a common function. Xylem and phloem are examples of such complex tissues. They are both conducting tissues and constitute a vascular bundle. Vascular tissue is a distinctive feature of the complex plants, one that has made possible their survival in the terrestrial environment.
    (a) What is meant by conducting tissue?

(b) Give specific roles of xylem and phloem.
(c) Name the components that make xylem tissue.
(d) Name the dead components of xylem and phloem.

18. Read the following and answer any **four** questions from 18 (a) to 18 (e)

Three mixtures A, B, and C are obtained by stirring three different solids in water taken in separate beakers. When mixture A is allowed to stand for some time, then its particles settle at the bottom of the beaker. When a beam of light is passed through mixture A in a dark room, the path of light becomes visible when observed from the side of the beaker. When mixture B is allowed to stand for a considerable time, even then its particles do not settle down. Mixture B, however, scatters the beam of light just like mixture A. The particles of mixture C do not settle down on keeping and it also does not scatter a beam of light passing through it.

(a) What are the mixtures like A known as?
(b) What are the mixtures like B known as?
(c) What are the mixtures like C known as?
(d) Name the phenomenon exhibited by A and B which occurs on passing a beam of light through them.
(e) Name one mixture each which is like (i) A (ii) B, and (iii) C.

19. Read the following and answer any **four** questions from 19(a) to 19 (e)

The quantity of matter contained in an object is called mass. It remains constant whether the object is on earth, the moon, or even in outer space. Weight on the other hand is the force of attraction of earth with which an object is attracted towards the earth. Now, suppose a man weighs 600 N on earth, his weight on the moon would be 100 N.

a. The mass of man on earth, if g is 10 m/s^2 is
A. 60 kg
B. 10 kg
C. 6000 kg
D. 1000kg
b. The mass of man on the moon is
A. 60 kg
B. 10 kg
C. 6000 kg
D. 1000kg
c. Acceleration due to gravity on the moon is
A. 10 m/s^2

B. 9.8m/s^2
C. 1.66 m/s^2
D. 1 m/s^2

d. The weight of a body of mass 15 kg on the moon will be

A. 24.9 N
B. 150 N
C. 15 N
D. 10 N

e. The formula for the acceleration due to gravity at the surface of a planet is

A. $g = \sqrt{\frac{GM}{R^3}}$
B. $g = \sqrt{\frac{GM^2}{R^2}}$
C. $g = \sqrt{\frac{GM}{R^2}}$
D. $g = \sqrt{\frac{GM}{R}}$

20. Read the following and answer any **four** questions from 20 (a) to 20 (e)

Waves can be categorized— into three types, viz. electromagnetic waves, mechanical waves, and matter waves. Electromagnetic waves do not require any material medium for their propagation, i.e., they can travel through a vacuum while mechanical waves require a material medium for their propagation i.e. they cannot propagate through the vacuum, on the other hand, matter waves are the waves associated with fast-moving particles such as electrons in accordance with the de-Broglie hypothesis of dual nature of matter.

a. Sound waves in air are
(a) electromagnetic waves
(b) mechanical waves
(c) matter waves
(d) either (a) or (b).

b. Light travels in the form of
(a) electromagnetic waves
(b) mechanical waves
(c) matter waves
(d) tiny particles

c. Which of the following is an electromagnetic wave?
(a) A wave set up on a stretched string
(b) A wave set up on the surface of the water
(c) An X-ray

(d) All of the above

d. A longitudinal wave travels from east to west in the air in which direction do the particles of air move?

A. East to west
B. East to west and north to south
C. North to south
D. South to north

e. Which of the following statements about sound waves is correct?

A. A sound wave is a type of longitudinal waves
B. Sound wave follows the same laws of reflection as lightwave
C. The speed of the sound wave in the air is 332 m/s
D. All the above

Section B

21. Differentiate between the plasma membrane and cell wall.

OR

Give the location and functions of the following tissues: (a) Cartilage (b) Areolar tissue

22. Chloroplast and mitochondria are referred to as semi-autonomous organelles. Justify?
23. Find the ratio by mass of the combining elements in the following compounds.

(a) C_2H_5OH (b) NH_3

OR

Classify each of the following on the basis of their atomicity.

(a) F_2, NO_2, P_4O_{10}
(b) C_2H_6, N_2O, HCl
(c) P_4, H_2O_2, He
(d) Ag, CH_4, O_3

24. What is meant by the concentration of a solution? Explain by giving an example.
25. A body is thrown vertically upwards. Its velocity goes on decreasing. What happens to its kinetic energy as its velocity becomes zero?
26. A ball is shot vertically upward with a given initial velocity. It reaches a maximum height of 100 m. If on a second shot. the initial velocity is doubled then how high will the ball reach.

Section C

27. Explain the structural difference between plastids and mitochondria. Write one similarity between the two.

OR

List any two differences between striated and cardiac muscle with respect to their structure and location.

28. State one important function of each of the following: (a) areolar tissue (b) cuboidal epithelium
29. Name the tissue that smoothens bone surfaces at joints. Describe its structure with the help of a diagram.
30. (i) Why does the level of water not change when salt is dissolved in water? **(1.5)**

    (ii) What is the difference between aqueous and non-aqueous solutions? **(1.5)**
31. Verify by calculating that

    (a) 5 moles of CO_2 and 5 moles of H_2O does not have the same mass. (1.5)

    (b) 240 g of calcium and 240 g magnesium elements have a mole ratio of 3:5. (1.5)
32. (a) What is an octet? How do elements reach an octet? **(1)**

    (b) Make a schematic atomic structure of Magnesium and Phosphorus. (Given: number of protons of Magnesium = 12, Phosphorus = 15). **(2)**
33. An object with a mass of 10 kg moves at a constant velocity of 10 m/sec. A constant force then acts for 4 seconds on the object and gives. It then moves with a speed of 2 m/s in the opposite direction. What is the acceleration produced?

Section D

34. (a) It is said that molecules of many elements, such as argon(Ar), helium (He), neon (Ne), etc. are made-up of only one atom of the element. Why is it so? (3)

    (b) Give differences between an atom and an ion.

    OR

    (a) Why does the solubility of any solute change with a change in temperature? (2)

    (b) Why is the Tyndall effect not observed when light passes through a true solution or suspension? (2)

    (c) Why cream separates from milk on churning? (1)
35. a) How is a prokaryotic cell different from a eukaryotic cell?

b) What would happen if the plasma membrane ruptures or breaks down?

c) What would happen to the life of a cell if there was no Golgi apparatus?

36. (a) What happens to the potential energy of a body when its height is doubled?

(b) Give one example each of the body possessing: (i) kinetic energy, and (ii) potential energy.

(c) How much is the mass of a man if he has to do 2500 joules of work is climbing a tree 5 m tall?

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Hints & Solutions

Section A

1. **Solution:** C

   Gases and liquids behave like fluids because they can be made to flow or move. The molecules in any fluid are in constant, random motion, colliding with themselves and the walls of the container.

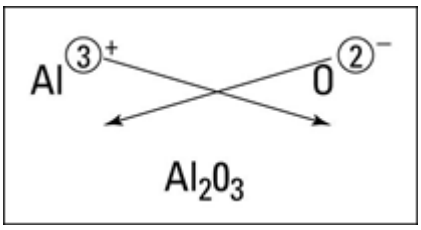
   OR

   Tincture of iodine solution is made by dissolving iodine in alcohol. It contains around 2–7% iodine dissolved in a mixture of ethanol and water.

2. **Solution:** $^{16}_{8}X$ and $^{17}_{8}X$ are a pair of isotopes as they have the same atomic number but different mass numbers.

   Here 8 is the atomic number and 16, 17 are mass numbers that are different so these are isotopes.

3. **Solution:** C



4. **Solution:** A man climbing a ladder
   Explanation: Distance is a scalar quantity (it has magnitude only) while displacement is a vector quantity (it has magnitude and direction both) Hence if we take any example considering a motion in which direction does not change throughout the motion and we will always get
   Distance = Displacement
5. **Solutions:** Uniform motion: When a car moving at a constant velocity of 50Km/hr in a straight line, then the car is covering equal distances in equal intervals of time irrespective of the length of time. Then we can say that the car is in uniform motion.
   Non-Uniform motion: When a race car constantly accelerates to win the race, then the car travels unequal distances in equal intervals of time. Hence such an instance can be referred to as an example of non-uniform motion.
6. **Solution:** When we kick a football due to its lightweight it moves and gives less recoil to us due to the law of conservation momentum and when we kick a heavy stone it gives us more recoil to conserve

momentum and has more inertia of rest, so we get hurt by kicking a stone

OR

Grinding stone is like a wheel and at every point of the wheel at the periphery, the direction of linear velocity is tangential due to the inertia of motion, so that is why the sparks go tangential

7. **Solution (c):** From the universal law of gravitation we have

$$F = G\frac{m_1 m_2}{r^2}$$

Since masses are constant

$$F \propto \frac{1}{r^2}$$

Which is an inverse relationship. Therefore, the correct relation is shown by graph (iii)

8. **Solution:** The gun recoils so as the momentum of both the gun and the bullet remain conserved before and after the gun fires.
9. **Solution:** Work was done = Force × Displacement
Given
Force = 15 N
Displacement = 5 m
Work done = 15×5 = 75 J
The work done is 75 Joule

OR

Mass of object (m) = 10 Kg.
Height (h) = 6 m.
Acceleration due to gravity (g) = 9.8m/s^2
Potential Energy of Object = mgh
= 10×9.8×6 = 98×6
= 588 J
The energy possessed by an object is 588 Joule.

10. **Solution:** B
11. **Solution:** If the organization of a cell is destroyed due to some physical or chemical influence then the cell will not be able to perform its basic functions like digestion, excretion, respiration etc. This may stop all the life activities and the life of an individual may come to an end.
12. **Solution -** Penicillin antibiotics stop bacteria from multiplying by preventing bacteria from forming the walls that surround them. The walls are necessary to protect the bacteria from their environment, and to keep the contents of the bacterial cell together. Bacteria cannot survive without a cell wall.

13. **Solution -** Here, ground-level or "bad" ozone is an air pollutant that is harmful to breathe and it damages crops, trees, and other vegetation. The stratosphere or "good" ozone layer extends upward from about 6 to 30 miles and protects life on Earth from the sun's harmful ultraviolet (UV) rays.
14. **Solution:** C Assertion (A) is true but reason (R) is false.

    A solution having the same composition throughout is homogeneous.
15. **Solution -** b) Both A and R are true, R is not the correct explanation of A
16. **Solution (d):** In a v-t graph, when the curve is parallel to the time axis, then it means the body is moving with uniform velocity.
17. **Solution -** (a) The conducting tissue is one that helps in the transportation/conduction of material from one place to another in the plant body.
    (b) Xylem helps in the conduction of water and minerals. Phloem helps in the conduction of organic solutes i.e., food synthesized by plants.
    (c) Xylem is composed of – xylem parenchyma, tracheids, vessels, and fibers.
    (d) Dead components of xylems are – Xylem tracheids, xylem vessels, and fibers Dead components of phloem are – Phloem fibers.
18. **Solution:**
    (a) Suspensions
    (b) Colloids
    (c) True solutions
    (d) As A and B are suspensions and colloids, they will show the Tyndall effect
    (e) (i) Example of suspension is Chalk-water mixture
    (ii) Example of colloid is Soap solution
    (iii) Example of the true solution is Salt solution

19. a. **Solution (b):** Weight is given as

$$W = mg$$

$$100 = m \times 10$$

    Therefore, m = 10 kg
    b. **Solution(b):** The mass of a body remains constant, therefore its mass is still 10 kg
    c. **Solution (c):** Acceleration due to gravity on the moon is one-sixth of earth.
    d. **Solution (a):** On the moon, the acceleration due to gravity is one-sixth of earth, therefore, g_{moon} = 1.66 m/s^2
    Therefore, weight

$$W = mg_{moon} = 15 \times 1.66 = 24.9\ kg$$

e. **Solution (c):** The acceleration due to gravity on the surface of a planet is given as

$$g = \sqrt{\frac{GM}{R^2}}$$

20. a. **Solution (a):**
b. **Solution (a):**
c. **Solution (c):**
d. **Solution (a):**
Solution: In longitudinal waves, the particles in the medium vibrate along the direction of the propagation of the wave.

e. **Solution (d):**

Solution: Sound wave is a type of longitudinal wave. Sound waves are characterized by the motion of particles in the medium and are called mechanical waves.

Sound waves follow the same laws of reflection. The directions in which the sound is incident and is reflected make equal angles with the normal to the reflecting surface, and the three are in the same plane.
The speed of sound in air is equal to 332 m/s
Hence, all the statements mentioned in the three options are correct.
Thus D is the correct Solution.

Section B

21. **Solution -** Plasma Membrane is a type of phospholipid layer available in all types of cells. It protects the protoplasm and checks the passage of molecules inside the cell. Whereas the cell wall is found in the plant cell, fungi, bacteria only. It protects the cell from the external shocks, and also provides rigidity and shape to the cell. Therefore, the cell wall is the outermost boundary of the cell, on the other hand, the plasma membrane is present in the inner lining of the cell.
OR
Solution - a) Cartilage is a flexible connective tissue found in many parts of the body. It can bend a bit but resists stretching. Its main function is to connect bones together. It is also found in the joints, the rib cage, the ear, the nose, the throat, and between the bones of the back.
b) Areolar tissue is the most widely distributed connective tissue in the animal body. Located in the skin, areolar tissue binds the outer layers of the skin to the muscles lying underneath. They are also found in,

around the mucous membranes, surrounding nerves, blood vessels, and various other body organs.

22. **Solution -** Chloroplast and mitochondria have their own DNA, RNA and ribosomes and enzymes to synthesize their own proteins, So they are referred as semi-autonomous organelles as they are partly under the control of nucleus and partly work independently.
23. **Solution:**

(a) C_2H_5OH

The ratio by mass = 2XC : 6XH : O

= 2X12 : 6 : 16

= 24 : 6 : 16

= 12 : 3 : 8

(b) NH_3

The ratio by mass = N : 3 × H

14 : 3

OR

Solution: The number of atoms constituting a molecule is known as its atomicity. On the basis of atomicity, the elements may be classified as follows:

Monoatomic	Diatomic	Triatomic	Tetratomic	Polyatomic
He	F_2	N_2O	P_4	C_2H_6
Ag	HCl	NO_2	H_2O_2	CH_4
		O_3		

24. **Solution:** The concentration of a solution is the amount of solute present in a given amount of solution or solvent. This can be mathematically written as:

The concentration of solution = $\frac{\text{Amount of solute}}{\text{Amount of solution}}$

25. **Solution:**

When a body is thrown vertically upwards against the force of gravity, its Kinetic energy goes on decreasing as its velocity

decreases due to the gravitational force acting downwards. At maximum height, the Kinetic energy becomes zero as the velocity becomes zero and all the energy of the body is converted into potential energy. Hence this states that as KE decreases PE increases

26. **Solution:** Let the initial velocity at the first shot be u, then from the third equation of motion

$$v^2 = u^2 + 2aS$$

$$0 = u^2 - 2g(100)$$

$$u^2 = 2g(100)$$

Now, for the second shot similarly

$$(2u)^2 = 2g(H)$$

$$4u^2 = 2gH$$

$$4\left(2g(100)\right) = 2gH$$

$$H = 400\,m$$

Section C

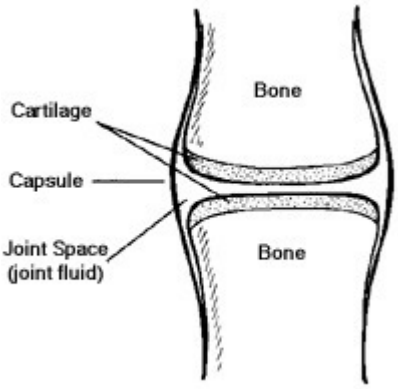
27. **Solution -** In mitochondria pigments are absent and In plastids, different pigments are found. In mitochondria, the inner membrane is inwardly many folds called cristae. in plastids inner membrane having no folds. Mitochondria are divided by complete chambers. plastids having no chambers. Mitochondria are found in plants as well as in animals. plastids are only found in plants. One similarity between them is that they both have their own DNA and protein.

OR

Solution - Striated muscles are cylindrical in shape and multinucleate whereas cardiac muscle is cylindrical branched and uninucleate. Striated muscles are present in body parts such as hands and legs whereas cardiac muscle is present in the heart

28. **Solution -** a) Areolar tissue is the most widely distributed connective tissue in the animal body. Assists in tissue-repair of muscles and skin
b) Simple cuboidal epithelium consists of single-layer cells that are as tall as they are wide. The important functions of the simple cuboidal epithelium are secretion and absorption. This epithelial type is found in the small collecting ducts of the kidneys, pancreas, and salivary glands.

29. **Solution -** 'Cartilage' is the tissue that smoothens bone surfaces at joints. It is an elastic tissue that smoothes and protects the joints. It is present at the end of bones, rib cage, nose, and ear. It is an elastic tissue. It protects the joints.



30. **Solution:** (i) The level of water does not change when salt is dissolved in water because the salt particles dissociate and occupy the intermolecular spaces between the water particles. Since only the empty spaces are occupied, the level of water does not increase.

(ii) Based on the following points, we can distinguish between the Aqueous and Non-aqueous solutions.

Aqueous solution	Non-aqueous solution
The solution in which the solvent used is water	The solvent used is not water
Water is a polar solvent.	Solvent maybe polar or non-polar.
Liquid solution	Maybe solid, liquid or gaseous solution
Eg: Salt solution (salt + water)	Eg: Tincture of iodine (Iodine + alcohol). Alcohol is the solvent

31. **Solution:** (a) Mass of given sample = Number of moles × Molar mass

Thus, the mass of 5 moles of CO_2 = 5 × 44 (Molar mass of CO_2 = 44g/mole) = 220 g

The mass of 5 moles of H_2O = 5 × 18 (Molar mass of H_2O = 18g/mole) = 90 g

Therefore, we can say that 5 moles of CO_2 and 5 moles of H_2O do not have the same mass.

(b) Number of moles of given sample: $n = \frac{\text{Given mass}}{\text{Molar mass}}$

Thus, the number of moles of 240 g of calcium:

$$n_1 = \frac{240}{40}$$

$$n_1 = 6$$

The number of moles of 240 g magnesium:

$$n_2 = \frac{240}{24}$$

$$n_2 = 10$$

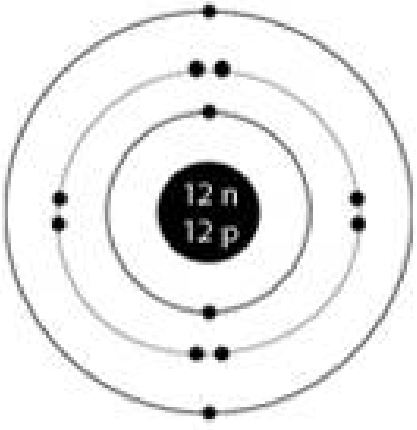
Therefore, the ratio of the number of moles: n_1: n_2

6:10

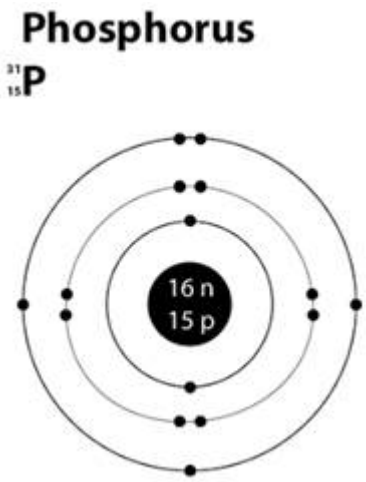
3:5

Now, we can say that 240 g of calcium and 240 g magnesium elements have a mole ratio of 3:5.

32. **Solution:** (a) Octet means the presence of 8 electrons in the outermost shell of an atom which means the atom is stable and has the electron arrangement of inert gas. Every atom wants to attain stability so they combine with one another and by gaining or losing or mutually sharing electrons they reach the octet state.
(b) Structure of magnesium whose atomic number is 12- 2, 8, 2



Structure of phosphorus whose atomic number is 15- 2, 8, 5



33. **Solution:** The change in momentum of the body is given as

$$= m(v - u)$$

Considering the final direction of the object as positive

$$= m\big(2 - (-10)\big) = m(12) = 120\ N\ s$$

Now, from the second law of motion, force is the rate of change of momentum, therefore

$$F = \frac{120}{4} = 30\ N$$

And also

$$F = ma$$

$$30 = ma$$

$$a = \frac{F}{m} = 3\ m/s$$

Section D

34. (2)**Solution:**
(a) Molecules of many elements, such as argon (Ar), helium (He), neon (Ne), etc., are made up of only one atom of the element because:
i. These elements are noble gases that are unreactive in nature.
ii. They have completely filled outermost shells.
iii. As a result, they are unable to combine with any other element.
iv. Hence, they exist independently in the form of a single atom.
(b) Difference between ion and atom may be encountered as:

Atom	Ion
The building blocks of all matter are atoms.	Compounds composed of metals and non-metals has charged species. The charge species are known as ions.
Atoms are divided into protons, neutrons, and electrons.	Ions are divided into cations and anions.
Atoms may or may not be able to exist independently.	Ions exist only independently.
For example Na, S_8, P_4 etc.	For ex: Sodium ion (Na^+), calcium ion (Ca^{2+})

OR

Solution: a) Solvent dissolves solute particles by overcoming the intermolecular forces between the solute (or one can call it the solute-solute interaction). So, to dissolve a solute, the solute-solute interaction must be broken by the solvent particles.

When the temperature increases, the kinetic energy of the solvent particles increases, causing to break the solute-solute interactions more effectively. This allows the addition of more solute particles, as there is space to accommodate more solute particles. So the solubility increases with an increase in temperature. Lowering the temperature does the opposite. It decreases the solubility of the solute.

(b) The phenomenon where the path of the light beam is visible as a result of scattering of light by colloidal particles is called the Tyndall effect. The size of the particle should be such that it should scatter light. Particles that are very small (in the case of true solutions) or very large (in the case of suspensions) do not scatter light. So, the Tyndall effect is not observed in true solutions or suspensions.

This is the general case. In certain special cases, if the particle size of suspension is small enough to scatter light, then suspensions also show the Tyndall effect.

(c) Cream and milk differ in their density. The cream is denser than milk. When milk is churned (shaking or spinning of a container containing milk by applying a rotating force) the denser particles (cream) tend to remain at the bottom, whereas the lighter particles (milk) stay at the top, along with the direction of spin. This process is called centrifugation.

35. **Solution:** (a)

Prokaryotic cell	Eukaryotic cell
Most prokaryotes are unicellular.	Most eukaryotes are multicellular.
Size of the cell - (0.5- 5 µ).	Size of the cell - (50- 100 µ).
It contains a single chromosome.	It contains more than one chromosome.
The nucleolus is absent.	The nucleolus is present.
Membrane-bound cell organelles such as plastids, mitochondria, endoplasmic reticulum, Golgi apparatus, etc. are absent.	Cell organelles such as mitochondria, plastids, endoplasmic reticulum, Golgi apparatus, lysosomes, etc. are present.
Cell division occurs through binary fission	Cell division occurs by mitosis.

b) If ever the plasma membrane ruptures or breakdown then the cell will not be able to exchange material from its surroundings by diffusion. As a result, the protoplasmic material will disappear and the cell will die.
c) Golgi apparatus performs the function of a storage modification and packaging of products. If the Golgi apparatus is not there then materials synthesized by the cell will not be packaged and transported.

36. **Solution:** (c)
(i)Potential energy also gets doubled as potential energy is directly proportional to the height of the object.
(ii) A stationary stone lying at the top of a hill has only potential energy.

(Since, the stone only possess height and not the velocity.)

When the stone reaches the bottom of the hill, it has only kinetic energy.

(Since, on reaching the bottom height would be reduced to zero But the stone would have gained Velocity)

(iii)Work done in climbing, w = 2500J

Acceleration due to gravity (g) = $10 m/s^2$

Height above the ground = 5m

We know,

W = mgh

= 2500/10 × 5

=50Kg

Hence, Mass of the man = 50 kg

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