Class IX Session 2023-24
Subject - Science
Sample Question Paper - 6

Time Allowed: 3 hours **Maximum Marks: 80**

General Instructions:

1. This question paper consists of 39 questions in 5 sections.
2. All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.
3. Section A consists of 20 objective type questions carrying 1 mark each.
4. Section B consists of 6 Very Short questions carrying 02 marks each. Answers to these questions should in the range of 30 to 50 words.
5. Section C consists of 7 Short Answer type questions carrying 03 marks each. Answers to these questions should in the range of 50 to 80 words.
6. Section D consists of 3 Long Answer type questions carrying 05 marks each. Answer to these questions should be in the range of 80 to 120 words.
7. Section E consists of 3 source-based/case-based units of assessment of 04 marks each with sub-parts.

Section A

1. The name of A, B, C and D in the following diagram are: **[1]**

a) A - Solidification, B - Vaporisation, C - Fusion, D - Condensation

b) A - Vapourisation, B - Fusion, C - Condensation, D - Solidification

c) A - Fusion, B - Vaporisation, C - Condensation, D - Solidification

d) A - Condensation, B - Vaporisation, C - Solidification, D - Fusion

2. Which among the following is concerned with the synthesis and transport of lipids within the cell? **[1]**

a) Smooth endoplasmic reticulum

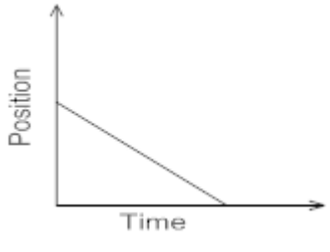
b) Lysosomes

c) Rough endoplasmic reticulum

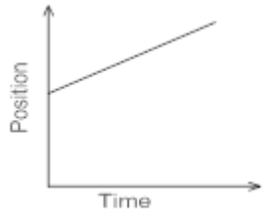
d) Golgi apparatus

3. Which of the following is the position-time graph for a body at rest? **[1]**

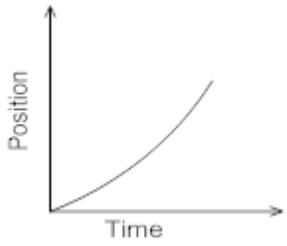
a)



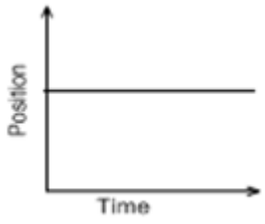
b)



c)



d)



4. Nitrogen, phosphorus and potassium are examples of **[1]**

a) Micro-nutrients and Macro-nutrients
b) Micro-nutrients
c) Fertilizers
d) Macro-nutrients

5. The extra stain from the slide if present is removed by: **[1]**

a) keeping slide under running water
b) evaporation by heating
c) soaking with filter paper
d) drying stain under sunlight

6. Analyze the statements and pick up the right one regarding mitochondrial membranes from the following: **[1]**

a) Mostly mitochondria have a single membrane
b) The inner membrane is longer than the outer membrane
c) The outer membrane is longer than the inner membrane
d) Both the inner and the outer membranes are almost equal in length

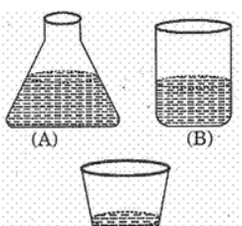
7. A sample of $CaCO_3$ contains 3.01×10^{23} ions of Ca^{+2} and CO_3^{-2}. The mass of the sample is: **[1]**

a) 200 g
b) 50 g
c) 100 g
d) 5 g

8. Cartilage is not found in **[1]**

a) nose
b) ear
c) larynx
d) kidney

9. Three students used three different containers (A) (B) and (C) of different shapes, for finding the loss in weight of solid when dipped in water. On dipping a solid sphere in these containers they would observe that the loss in weight is: **[1]**



a) Minimum in [A]
b) Maximum in [A]
c) Maximum in [B]
d) Same in all

10. A person sitting in the truck projected a ball vertically upwards. The ball: **[1]**

a) falls outside the truck
b) falls by the side of truck
c) falls back in his hand
d) falls in front of the truck

11. A student weights 30 kg. Suppose his body is entirely made up of electrons. How many electrons are there in his **[1]**

body?

a) 3.29×10^{23}

b) 3.29×10^{30}

c) 3.29×10^{31}

d) 3.29×10^{32}

12. Which is the most widely distributed connective tissue? **[1]**

a) Blood

b) Lymph

c) Adipose connective tissue

d) Areolar connective tissue

13. The number of lenses in a compound microscope is: **[1]**

a) 1

b) 4

c) 3

d) 2

14. Which of the following are homogeneous in nature **[1]**

i. ice
ii. wood
iii. soil
iv. air

a) (iii) and (iv)

b) (i) and (iii)

c) (i) and (iv)

d) (ii) and (iv)

15. To prepare iron sulphide, by heating a mixture of iron filings and sulphur powder, we should use a: **[1]**

a) copper dish

b) china dish

c) watch glass

d) petri dish

16. Which one is not a source of carbohydrate ? **[1]**

a) Millets

b) Sorghum

c) Gram

d) Rice

17. **Assertion (A):** Motion with uniform velocity is always along a straight-line path. **[1]**
Reason (R): In uniform velocity a motion, speed is the magnitude of the velocity and is equal to the instantaneous velocity.

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

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

c) A is true but R is false.

d) A is false but R is true.

18. **Assertion (A):** Naphthalene balls disappear with time without leaving any solid. **[1]**
Reason (R): Solid converted to liquid is called sublimation.

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

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

c) A is true but R is false.

d) A is false but R is true.

19. **Assertion (A):** The inner lining of the intestine has tall epithelial cells. **[1]**
Reason (R): Columnar epithelium facilitates absorption and secretion.

a) Both A and R are true and R is the correct

b) Both A and R are true but R is not the

explanation of A.

correct explanation of A.

c) A is true but R is false.

d) A is false but R is true.

20. **Assertion (A):** Thomson's model of an atom is popularly known as the plum pudding or Christmas pudding model of an atom. **[1]**

Reason (R): According to the Thomson's plum pudding model, an atom is a positively charged sphere in which the electrons are embedded.

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

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

c) A is true but R is false.

d) A is false but R is true.

Section B

21. Two girls, each of weight 400 N climb up a rope through a height of 8 m. We name one of the girls A and the other B. Girl A takes 20 s while B takes 50 s to accomplish this task. What is the power expended by each girl? **[2]**

OR

A woman pulls a bucket of water of total mass 5 kg from a well which is 10 m deep of 10 m in 10 s, Calculate the power used by her. (Take, g = 10 ms^{-2})

22. What happens to the particle motion if the temperature of the gas is increased? **[2]**

23. Why do we see light first and hear the sound later during thunderstorm? **[2]**

24. How will you demonstrate that air contains water vapours? **[2]**

25. Which of the following has more inertia: **[2]**

a. a rubber ball and a stone of the same size?

b. a bicycle and a train?

c. a five rupees coin and a one-rupee coin?

OR

From the rifle of mass 4 kg, a bullet of mass 50 g is fired with an initial velocity of 35 ms^{-1}. Calculate the initial recoil velocity of the rifle.

26. Do protons originate from the anode? **[2]**

Section C

27. i. On which factors the speed of sound depends? **[3]**

ii. How bat searches its prey at night?

28. Composition of the nuclei of two atomic species X and Y are given as under**:** **[3]**

	X	Y
Protons	6	6
Neutrons	6	8

Give the mass numbers of X and Y. What is the relation between the two species?

29. State which of the following situations are possible and give an example for each of these. **[3]**

(a) An object moving with a constant acceleration but with zero velocity

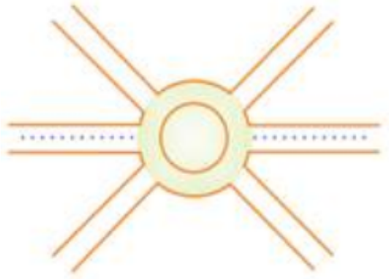
(b) An object moving in a certain direction with an acceleration in the perpendicular direction.

OR

A cheetah is the fastest land animal and can achieve a peak velocity of 100 kmh^{-1} up to distances less than 500 m . If

a cheetah spots his prey at a distance of 100 m, what is the minimum time it will take to get its prey, if the average velocity attained by it is 90 kmh^{-1}?

30. A boy is moving on a straight road against a frictional force of 5 N. After travelling a distance of 1.5 km he forgot the correct path at a round about (Fig.) of radius 100 m. However, he moves on the circular path for one and half cycle and then he moves forward upto 2.0 km. Calculate the work done by him. **[3]**



31. A bullet travelling at 360 m/s strikes a block of soft wood. The mass of the bullet is 2.0 g. The bullet comes to rest after penetrating 10 cm into the wood. **[3]**

a) Find the average de-accceleration force exerted by the wood.

b) Find the time taken by the bullet to come to rest.

32. There would be no plant life if chloroplasts did not exist. Justify. **[3]**

OR

Where will you find more number of ribosomes-in cancer cells or in fat cells?

33. Draw well-labeled diagrams of various types of muscles found in the human body. **[3]**

Section D

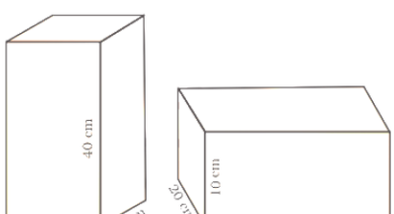
34. i. Prove that, if the earth attracts two bodies placed at the same distance from the centre of the earth with equal force, then their masses will be the same. **[5]**

ii. Mathematically express the acceleration due to gravity in terms of mass of the earth and radius of the earth.

iii. Why is G called a universal constant?

OR

A block of wood is kept on a tabletop. The mass of the wooden block is 5 kg and its dimensions are 40 cm × 20 cm × 10 cm. Find the pressure exerted by the wooden block on the table top if it is made to lie on the table top with its sides of dimensions



i. 20 cm × 10 cm and

ii. 40 cm × 20 cm.

35. Write the main function of each of the following. **[5]**

(a) Plasma membrane

(b) cell wall

(c) Ribosome

(d) Lysosome

(e) Nucleolus

(f) Endoplasmic reticulum

OR

Differentiate between

i. Cell wall and cell membrane.

ii. Nuclear region of a bacterial cell and nuclear region of an animal cell.

iii. Prokaryotic cell & eukaryotic cell.

36. i. Under which category of mixtures will you classify alloys and why? **[5]**

ii. Whether a solution is always liquid or not. Comment.

iii. Can a solution be heterogeneous?

Section E

37. **Read the text carefully and answer the questions:** **[4]**

Plant tissue is consists of meristematic tissue and permanent tissue. Meristematic tissue which is responsible for the growth of plants they are dividing tissue and permanent tissue provides permanent shape, size, and function to the plant they are also further classified as simple permanent tissue and complex permanent tissue. The plant tissue is responsible for performing various functions such as providing flexibility to plant parts as to stalk which can bend easily without breaking while some provide strength to the plant some of them have modified themself to provide floatation in an aquatic plant.

(i) Which part of the plant is responsible or growth of tip of stem and root?

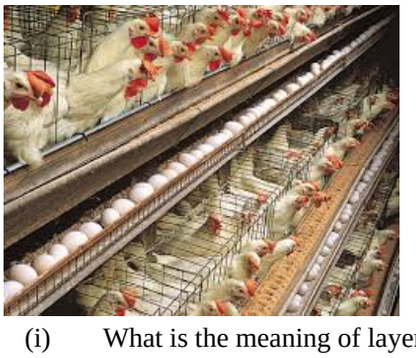
(ii) Which type of tissue present in the aquatic plants how it helps the aquatic plant to float?

OR

Which plant tissue provide flexibility?

38. **Read the text carefully and answer the questions:** **[4]**

Poultry is the rearing of domesticated fowl (chicken), ducks, geese, turkey and some varieties of pigeon for their meat and eggs. Poultry birds are of two types that is broilers and layers. One is specialized meat-producing poultry birds while other is egg-laying poultry birds. The tremendous rise in the availability of poultry products is called Silver Revolution.



(i) What is the meaning of layers regarding poultry?

(ii) There are different breeds of hens, so give some information about broiler.

(iii) We know that different types of revolution regarding animal husbandry. So, what is the silver revolution explain?

OR

There are different breeds of poultry birds, mention two examples of indigenous and exotic breeds of poultry birds.

39. **Read the text carefully and answer the questions:** **[4]**

Homogeneous mixtures are regarded as solutions or true solutions. Heterogeneous mixtures are of two types. These are suspensions and colloidal solutions. These differ in the size of the particles responsible for the difference in their properties. In a suspension, the particle size is more than 10^{-5} cm whereas in a colloidal solution, it ranges between 10^{-5} cm to 10^{-7} cm. The two phases which constitute colloidal solutions, are dispersed phase and dispersion medium. Based upon their nature, the colloidal solutions are classified into eight types. The mixture of the non-reacting gases is always homogeneous irrespective of their nature. Therefore, it is not a colloidal solution.

(i) Scattering of light occurs when a beam of light is passed through Blood. Why?

(ii) What is Tyndall effect?

(iii) What is called colloidal solution?

OR

Give an example of colloidal solution and identified their dispersed phase and dispersion medium?

Solution

Section A

1.

(c) A - Fusion, B - Vaporisation, C - Condensation, D - Solidification

Explanation:

i. A – Fusion: Change of solid state into liquid state is known as fusion.

ii. B – Vaporization: Change of liquid state into gases state is known as vaporization.

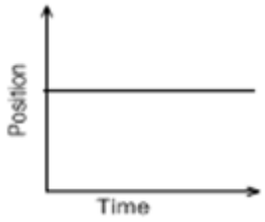
iii. C – Condensation: Change of gases state into liquid state is known as condensation.

iv. D – Solidification: Change of liquid state into solid state is known as solidification.

2. **(a)** Smooth endoplasmic reticulum

Explanation: Smooth endoplasmic reticulum synthesises lipids while rough endoplasmic reticulum synthesise proteins.

3. **(d)**



Explanation: The above graph shows an object which is not moving i.e. it is at rest.

The straight horizontal line parallel to the time axis shows that the distance covered by the body remains constant with the change in time.

4.

(d) Macro-nutrients

Explanation: Macro-nutrients

5.

(c) soaking with filter paper

Explanation: The staining of the peel must be appropriate. Excess stain can be removed by rinsing the peel with water taken in the watch glass. The extra stain from the slide if present is removed by soaking with filter paper. Filter paper absorbs the excess water and stain.

6.

(b) The inner membrane is longer than the outer membrane

Explanation: The inner membrane, which has a larger surface area than the outer membrane, contains features referred to as cristae (literally, crests) which have long been represented as simple infoldings of this membrane.

7.

(b) 50 g

Explanation: The mass of one mole of $CaCO_3$ is equal to 100 g. 6.022×10^{23} ions are equivalent to one mole. Therefore, mass of 3.01×10^{23} ions will be equivalent to $(\frac{100}{2})$ g or 50 g.

8.

(d) kidney

Explanation: The cartilage is a connective tissue with solid matrix composed of proteins and sugars. It is commonly seen in nose, ear, trachea, and larynx. Cartilage is not found in kidney.

9.

(d) Same in all

Explanation: Loss in weight depends on the liquid density and volume displaced (= volume immersed) and not on the shape of the container.

10.

(c) falls back in his hand

Explanation: A person sitting in the truck projected a ball vertically upwards. The ball will fall back in his hand as the ball and the truck are moving at the same speed.

11.

(c) 3.29×10^{31}

Explanation: Mass of electron = 9.1×10^{-31} kg.

Number of electron in the body of student = $\frac{total\ mass}{mass\ of\ each\ electrons} = \frac{30kg}{9.1 \times 10^{-31}\ kg} = 3.29 \times 10^{31}$

Therefore, the student is made up of approximately 3.29×10^{31} electrons.

12.

(d) Areolar connective tissue

Explanation: Areolar connective tissue is the simplest and most widely distributed connective tissue. Areolar connective tissue is found between the skin and muscles, around blood vessels and nerves, and in the bone marrow.

13.

(d) 2

Explanation: The compound microscope contains two lenses that magnify the object. It uses a lens (called the objective lens) close to the object being viewed to collect light which focuses on a real image of the object inside the microscope. The image is then magnified by a second lens (called the eyepiece) that gives the observer an enlarged inverted virtual image of the object.

14.

(c) (i) and (iv)

Explanation: A mixture is said to be a homogeneous mixture if its constituents are distributed uniformly and are not physically distinct. Wood and soil are heterogeneous mixtures. Ice is made up of water and water is a pure compound. Air is a mixture of various gases.

Ice and air are homogeneous in nature.

15.

(b) china dish

Explanation: China's dish is the right apparatus used for strong heating. So, china's dish is used for heating as it has a high melting point and does not react with sulphur.

16.

(c) Gram

Explanation: Sources of carbohydrate include plant foods such as fresh fruits, vegetables, corn, potatoes etc. Unhealthy sources include soda, white bread, artificial sugar, pastries and other highly processed foods. Gram is not a source of carbohydrate.

17.

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

Explanation: Uniform velocity means that speed and direction remain unchanged.

18.

(c) A is true but R is false.

Explanation: Naphthalene has the property of sublimation and hence naphthalene ball evaporates easily and disappears.

19. **(a)** Both A and R are true and R is the correct explanation of A.

Explanation: Where absorption and secretion occur, such as in the inner lining of the intestine, tall epithelial cells or columnar epithelium is present. This epithelium facilitates movement or diffusion across the epithelial barrier.

20. **(a)** Both A and R are true and R is the correct explanation of A.

Explanation: Thomson's model of an atom is popularly known as the plum pudding or Christmas pudding model of an atom. According to Thomson's plum pudding model, an atom is a positively charged sphere in which the electrons are embedded. The negative charge of the electrons and the positive charge of the sphere are equal in magnitude. Thus, an atom as a whole is electrically neutral.

Section B

21. i. Let us find Power expended by girl A:

Weight of the girl, mg = 400 N

Displacement (height), h = 8 m

Time taken, t = 20 s

Power, P = $\frac{Work\,done}{time\,taken}$

= $\frac{mgh}{t}$

= $\frac{400\text{N}\times 8\text{m}}{2\text{OS}}$

160 W

ii. Now, the power expended by girl B:

Weight of the girl, mg = 400 N Displacement (height), h = 8 m Time taken, t = 50 s

Power, $P = \frac{mgh}{t}$

= $\frac{400\text{N}\times 8\text{m}}{50\text{s}}$

= 64 W.

The Power expended by girl A is 160 W.

The Power expended by girl B is 64 W.

OR

Given: Mass of water (m) = 5 kg

Height through which water is raised (h) = 10 m

Acceleration due to gravity (g): = 10 ms^{-2}

∴ Work done by the women = P.E. = mgh = 5 × 10 × 10 = 500J

∴ Power used by the woman = $P = \frac{W}{t} = \frac{500}{10}$ = 50 watt

22. With the increase in temperature, the average kinetic energy of the particles increases. As a result, the particle motion increases.

23. We see the lightning before we hear the thunder because light travels faster thansound. The light from the lightning travels to our eyes much quicker than the soundfrom the lightning. so we hear it later than we see it.

24. Thoroughly dry a glass beaker and take some crushed ice in it. After sometime, droplets of water appear on the outer surface of glass. It is because of water vapours present in air, which get condensed when they come in contact with the glass surface where the temperature is very low.

25. a. a stone of the same size will have more inertia than a rubber ball.

b. A train will have more inertia than a bicycle.

c. A five rupees coin will have more inertia than a one-rupee coin.

Explanation: Inertia is associated with mass. Inertia is directly proportional to the mass of a body. Objects having more mass have more inertia.

OR

Initial mass of rifle = 4 kg

Let initial velocity of recoil of rifle = v

Q Initial momentum of the rifle = 4 × v

Initial mass of bullet = 50 g

= $\frac{50}{1000}$ kg = 0.05 Kg

Initial velocity of bullet = 35 ms^{-1}

Initial momentum of bullet = 0.05 × 35

Using the law of conservation of momentum;

Momentum of the rifle = Momentum of the bullet

4 × v = 0.05 × 35

v = $\frac{0.05\times 35}{4}$

v = 0.4375 ms^{-1}

26. No, protons do not originate from the anode. Proton is present in the nucleus of atom. These are the residual positively charged species formed when the electrons are knocked out from the gaseous atoms of the gases present in the discharge tube.

Section C

27. i. The speed of sound tells us the rate at which the sound travels from the sound-producing body to our ears. The speed of sound depends on a number of factors. These are given below:

a. The speed of sound depends on the nature of the material through which it travels.

b. The speed of sound depends on the temperature.
c. The speed of sound depends on the humidity of the air.

ii. Bats search their prey at night by the method of echolocation. They emit high-frequency ultrasonic squeaks while flying and listen to the echoes produced by the reflection of their squeaks from the prey like a flying object. From the time taken by the echo to be heard, bats can judge the distance of the insect and hence catch it.

28. The mass number of X = Number of protons + Number of neutrons = 6 + 6 = 12
The mass number of Y = Number of protons + Number of neutrons = 6 + 8 = 14
Since the number of protons (6) in the two species is the same and the atomic mass of the two species is different (12 and 14), the given atomic species are isotopes of the same element (with atomic number Z = 6).

29. (a)An object with a constant acceleration can still have the zero velocity. For example an object which is at rest on the surface of earth will have zero velocity but still being acted upon by the gravitational force of earth with an acceleration of 9.81 ms^{-2} towards the center of earth. Hence when an object starts falling freely can have contant acceleration but with zero velocity.
(b)When an athlete moves with a velocity of constant magnitude along the circular path, the only change in his velocity is due to the change in the direction of motion. Here, the motion of the athlete moving along a circular path is, therefore, an example of an accelerated motion where acceleration is always perpendicular to direction of motion of an objectat a given instance. Hence, it is possible when an object moves in a circular path.

OR

Speed of the cheetah in ms^{-1} is $90 \times \frac{5}{18}$ $ms^{-1} = 25ms^{-1}$
Distance of the prey = 100 m
Therefore time to catch the prey = $\frac{Distance}{Speed} = \frac{100}{25} = 4S$

30. Displacement = 1500 m + 200 m + 2000 m = 3700 m
Work done = Force $\times$ displacement = 5 N $\times$ 3700 m = 18500 J
(Note: We do not need to calculate the circumference because we need to take displacement and not distancebecause displacement is change of position not distance covered by the object)

31. Initial velocity,u = 360 m/s
Final Velocity,v =0
Distance Travelled ,S = 10 cm = 0.1 m
Acceleration,a = ?
From third equation of motion, $v^2 = u^2 + 2as$
$\implies 0 = (360)^2 + 2a(0.1)$
$\implies a = \frac{-129600}{2} = -648000 m/s^2$
Now,
mass of the bullet,m= 2.0g = 0.002 kg
Force,F = ma
$= 0.002 \times (-648000)$
$= -1296\, N$
∴The average de-accelerating force exerted by the wood $= -1296\, N$
(b)
From first equation of motion,$v = u + at$
$\implies 0 = 360 + (-648000)t$
$\implies t = 5.56 \times 10^{-4} s$
Therefore,time taken by the bullet to come to rest $= 5.56 \times 10^{-4} s$

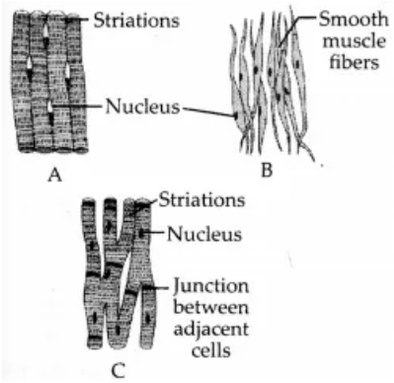
32. Chloroplasts contain the pigment chlorophyll which is responsible for food preparation in plants by the process of photosynthesis. Hence, if there were no chloroplasts then there would not have been any plant life.

OR

Ribosomes are found in greater number in actively dividing cells which are the cancer cells are they need more amount of proteins for the formation of new cells.

33. The three main types of muscular tissues found in the human body are:
i. Skeletal (striated) muscle tissue
ii. Smooth (Non-striated) muscle tissue
iii. Cardiac muscle tissue.

The well-labelled diagrams of these tissues are as follows:



A. Skeletal muscle tissue.
B. Smooth muscle tissue
C. Cardiac muscle tissue

Section D

34. i. Let the two bodies have masses m_1 and m_2 and they are placed at the same distance R from the centre of the earth. According to the question, if the same force acts on both of them, then

$F_1 = \frac{GMm_1}{R^2}$ ....(i)

and $F_2 = \frac{GMm_2}{R^2}$ ....(ii)

As, $F_1 = F_2$

Hence, $\frac{GMm_1}{R^2} = \frac{GMm_2}{R^2}$

So, $m_1 = m_2$, their masses will be the same.

ii. Mathematically, $g = \frac{GM}{R^2}$

Where, g = acceleration due to gravity

G = universal gravitational constant, M = mass of the earth and R = radius of the earth

iii. G is known as the universal gravitational constant because its value remains the same all the time everywhere in the universe, applicable to all bodies whether celestial or terrestrial.

OR

We have given that,

The mass of the wooden block = 5 kg

The dimensions = 40 cm $\times$ 20 cm $\times$ 10 cm

Here, the weight of the wooden block applies a thrust on the table top.

i.e,

Now we know that,

Thrust = F = m$\times$g

= 5 kg $\times$ 9.8 ms^{-2}

= 49 N

Area of a side = length $\times$ breadth

= 20 cm $\times$ 10 cm

= 200 cm^2 = 0.02 m^2

From equation Pressure = $\frac{thrust}{area}$ .....(i)

Pressure = $\frac{49N}{0.02m^2}$

= 2450 Nm^{-2}.

When the block lies on its side of dimensions 40 cm $\times$ 20 cm, it exerts the same thrust.

Area length $\times$ breadth

= 40 cm $\times$ 20 cm

= 800 cm^2 = 0.08 m^2

From equation (i)

Pressure = $\frac{49N}{0.08m^2}$

The pressure exerted by the side 20 cm $\times$ 10 cm is 2450 Nm^{-2} and by the side 40 cm $\times$ 20 cm is 612.5 Nm^{-2}.

35. (a) Plasma membrane – The cell membrane separates the cell from its external environment, and is selectively permeable (controls what gets in and out). It protects the cell and provides stability. Proteins are found embedded within the plasma membrane, with some extending all the way through in order to transport materials.
(b) Cell wall – The cell wall is a rigid organelle composed of cellulose and lying just outside the cell membrane. The cell wall gives the plant cell it's box-like shape. it also protects the cell. The cell wall contains pores which allow materials to pass to and from the cell membrane
(c) Ribosome – Ribosomes are small particles which are found individually in the cytoplasm and also line the membranes of the rough endoplasmic reticulum. Ribosomes produce protein. They could be thought of as "protein factories" of the cell.
(d) Lysosome –Lysosomes are small sac-like structures surrounded by a single membrane and containing strong digestive enzymes which when released can break down worn out organelles or food. The lysosome is also known as a suicide sac.
(e) Nucleolus – It synthesizes ribosome
(f) Endoplasmic Reticulum – Produces lipids and proteins and also in intracellular transport of substances.

OR

i.

Cell wall	**Cell membrane**
It is present in bacteria, fungi, and plant cells. It is absent in animal cells and protozoans.	It is present in all cells.
There is no other name of the cell wall.	The cell membrane is also known as the plasma membrane or plasmalemma.
The cell wall is completely permeable.	The cell membrane is semi-permeable.
The cell wall is made up of cellulose.	The cell membrane is made up of lipids and proteins.

ii.

Nuclear region of bacterial cell	**Nuclear region of an animal cell**
Smaller in size.	Larger in size.
The nuclear membrane is absent, the nucleolus is absent. The nucleus is regarded as the nucleoid.	Nuclear membrane with nucleolus present.

iii.

Prokaryotic cell	**Eukaryotic cell**
The size of a cell is generally small.	The size of a cell is generally large.
The true nucleus is absent.	The true nucleus is present.
It contains a single chromosome.	Contains more than one chromosome.
Membrane-bound cell organelles absent.	Membrane-bound cell organelles present.

36. i. Alloys are a homogeneous mixture of metals or non-metals because
a. It shows the properties of its constituents, and
b. It has variable composition, e.g. brass is considered a mixture because it shows the properties of its constituents, copper and zinc; and it has a variable composition.
ii. No, a solution is not generally a liquid always. For e.g. alloys are known to be solid solutions.
iii. The term solution is generally used for ‘true solution’. In this case, the solution is always homogeneous.
In the case of ‘colloidal solution’, that is not a true solution i.e. the solution is heterogeneous.

Section E

37. **Read the text carefully and answer the questions:**
Plant tissue is consists of meristematic tissue and permanent tissue. Meristematic tissue which is responsible for the growth of plants they are dividing tissue and permanent tissue provides permanent shape, size, and function to the plant they are also further classified as simple permanent tissue and complex permanent tissue. The plant tissue is responsible for performing various functions such as providing flexibility to plant parts as to stalk which can bend easily without breaking while some provide strength to the plant some of them have modified themself to provide floatation in an aquatic plant.
(i) Apical Meristem
(ii) Parenchyma tissue, in aquatic plant large air cavities are present in parenchyma to give buoyancy to plant help them to float.

OR

Collenchyma tissue provide flexibility.

38. **Read the text carefully and answer the questions:**

Poultry is the rearing of domesticated fowl (chicken), ducks, geese, turkey and some varieties of pigeon for their meat and eggs. Poultry birds are of two types that is broilers and layers. One is specialized meat-producing poultry birds while other is egg-laying poultry birds. The tremendous rise in the availability of poultry products is called Silver Revolution.

(i) Egg-laying poultry birds are called **layers.**

(ii) The specialized meat-producing poultry birds are called **broilers.** Broilers are quick growing birds which are raised for 6-8 weeks. Their food is rich in vitamin A and K.

(iii) The tremendous rise in the availability of poultry products is called Silver Revolution.

OR

Following are the example of poultry birds

Indigenous breed: Assel and Kadaknath.

Exotic breed: Rhode island red and Light Sussex.

39. **Read the text carefully and answer the questions:**

Homogeneous mixtures are regarded as solutions or true solutions. Heterogeneous mixtures are of two types. These are suspensions and colloidal solutions. These differ in the size of the particles responsible for the difference in their properties. In a suspension, the particle size is more than 10^{-5} cm whereas in a colloidal solution, it ranges between 10^{-5} cm to 10^{-7} cm. The two phases which constitute colloidal solutions, are dispersed phase and dispersion medium. Based upon their nature, the colloidal solutions are classified into eight types. The mixture of the non-reacting gases is always homogeneous irrespective of their nature. Therefore, it is not a colloidal solution.

(i) Since blood is a colloid, so tyndall effect is observed when a beam of light is passed through it since the dispersed particles of a colloid are large, deflect light.

(ii) The phenomenon by which the colloidal particles scatter light is called Tyndall effect.If light is passed through a colloid the light is scattered by the larger colloidal particles and the, beam becomes visible.

(iii) Colloidal solutions area mixture in which the substances are regularly suspended in a fluid. A colloid is a very tiny and small material that is spread out uniformly all through another substance.

OR

Fog : Liquid (water drops) acts as dispersed phase and gas (air) as the dispersion medium.