CBSE Sample Question Paper Term 1

Class – IX (Session : 2021 - 22)

SUBJECT - SCIENCE - 086 - TEST - 05

Class 09 - Science

Time Allowed: 1 hour and 30 minutes **Maximum Marks: 40**

General Instructions:

1. The Question Paper contains three sections.
2. Section A has 24 questions. Attempt any 20 questions.
3. Section B has 24 questions. Attempt any 20 questions.
4. Section C has 12 questions. Attempt any 10 questions.
5. All questions carry equal marks.
6. There is no negative marking.

Section A

Attempt any 20 questions

1. In the laboratory, what precaution has to be taken with carbon disulphide? **[0.8]**

   a) Kept away from carbon
   b) Kept away from iron sulphide
   c) Kept away from the flame
   d) Kept away from distilled water

2. Tongue is made up of _____. **[0.8]**

   a) Striated muscle and Smooth muscle
   b) Skeletal muscle
   c) Cardiac Muscle
   d) Smooth muscle

3. Which one of the following is not visible in the cheek cells? **[0.8]**

   a) cell wall
   b) nucleus
   c) cytoplasm
   d) cell membrane

4. A body moves on three-quarters of a circle of radius r. The displacement and distance travelled by it **[0.8]**

   a) displacement = 0, distance = $\frac{3\pi r}{2}$
   b) displacement = r, distance = 3r
   c) distance = 2r, displacement = $\frac{3\pi r}{2}$
   d) displacement = $\sqrt{2}r$ Distance = $\frac{3\pi r}{2}$

5. The SI unit of force is: **[0.8]**

   a) Newton
   b) Newton per second
   c) Newton per square metre
   d) Newton metre

6. Recovery of salt solution in water can be done by: **[0.8]**

   a) condensation
   b) evaporation
   c) filtration
   d) dissolving in more water

7. Chlorophyll is present in _____. **[0.8]**

a) Thylakoid b) Matrix

c) Stroma d) Cristae

8. Name the muscle which is found in visceral organs. **[0.8]**

a) Both Serum and Plasma b) Smooth muscle

c) Blood d) Plasma

9. The maximum speed of a train is 90 km/h. It takes 10 hours to cover a distance of 500 km. The ratio of its average speed to maximum speed is: **[0.8]**

a) 9:5 b) 5:9

c) 1: 5 d) 5:1

10. The change in the momentum of a body in 0.01 seconds is 10 kg ms^{-1}. The force acting on this body is **[0.8]**

a) 100 N b) 0.1 N

c) 10 N d) 1000 N

11. The aqueous mixture of salt and sand can be separated by the following method **[0.8]**

a) Sublimation b) Condensation

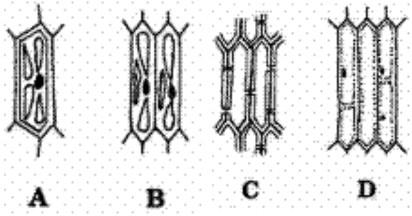
c) Melting d) Filtration

12. A prokaryotic cell does not possess: **[0.8]**

a) nuclear membrane b) both cell membrane and nuclear membrane

c) cell membrane d) cell wall

13. While observing a thin section of a plant stem, four students sketched sclerenchyma as given below. The correct diagram is: **[0.8]**



a) C b) B

c) A d) D

14. A 20 kg gun fires a bullet of mass 20 g with a velocity of 400 m/s. The action on the shoulder of the person per second by the gun is: **[0.8]**

a) 8000 N b) 8 N

c) 4000 N d) 4 N

15. Match the following with correct response. **[0.8]**

(1) Force	(A) Newton
(2) Momentum	(B) Acceleration

(3) Unbalanced force	(C) Kg m/s
(4) Principle on rocket works	(D) Newton's third law of motion

a) 1-D, 2-A, 3-C, 4-B
b) 1-B, 2-D, 3-A, 4-C
c) 1-A, 2-C, 3-B, 4-D
d) 1-C, 2-B, 3-D, 4-A

16. What is observed when carbon disulphide is added to a mixture of iron filings and sulphur powder taken in a test tube? **[0.8]**

a) A brisk effervescence
b) Sulphur powder remains unaffected
c) Sulphur powder dissolves to give a colourless solution
d) Iron fillings turn red

17. The cell organelles with membrane-bound cisternae located near the nucleus of the cell are **[0.8]**

a) Lysosome
b) Mitochondria
c) Plastids
d) Golgi apparatus

18. Flexibility in plants is due to **[0.8]**

a) parenchyma
b) chlorenchyma
c) collenchyma
d) sclerenchyma

19. If the velocity of a body is reducing, it is said to have **[0.8]**

a) Retardation
b) Both Negative acceleration and Retardation
c) Negative acceleration
d) Positive acceleration

20. A force can be completely described by: **[0.8]**

a) its magnitude
b) neither magnitude nor direction
c) its magnitude and direction
d) its direction

21. The system when starch is added to hot water is: **[0.8]**

a) colloid
b) mixture
c) suspension
d) true solution

22. The only cell organelle seen in prokaryotic cell is **[0.8]**

a) ribosomes
b) mitochondria
c) lysosomes
d) plastids

23. If the tip of sugarcane plant is removed from the field, even then it keeps on growing in length. It is due to the presence of **[0.8]**

a) lateral meristem
b) intercalary meristem
c) cambium
d) apical meristem

24. A person sitting in the truck projected a ball vertically upwards. The ball: **[0.8]**

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

Section B

Attempt any 20 questions

25. A mass M breaks into two pieces in the ratio 1 : 3 while at rest. If the heavier has a speed of v, the speed of the lighter is **[0.8]**

a) v/3 b) v

c) 4v d) 2v

26. Which of the following is absent in plant cells? **[0.8]**

a) Cell membrane b) Vacuole

c) Mitochondria d) Centriole

27. Which of the following does not loss their nucleus at maturity? **[0.8]**

a) Red blood cells b) Companion cells

c) Sieve tube cells d) Vessel

28. A student used a red stain for mounting a peel of onion. This corresponds to the stain: **[0.8]**

a) Methylene b) Safranin

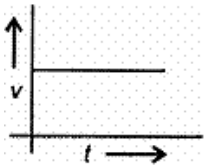
c) Acetocarmine d) Iodine

29. The well defined nucleus is absent in _____. **[0.8]**

a) Prokaryotic cell b) Plant cell

c) Animal cell d) Eukaryotic cell

30. From the given v-t graph, it can be inferred that the object is: **[0.8]**



a) in non-uniform motion b) at rest

c) Non of these d) in uniform motion

31. **Assertion (A):** Newton's third law applies to all types of forces. e.g. gravitational, electric, or magnetic forces, etc. **[0.8]**
Reason (R): Newton's third law of motion is applicable only when bodies are in motion.

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.

32. **Assertion (A):** Mitochondria and chloroplasts are semiautonomous organelles. **[0.8]**
Reason (R): They are formed by the division of pre-existing organelles and contain DNA but lack protein-synthesizing machinery.

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.

33. **Assertion (A):** Animals of colder regions and fishes of cold water have a thicker layer of subcutaneous fat. **[0.8]**

Reason (R): The thick layer of subcutaneous fat acts as an insulator and prevents the heat of the body to escape out. The layer of fat acts as subcutaneous insulation of body for thermoregulation.

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.

34. **Assertion (A):** A car is said to have a uniform speed of say, 60 km per hour, if it travels 30 km every half hour, 15 km every quarter of an hour, 1 km every minute, and 1/60 km every second. **[0.8]**

Reason (R): The SI unit of speed is metres per second.

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.

35. **Assertion (A):** Cell wall is a non-living part of the cell. **[0.8]**

Reason (R): It offers protection, definite shape and support.

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.

36. Find the incorrect statement **[0.8]**

a) The purity of compounds can be tested by determining their melting points.

b) The mixture can be called as a single substance.

c) Cesium and gallium are liquids above $30^{o}C$.

d) No energy changes occur when the constituent of air tried to be mixed.

37. Tincture of iodine has antiseptic properties. This solution is made by dissolving **[0.8]**

a) iodine in vaseline

b) iodine in potassium iodide

c) iodine in water

d) iodine in alcohol

38. The extremely thin and flat cells forming a delicate lining in the lung alveoli constitute **[0.8]**

a) stratified squamous epithelium

b) simple squamous epithelium

c) ciliated epithelium

d) simple cuboidal epithelium

39. Newton's third law tells that _____ force does not exist. **[0.8]**

a) unbalanced

b) balanced

c) paired

d) isolated

40. Two bodies of masses 1kg and 5kg are dropped gently from the top of a tower. At a point, 50cm from the ground both the bodies will have the same: **[0.8]**

a) kinetic energy
b) momentum
c) velocity
d) total energy

41. Which of the following are covered by a single membrane? **[0.8]**

a) Mitochondria
b) Vacuole
c) Nucleus
d) Plastid

42. A long tree has several branches. The tissue that helps in the side ways conduction of water in the branches is **[0.8]**

a) collenchyma
b) xylem vessels
c) xylem parenchyma
d) parenchyma

43. A force of 5 N applied on m_1 produces an acceleration of 8 m/s^2 and when applied on m_2 produces an acceleration of 24 m/s^2. When they are tied together, the acceleration will be **[0.8]**

a) 3 m/s^2
b) 16 m/s^2
c) 6 m/s^2
d) 8 m/s^2

44. What is not observed when a magnet is moved repeatedly through a mixture of iron filings and sulphur placed on a paper? **[0.8]**

a) Iron filings stick to the magnet
b) All of these
c) A black mass of iron sulphide is formed
d) Sulphur powder is left on the paper

45. Which of the following settles down when allowed to stand undisturbed doe sometimes? **[0.8]**

a) Copper sulphate solution
b) Blood
c) Muddy water
d) Solution of egg albumin in water

46. Which of these is not related to endoplasmic reticulum? **[0.8]**

a) It transports materials between various regions in cytoplasm.
b) It can be the site for some biochemical activities of the cell
c) It behaves as transport channel for proteins between nucleus and cytoplasm.
d) It can be the site of energy generation.

47. Which of the following is not a function of the epidermis? **[0.8]**

a) Transpiration
b) Conduction of food
c) Exchange of gases
d) Protection

48. To prepare a mount of human cheek cell, the sample is collected from: **[0.8]**

a) outer side of cheek with a blade
b) inner side of cheek with a toothpick
c) inner side of cheek with a blade
d) outer side of cheek with a toothpick

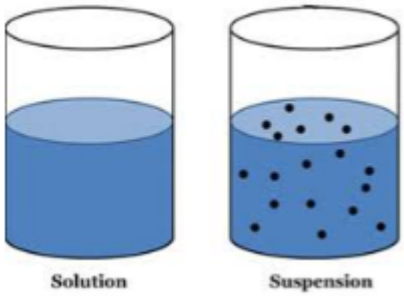
Section C

Attempt any 10 questions

Question No. 49 to 52 are based on the given text. Read the text carefully and answer the

questions:

A suspension is a heterogeneous mixture in which the solute particles do not dissolve but remain suspended throughout the bulk of the medium. Particles of a suspension are visible to the naked eye. The particles of a suspension scatter a beam of light passing through it and make its path visible. Due to the relatively smaller size of particles, as compared to that of a suspension, the mixture appears to be homogeneous. The scattering of a beam of light is called the Tyndall effect. The components of a colloidal solution are the dispersed phase and the dispersion medium. The solute-like component or the dispersed particles in a colloid form the dispersed phase, and the component in which the dispersed phase is suspended is known as the dispersing medium.



49. Which of the following is not the property of colloid? **[0.8]**

a) Colloids are big enough to scatter a beam of light passing through it.

b) A colloid is a heterogeneous mixture.

c) Size of particles of a colloid is too small

d) A colloid is very unstable

50. Sol and gel are examples of: **[0.8]**

a) Sol is solid-solid colloid and gel is a solid-liquid colloid

b) Sol is a liquid-solid colloid and gel is a solid-liquid colloid

c) Solid-solid colloids

d) Sol is a solid-liquid colloid and gel is a liquid-solid colloid

51. A mixture of sulphur and carbon disulphide is: **[0.8]**

a) Homogeneous and does not show Tyndall effect

b) Heterogeneous and does not show Tyndall effect

c) Heterogeneous and shows Tyndall effect

d) Homogeneous and shows Tyndall effect

52. Which of the following is an example of solid sol? **[0.8]**

a) Shaving cream

b) Fog

c) Coloured gemstone

d) Milk

Question No. 53 to 56 are based on the given text. Read the text carefully and answer the questions:

Lysosomes are membrane-bound sacs filled with digestive enzymes. These enzymes are made by RER. Lysosomes are a kind of waste disposal system of the cell. Foreign materials entering the cell, such as bacteria or food, as well as old organelles end up in the lysosomes, which break complex substances

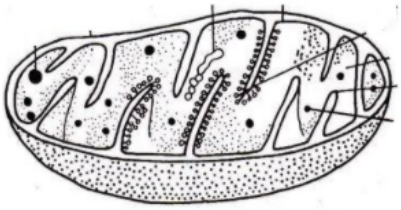
into simpler substances. Mitochondria have two membrane coverings. The outer membrane is porous while the inner membrane is deeply folded. Mitochondria are strange organelles in the sense that they have their own DNA and ribosomes. Plastids are present only in plant cells. There are two types of plastids – chromoplasts and leucoplasts. Vacuoles are storage sacs for solid or liquid contents. Vacuoles are small-sized in animal cells while plant cells have very large vacuoles.

53. Which of the following statement marks a difference between a plant cell and an animal cell? **[0.8]**

I. Plant cells have a cell wall which animal cells do not.
II. Plant cells do not have vacuoles while animal cells do have.
III. Plant cells have only cell membranes while animal cells have both cell walls as well as cell membranes.
IV. Plant cells have more plastids while animal cells have few plastids.

a) (II) and (III)
b) (III) and (IV)
c) Only (I)
d) (I) and (II)

54. Mitochondria folds that are shown in the below diagram increases surface area for: **[0.8]**



a) none of these
b) for absorption
c) ATP generating chemical reactions
d) for synthesis of a protein

55. Organelle other than nucleus, containing DNA is: **[0.8]**

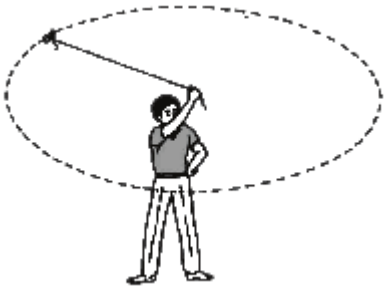
a) mitochondria
b) Golgi apparatus
c) lysosomes
d) endoplasmic reticulum

56. Which out of the following is not a function of vacuole? **[0.8]**

a) Locomotion
b) Providing turgidity and rigidity to the cell
c) Storage
d) Waste excretion

Question No. 57 to 60 are based on the given text. Read the text carefully and answer the questions:

When an object moves in a circular path with uniform speed, its motion is called uniform circular motion. The direction of motion changed at every point moving along the circular path.



57. Which one of the following is most likely not a case of uniform circular motion? **[0.8]**

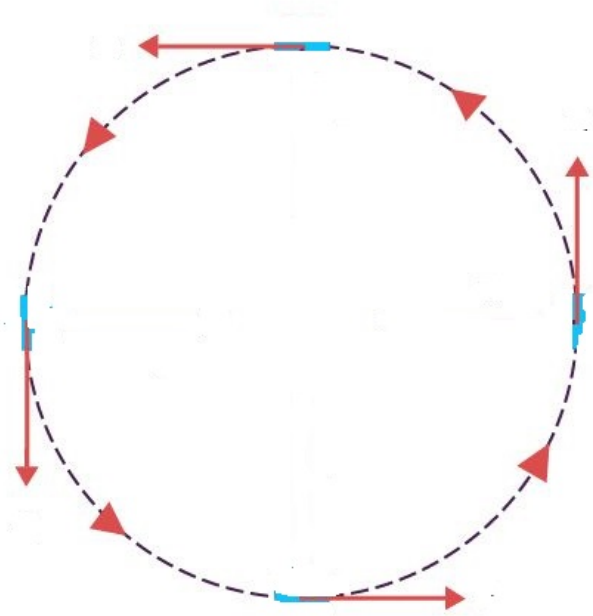
a) The motion of hours' hand on the dial of a clock.

b) The motion of a racing car on a circular track.

c) The motion of the earth around the sun.

d) The motion of a toy train on a circular track.

58. The train is moving on a track**(below image)**. Though the speed of a train is constant the direction of motion (or direction of speed) is changing continuously. So, the train is exhibiting: **[0.8]**



a) uniform motion

b) uniform notion

c) decelerated motion

d) accelerated motion

59. A cyclist goes around a circular track once every 2 minutes. If the radius of the circular track is 105 metres, calculate his speed. **[0.8]**

a) 5.8 m/s

b) 5.6 m/s

c) 5.5 m/s

d) 5.7 m/s

60. Which of the following statement is correct? **[0.8]**

I. Motion of the moon and the earth is an example of non-uniform circular motion.

II. When the velocity of an object changes, we say that the object is accelerating.

III. A satellite in a straight orbit around the earth.

IV. the change in the velocity could be due to a change in its magnitude or the direction of the motion or both.

a) (II) and (IV)

b) (III) and (IV)

c) (I) and (II)

d) (II) and (III)

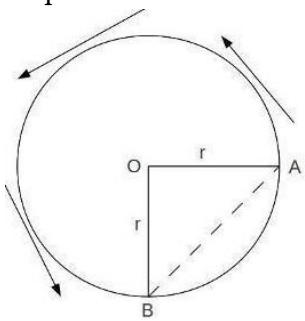
Solution

SUBJECT - SCIENCE - 086 - TEST - 05

Class 09 - Science

Section A

1. **(c)** Kept away from the flame
   Explanation: Carbon disulphide is an extremely flammable and dangerous fire hazard so, it should be kept away from the flame as it is inflammable.
2. **(b)** Skeletal muscle
   Explanation: The tongue is under voluntary control via the somatic nervous system, therefore it is made up of skeletal muscle. Skeletal muscle is found in other places as well - not just attached to the bones.
3. **(a)** cell wall
   Explanation: The cells do not have a cell wall. However, each cell has a thin cell membrane. A large vacuole is present at the center of each cell and is surrounded by the cytoplasm. A lightly stained cytoplasm is observed in each cell. A deeply stained nucleus is observed at the center of each cell.
4. **(d)** displacement = $\sqrt{2}r$ Distance = $\frac{3\pi r}{2}$
   Explanation: Distance covered is $\frac{3}{4}$ circumference.
   $\frac{3}{4} \times 2 \times \pi \times r = \frac{3\pi r}{2}$
   Displacement = Shortest Path

   If We Join Point A and B we get right angle triangle with
   Hypotenuse(displacement) and other two sides of a triangle with sides r.
   Displacement = $\sqrt{r^2 + r^2} = \sqrt{2r^2} = \sqrt{2}r$
5. **(a)** Newton
   Explanation: The newton (symbol: N) is the International System of Units (SI) derived unit of force. It is named after Isaac Newton in recognition of his work on classical mechanics, specifically Newton's second law of motion.
6. **(b)** evaporation
   Explanation: Although the salt is dissociated in solution, it still retains the property that it has a different boiling point from water. The water will evaporate first, leaving salt crystals behind.
7. **(a)** Thylakoid
   Explanation: A thylakoid is a sheet-like membrane-bound structure that is the site of the light-dependent photosynthesis reactions in chloroplasts and cyanobacteria. It is the site that contains the chlorophyll used to absorb light and use it for biochemical reactions.
8. **(b)** Smooth muscle
   Explanation: Visceral muscle tissue, or smooth muscle, is tissue associated with the internal organs of the body, especially those in the abdominal cavity.
9. **(b)** 5:9
   Explanation: Average speed = $\frac{500}{10}$ = 50 km/hr
   Ratio of average speed to maximum speed = 50 : 90 = 5:9
10. **(d)** 1000 N
    Explanation: The force acting on a body is equal to rate of change of momentum. Change of momentum =

10 Kg/s, time taken = 0.01 second. Force = $\frac{10}{0.01}$ = 1000 N.

11. **(d)** Filtration
Explanation: Filter the solution to get sand separated. Now the filterate, on evaporation will give salt back.

12. **(a)** nuclear membrane
Explanation: Prokaryotes do have their genomic DNA concentrated and localized to a small area within the cell (nucleoid region). So it's not entirely accurate to say that prokaryotes don't have a nucleus.

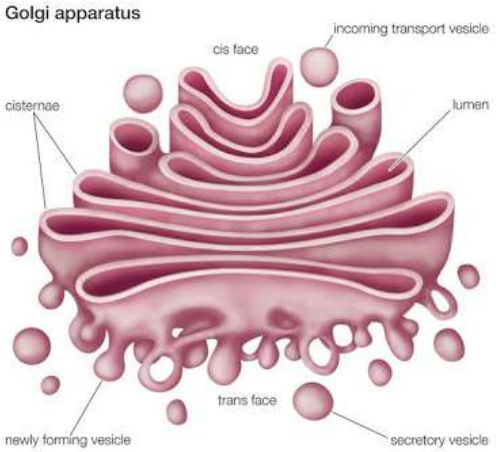
13. **(a)** C
Explanation: Figure C show section of a plant stem. Plant stem has pits, non-nucleated cells, thick cell walls are characteristics.

14. **(b)** 8 N
Explanation: In the given problem,
Mass of gun =20kg ; velocity of bullet =400m/s
mass of the bullet = 20g = 0.02 kg
F= change in momentum/ time taken
For t = 1sec.
F= m× v /t
=400× 0.02/1
=8N

15. **(c)** 1-A, 2-C, 3-B, 4-D
Explanation: Units of-
    - force- Newton
    - momentum- kg m/s
    - acceleration is caused due to unbalanced force acting on the body.
    - rocket works on the principle of Newton's third law of motion

16. **(c)** Sulphur powder dissolves to give a colourless solution
Explanation: Addition of carbon disulphide to a mixture containing iron filings and sulphur powder leads to the formation of a clear yellow solution when sulphur powder dissolves in carbon disulphide, on gentle shaking. The sulphur powder dissolves in carbon disulphide to form a colourless solution. Iron fillings being insoluble settle in the bottom. These can be separated by filtration. When the solution is allowed to evaporate, the powder of solid sulphur is obtained.

17. **(d)** Golgi apparatus
Explanation: Golgi apparatus is a complex of vesicles and folded membranes within the cytoplasm of most eukaryotic cells, involved in secretion and intracellular transport.



18. **(c)** collenchyma
Explanation: Collenchyma consist of living cells and are characterised by the presence of cellulose. Collenchyma is a mechanical tissue in young dicotyledonous stems and provides mechanical support and elasticity. It provides great tensile strength with flexibility to those organs in which it is found. It allows easy bending in various parts of a plant mainly young growing stem without breaking them.

19. **(b)** Both Negative acceleration and Retardation
Explanation: If there is a decrease in acceleration, it is called Retardation. This means the rate of decrease in velocity is called **retardation or negative acceleration or deceleration**.

20. **(c)** its magnitude and direction
Explanation: A force can cause an object with mass to change its velocity (which includes beginning moving from a state of rest), i.e., to accelerate. Force can also be described intuitively as a push or a pull. A force has both magnitude and direction, making it a vector quantity.

21. **(a)** colloid
Explanation: The colloid of starch is prepared by the dispersion method. 2-3 g of powdered/crushed starch is dissolved in 3- 4 ml of water to make a thin paste. This paste is added to100 ml of boiling water while stirring. Allow the solution to cool and filter. The filtrate is colloid of starch.

22. **(a)** ribosomes
Explanation: Unlike eukaryotic cell, a prokaryotic cell lacks membrane-bound organelles like plastids, mitochondria and endoplasmic reticulum but smaller and randomly scattered ribosomes are seen.

23. **(b)** intercalary meristem
Explanation: If the tip of sugarcane plant is removed the apical meristem is also removed as it is situated in the apices of growing roots and stem. Intercalary meristem are located at the base of leaves or nodes and leads to the increase in the length of an organ such as leaves and internodes.

24. **(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.

Section B

25. **(a)** v/3
Explanation: Due to the conservation of momentum a collision between two bodies, the total momentum of the colliding bodies before the collision is equal to the total momentum after the collision.
$m_1v_1 = m_2v_2$

26. **(d)** Centriole
Explanation: A centriole is an organelle that helps cells divide, or make copies of themselves. Centrioles are only found in animal cells. All centrioles are made of protein strands called microtubules.

27. **(b)** Companion cells
Explanation: Companion cells are present along the sieve tube, connected to them via plasmodesmata. These cells are metabolically active and sieve tube elements are dependent on these cells they do not lose nucleus at maturity. RBC vessels and sieve tube cells lose their nucleus at maturity.

28. **(b)** Safranin
Explanation: A student used a red stain for mounting a peel of onion This corresponds to the stain Safranin.
    i. It is used in histology and cytology.
    ii. The formula of Safranin is $C_{20}H_{19}N^{4+}Cl^{-}$
    iii. The molar mass of Safranin is 350.85 $g \cdot mol^{-1}$
    iv. It is soluble in water.

29. **(a)** Prokaryotic cell
Explanation: Prokaryotic cells do not have a nuclear membrane, and cell organelles are also not well enveloped.

30. **(d)** in uniform motion
Explanation: From the given v-t graph, it is clear that the velocity of the object is not changing with time i.e., the object is in uniform motion.

31. **(c)** A is true but R is false.
Explanation: According to third law of motion it is impossible to have a single force out of mutual interaction between two bodies, whether they are moving or at rest. While Newton's third law is applicable for all types of forces.

32. **(c)** A is true but R is false.
Explanation: Both mitochondria and chloroplasts are double membrane-bound, semi-autonomous cell organelles. Their structure and functions are partially controlled by the nucleus of the cell and partially by themselves. Both possess their own DNA and arise from pre-existing cells. 70S type of ribosome is present in both organelles which can help to translate the coded information contained in mRNA and protein synthesis.

33. **(a)** Both A and R are true and R is the correct explanation of A.
Explanation: Animals of colder regions and fishes of cold water have a thicker layer of subcutaneous fat. The thick layer of subcutaneous fat acts as an insulator and prevents the heat of the body to escape out. The layer of fat acts as subcutaneous insulation of the body for thermoregulation.

34. **(b)** Both A and R are true but R is not the correct explanation of A.
Explanation: A body has a uniform speed if it travels equal distances in equal intervals of time, no matter how small these time intervals may be. For example, a car is said to have a uniform speed of say, 60 km per hour, if it travels 30 km every half hour, 15 km every quarter of an hour, 1 km every minute, and 1/60 km every second

35. **(a)** Both A and R are true and R is the correct explanation of A.
Explanation: Cell wall is a non-living part of the cell. It is an outer, rigid, protective, supportive and semi-transparent covering of plant cells only. The cell wall lies outside the plasma membrane. The cell wall is mainly composed of cellulose. It provides a definite shape to the cell. It protects plasma membrane and internal structures from the attack of pathogens and mechanical injury.

36. **(b)** The mixture can be called as a single substance.
Explanation: Mixtures are a substance that consists of two or more pure substances. So the given statement is incorrect.

37. **(d)** iodine in alcohol
Explanation: 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.

38. **(b)** simple squamous epithelium
Explanation: Tongue, esophagus, and the lining of the mouth are made up of simple squamous epithelium. It is also found in blood vessels and alveoli. It protects the underlying parts of the body from mechanical injury, entry of germs, chemicals, and drying. It also forms a selectively permeable surface through which filtration occurs.

39. **(d)** isolated
Explanation: Force can not generate in a body on its own.

40. **(c)** velocity
Explanation: The velocity of the body falling towards depends upon gravitational force acting on it. So, both the body of masses 1 kg and 5 kg will have the same velocity at a particular height and fall at the same time at the ground.

41. **(b)** Vacuole
Explanation: Vacuole is a cavity within the cytoplasm of a cell, surrounded by a single membrane and containing fluid, food, or metabolic waste. Mitochondria, Nucleus and Plastids are surrounded by double membrane.

42. **(b)** xylem vessels
Explanation: Xylem vessels are very long tube-like structures formed by a row of cells placed end to end. The transverse walls between these cells are partially or completely dissolved to form continuous water channels.

43. **(c)** 6 m/s^2
Explanation: For the first body,
$F = m_1a_1$
So, $5 = m_1 \times 8$
So, $m_1 = \frac{5}{8}$ kg

For second body,

$F = m_2a_2$

So, $5 = m_2 \times 24$

So, $m_2 = \frac{5}{24}$ kg

Combined mass of both bodies, $m_1 + m_2$

$= \frac{5}{8} + \frac{5}{24} = \frac{20}{24}$ kg

Now, $m = \frac{20}{24}$ kg

F = 5N

a = ?

F = ma

So, $5 = \frac{20}{24} \times a$

So, $a = 5 \times \frac{24}{20}$

So, $a = 6m/s^2$

44. **(b)** All of these
Explanation: Iron filling are attracted to the bar magnet. A black substance is formed on heating. Sulphur dissolves in CS_2 and a yellow solution is formed. Solid sulphur reappears when CS_2 is evaporated. So all statements are correct.

45. **(c)** Muddy water
Explanation: Muddy water will settle down because particles are heavy and settle due to gravity. Setting down of coarse particles under the influence of gravity is called sedimentation. During sedimentation, heavier particles settle down faster than finer particles.

46. **(d)** It can be the site of energy generation.
Explanation: Mitochondria is the site of energy generation. It is not generated in the endoplasmic reticulum.

47. **(b)** Conduction of food
Explanation: The epidermis does not conduct the food to the various parts of the plant. Conduction of food is carried by phloem tissue.

48. **(b)** inner side of cheek with a toothpick
Explanation: While preparing a mount of human cheek cell, the sample is collected from the inner side of the cheek using a toothpick, which will collect some cheek cells.

Section C

49. **(d)** A colloid is very unstable
Explanation: A colloid is very unstable

50. **(d)** Sol is a solid-liquid colloid and gel is a liquid-solid colloid
Explanation: Sol is a solid-liquid colloid and gel is a liquid-solid colloid

51. **(a)** Homogeneous and does not show Tyndall effect
Explanation: Homogeneous and does not show Tyndall effect

52. **(c)** Coloured gemstone
Explanation: Coloured gemstone

53. **(c)** Only (I)
Explanation: Only (I)

54. **(c)** ATP generating chemical reactions
Explanation: ATP generating chemical reactions

55. **(a)** mitochondria
Explanation: mitochondria

56. **(a)** Locomotion
Explanation: Locomotion

57. **(b)** The motion of a racing car on a circular track.
Explanation: The motion of a racing car on a circular track.

58. **(d)** accelerated motion
Explanation: accelerated motion

59. **(c)** 5.5 m/s
Explanation: 5.5 m/s

60. **(a)** (II) and (IV)
Explanation: (II) and (IV)