CBSE Sample Question Paper Term 1

Class – IX (Session : 2021 - 22)

SUBJECT - SCIENCE - 086 - TEST - 04

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. Tyndall effect is observed in which one of the following? **[0.8]**

   a) True solution b) Starch + Water

   c) Alum + Water d) NaCl + Water

2. Choose the chemical compound with which the specimen is temporarily mounted. **[0.8]**

   a) Water b) Glycerine

   c) Alcohol d) Salt solution

3. While preparing a temporary mount of cheek cells, teacher asked Rohit to pick up the stain. He had four bottles A, B, C, and D containing methylene blue, glycerine, distilled water, Canada balsum. Which one should he pick? **[0.8]**

   a) B b) C

   c) D d) A

4. In which of the following cases of motion, the distance moved and the magnitude of displacement are equal? **[0.8]**

   a) The earth is revolving around the Sun b) The pendulum is moving to and fro

   c) A car is moving on a straight road d) A car is moving in a circular path

5. Impulse is the other name of **[0.8]**

   a) momentum b) change in momentum

   c) inertia d) force

6. Identify a method used to separate a mixture of water and groundnut oil. **[0.8]**

a) None of these
b) Crystallisation
c) Chromatography
d) Separating funnel

7. Which cell organelle plays a crucial role in detoxifying many poison and drugs in a cell? **[0.8]**

a) Lysosomes
b) Vacules
c) Smooth endoplasmic reticulum
d) Golgi apparatus

8. Rhythmic contraction and relaxation throughout life, are shown by **[0.8]**

a) epithelium of lungs
b) striated muscles of tongue
c) striated muscles of limbs
d) cardiac muscles of heart

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

a) The body is said to be accelerating if it moves in a uniform circular motion
b) None of these.
c) The slope of velocity-time graph gives instantaneous acceleration
d) When a body moves with constant speed its acceleration is zero

10. If an object experiences a net zero unbalanced force then the body: **[0.8]**

a) moves with constant velocity
b) can be accelerated
c) cannot remain at rest
d) none of these

11. Which one is a physical change? **[0.8]**

a) Mixing $BaSO_4$ + NaCl
b) Mixing NH_3 and HCl
c) Burning magnesium in air
d) Adding NaCl to water

12. Chromosomes are made up of **[0.8]**

a) RNA
b) DNA
c) DNA and protein
d) Protein

13. Contractile proteins are found in **[0.8]**

a) muscles
b) bones
c) cartilage
d) blood

14. Rocket works on the principle of _____. **[0.8]**

a) Newton's third law
b) Newton's second law
c) Newton's fourth law
d) Newton's first law

15. Which is correct about frictional force & gravitational force? **[0.8]**

A. Frictional force always produces retardation while gravitational force produces both retardation and acceleration
B. Both produce retardation
C. The frictional force acts when two surfaces are in contact
D. Gravitational force acts when the object is at some height

a) (A) and (B) are correct
b) (B) and (C) are correct

c) (A), (C) and (D) are correct

d) All of these

16. Take three test tubes A, B and C containing salt solution, egg albumin in water and suspension of sand in water. Filter the contents of A, B, C through filter paper and observe the residue and filtrate. Identify the correct statements. **[0.8]**

a) Residue left and clear filtrate in all

b) No residue and clear filtrate in all the test tubes

c) Translucent filtrate in all

d) A clear filtrate and no residue in A, translucent filtrate and no residue in B, solid particles as residue and clear filtrate in C

17. Following are a few definitions of osmosis read carefully and select the correct definition. **[0.8]**

a) Movement of solvent molecules from its higher concentration to lower concentration

b) Movement of solvent molecules from higher concentration to lower concentration of solution through a permeable membrane

c) Movement of solute molecules from lower concentration to higher concentration of solution through a semipermeable membrane

d) Movement of water molecules from a region of higher concentration to a region of lower concentration through a semipermeable membrane

18. Voluntary muscles are found in **[0.8]**

a) limbs

b) alimentary canal

c) iris of the eye

d) bronchi of lungs

19. A body is thrown vertically upwards with velocity u, the greatest height h to which it will rise is **[0.8]**

a) $\frac{u}{2g}$

b) $\frac{u^2}{2g}$

c) $\frac{u^2}{g}$

d) $\frac{u}{g}$

20. On a 3 kg mass, 5 newton of force acts for 0.1 second. The impulse imparted to the mass is (in kg m/s): **[0.8]**

a) 0.16

b) 1.0

c) 1.5

d) 0.5

21. An element **Y** is not lustrous, sonorous, or malleable. Identify **Y**. **[0.8]**

a) Gold

b) Aluminum

c) Copper

d) Bromine

22. Lipid molecules in the cell are synthesized by **[0.8]**

a) Plastids

b) Rough endoplasmic reticulum

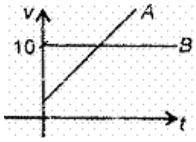
c) Golgi apparatus

d) Smooth endoplasmic reticulum

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

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

24. The v-t graph shown here depicts the motion of A and B such that **[0.8]**



a) they collide when their velocity is 10 ms^{-1}
b) both A and B have zero acceleration
c) both A and B have non-zero acceleration
d) velocity of A exceeds beyond 10 ms^{-1}

Section B

Attempt any 20 questions

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

(1) Inertia	(A) Product of mass and velocity
(2) Friction	(B) Mass of the object
(3) Momentum	(C) Rate of change of momentum
(4) Force	(D) Necessary evil

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

26. A cell has 10 chromosomes. After mitotic cell division, the number of chromosomes in the daughter cell will be: **[0.8]**

a) 10
b) 4
c) 20
d) 5

27. Which is the most widely distributed connective tissue? **[0.8]**

a) Blood
b) Lymph
c) Adipose connective tissue
d) Areolar connective tissue

28. Nerve cell does not contain **[0.8]**

a) axon
b) nerve endings
c) dendrites
d) tendons

29. Organelle without a cell membrane is **[0.8]**

a) Ribosome
b) Golgi apparatus
c) Chloroplast
d) Nucleus

30. Slope of a velocity-time graph gives **[0.8]**

a) the displacement
b) the acceleration

c) the distance
d) the speed

31. **Assertion (A):** When we sit on a chair, our body exerts a force downward and that chair needs to exert an equal force upward or the chair will collapse. **[0.8]**
Reason (R): The third law says that for every action there is an equal and opposite reaction.

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):** Cell vomiting process occurs in cells to remove undigested substances, secrete hormones, enzymes, and transport various substances. **[0.8]**
Reason (R): Cell vomiting is a process in which the waste materials from the cell are extruded through the plasma membrane by diffusing the vesicles containing materials needs to be taken out of the body.

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):** Surface of skin is impervious to water. **[0.8]**
Reason (R): Surface of skin is covered by stratified cuboidal epithelium.

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): T**he speedometer of a car measures the instantaneous speed of the car. **[0.8]**
Reason (R): Average speed is equal to the total distance covered by an object divided by the total time taken.

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):** Lysosome is called a suicidal bag. **[0.8]**
Reason(R): Lysosomes contain certain digestive enzymes that help to auto digest the cell in case if there is an infection.

a) Both A and R are true and R is the correct explanation of A.
b) Both A and R are true and R is not the correct explanation of A.
c) A is true and R is false.
d) A is false and R is true.

36. When iron filings and powdered sulphur are mixed together in a china dish: **[0.8]**

a) the constituents can be separated by a magnet
b) a heterogeneous mixture results
c) the constituents present can easily be seen
d) All of these

37. The process used to separate a mixture of iron fillings, iodine, and common salt is: **[0.8]**

a) magnetic separation followed by sublimation

b) dissolution in water followed by sublimation and magnetic separation

c) sublimation followed by magnetic separation

d) any order can be followed

38. Which is not a function of epidermis? **[0.8]**

a) Protection from adverse condition

b) Transpiration

c) Conduction of water

d) Gaseous exchange

39. A water tanker filled up to $\frac{2}{3}$rd of its height is moving with a uniform speed. On sudden application of the brake, the water in the tank would **[0.8]**

a) be unaffected

b) move backwards

c) rise upwards

d) move forwards

40. A ball is dropped from a height of 10m. The ball is embedded in sand of 1m and stops. **[0.8]**

a) The only momentum remains conserved.

b) Only kinetic energy remains conserved.

c) Both momentum and kinetic energy are conserved.

d) Neither K.E nor momentum is conserved.

41. 70-80% of the volume of a mature plant cell is occupied by: **[0.8]**

a) cytoplasm

b) vacuole

c) nucleus

d) endoplasmic reticulum

42. Which of the following tissues has dead cells? **[0.8]**

a) Collenchyma

b) Epithelial tissue

c) Parenchyma

d) Sclerenchyma

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

(1) Friction	(A) when one object rolls over another
(2) Limiting friction	(B) Force just sufficient to move the object
(3) Sliding friction	(iii)(C) Force which opposes motion
(4) Rolling friction	(D) Force sufficient to slide one object over another

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

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

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

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

44. 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.

45. Add dil. HCl to (i) mixture of Fe and sulphur (ii) iron sulphide and choose the correct observation: **[0.8]**

a) Mixture of iron and sulphur reacts with HCl to give H_2S gas

b) FeS does not react with HCl

c) FeS reacts with HCl to give H_2 gas

d) Mixture of iron and sulphur reacts with HCl to give H_2 gas

46. Find out the false sentence. **[0.8]**

a) Mitochondria is said to be the power house of the cell as ATP is generated in them.

b) Nucleus, mitochondria, and plastid have DNA; hence they are able to make their own structural proteins.

c) The cytoplasm is called as protoplasm.

d) Golgi apparatus is involved with the formation of lysosomes.

47. Tendons help to connect **[0.8]**

a) muscle to muscle

b) muscle to bone

c) bone to cartage

d) bone to bone

48. Branched involuntary muscles fibres are found in **[0.8]**

a) ureters

b) limbs

c) heart

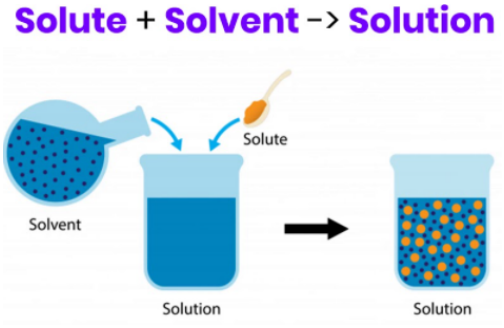
d) tongue

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:

Mixtures are constituted by more than one kind of pure form of matter. Sodium chloride is itself a pure substance matter. The solution is a homogeneous mixture of two or more substances. Lemonade, soda water etc. are all examples of solutions. Alloys are mixtures of two or more metals or a metal and a non-metal and cannot be separated into their components by physical methods. A solution has a solvent and a solute as its components. The component of the solution that dissolves the other component in it (usually the component present in a larger amount) is called the solvent. The component of the solution that is dissolved in the solvent
(usually present in lesser quantity) is called the solute.



49. In a water-sugar solution: **[0.8]**

a) water is solute and water is also solvent
b) water is solvent and sugar is solute
c) water is solute and sugar is solvent
d) none of these

50. The particles of a solution are smaller than: **[0.8]**

a) 10 nm in diameter
b) 1 nm in diameter
c) 6 nm in diameter
d) 5 nm in diameter

51. Which of the following statements are true for pure substances? **[0.8]**

a) Pure substances may be compounds or mixtures.
b) Pure substances have different compositions throughout.
c) Pure substances can be exemplified by all elements other than nickel.
d) Pure substances contain only one kind of particle.

52. Brass is a mixture of: **[0.8]**

a) 30% zinc and 40% copper
b) 30% zinc and 70% copper
c) 60% zinc and 70% copper
d) 70% zinc and 50% copper

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

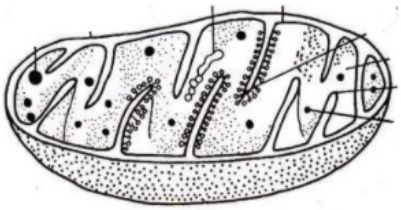
Lysosomes are membrane-bound sacs filled with digestive enzymes. These enzymes are made by RER. Lysosomes are a kind of waste disposal system of the cell. Foreign materials entering the cell, such as bacteria or food, as well as old organelles end up in the lysosomes, which break complex substances into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

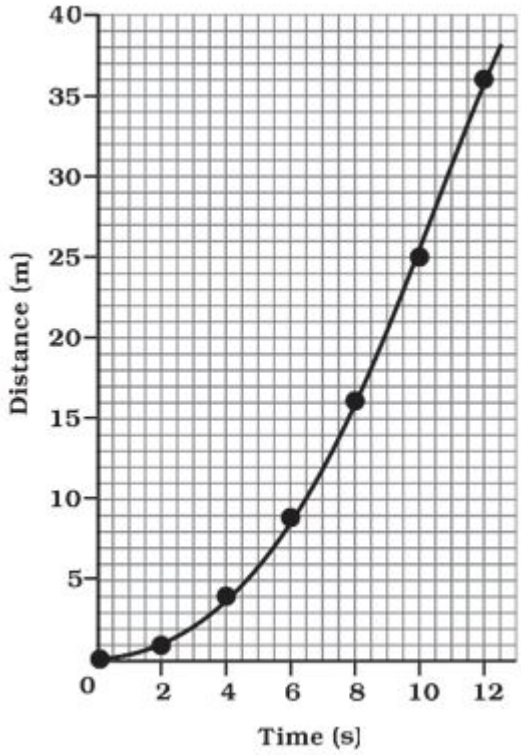
a) mitochondria
b) Golgi apparatus
c) lysosomes
d) endoplasmic reticulum

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:

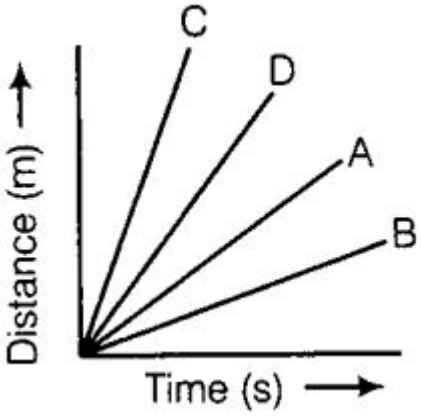
The change in the position of an object with time can be represented on the distance-time graph adopting a convenient scale of choice. In the distance-time graph, time is taken along the x–axis and distance is taken along the y-axis.



57. A man travels a distance of 1.5 m towards East, then 2.0 m towards South and finally 4.5 m towards East. What is the total distance traveled? **[0.8]**

a) 8m
b) 16m
c) 5m
d) 7m

58. Four cars A, B, C and D are moving on a levelled road. Their distance versus time graphs are shown in the adjacent figure. Choose the correct statement. **[0.8]**



a) Car C is the slowest
b) Car D is faster than car C
c) Car B is the slowest
d) Car A is faster than car D

59. If the displacement of an object is proportional to the square of time, then the object is moving with: **[0.8]**

a) decreasing acceleration
b) increasing acceleration
c) uniform velocity
d) uniform acceleration

60. Which of the following statement is correct for distance-time graph? **[0.8]**

I. Time is taken along the x–axis
II. When an object travels equal distances in equal intervals of time, it moves with uniform speed
III. Distance-time graphs can be employed under various conditions
IV. For uniform speed, a graph of distance travelled against time is a curved line

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

Solution

SUBJECT - SCIENCE - 086 - TEST - 04

Class 09 - Science

Section A

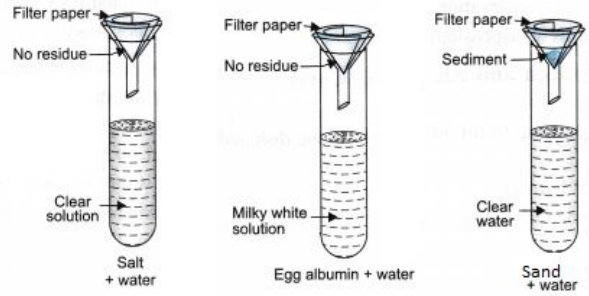
1. **(b)** Starch + Water
   Explanation: Starch forms a colloid in water (hot water).
2. **(b)** Glycerine
   Explanation: Glycerine is a good dehydrating agent. It avoids the drying of the specimen. Besides, glycerine tends to reflect light due to its refractive nature. As a result of it, the image appears clearer under the microscope. Due to these reasons, glycerine is used while preparing a temporary mount of leaf peel.
3. **(d)** A
   Explanation: Methylene blue is used to stain human cheek epithelial cells better. Methylene blue stains negatively charged molecules in the cell, including DNA and RNA. This dye is toxic when ingested and it causes irritation when in contact with the skin and eyes.
4. **(c)** A car is moving on a straight road
   Explanation: The distance moved and magnitude of displacement are equal only in the case of motion along a straight line. Because displacement is the shortest path between initial and find path. So, for car moving on straight road, distance moved and magnitude of displacement are equal.
5. **(b)** change in momentum
   Explanation: Momentum is mass in motion, and any moving object can have momentum. An object's change in momentum is equal to its impulse.
6. **(d)** Separating funnel
   Explanation: Separating funnel is used to separate a mixture of water and groundnut oil as this technique is used to separate a mixture of two immiscible liquids depending on the difference in their densities.
7. **(c)** Smooth endoplasmic reticulum
   Explanation: Smooth Endoplasmic Reticulumis not only plays a role in detoxification but also regulates and releases calcium ions. These are the network of tubular membranes within the cytoplasm of the cell. They are involved in the transport of materials.
8. **(d)** cardiac muscles of heart
   Explanation: Cardiac muscles are present in the heart. They contract and relax rapidly, rhythmically, and tirelessly. They help to pump the blood to various parts of the body.
9. **(d)** When a body moves with constant speed its acceleration is zero
   Explanation: If a body with constant speed is travelling in the same direction(i.e. it is not changing its direction) then its velocity is constant and so its acceleration will be zero. But if the object is changing its direction then its velocity is also changing and so it possesses the acceleration.
   Hence, the given statement is incorrect.
10. **(a)** moves with constant velocity
    Explanation: If an object experiences a net-zero unbalanced force, then the body moves with constant velocity. Zero unbalanced forces produce no acceleration in the body and the body continues to move with the same velocity.
11. **(d)** Adding NaCl to water
    Explanation: Adding of common salt (NaCl) to water is physical change as no new substance is formed and no heat is evolved during the addition of salt in water. Also, salt can be obtained by evaporation.
12. **(c)** DNA and protein
    Explanation: Each chromosome is made up of DNA tightly coiled many times around proteins called histones that support its structure.
13. **(a)** muscles
    Explanation: Contractile proteins are found in muscles, as they are associated with the movement of body

or limbs. The contraction and relaxation of contractile proteins, present in muscles bring about movements of limbs, internal organs, etc.

14. **(a)** Newton's third law
Explanation: Newton's third law of motion is: For every action, there is an equal and opposite reaction.

15. **(c)** (A), (C) and (D) are correct
Explanation: Statement (B) is wrong as when you drop a ball from a height gravity provides acceleration. Also, the frictional force is a retarding force while gravitational force may be retarding or accelerating. The frictional force is a contact force whereas gravitational force acts from distance like from height.

16. **(d)** A clear filtrate and no residue in A, translucent filtrate and no residue in B, solid particles as residue and clear filtrate in C
Explanation: A clear filtrate and no residue in A, translucent filtrate and no residue in B, solid particles as residue and clear filtrate in C.



17. **(d)** Movement of water molecules from a region of higher concentration to a region of lower concentration through a semipermeable membrane
Explanation: Osmosis is the passive movement of water or any other solvent molecules from a region of higher water concentration to a region of lower water concentration through a semipermeable membrane.

18. **(a)** limbs
Explanation: Voluntary muscles are the muscles, which are under our complete control for, e.g., the working and movement of limbs. On the other hand involuntary muscles are controlled by hypothalamus, i.e., they are regulated rhythmically, e.g., alimentary canal, iris of the eye and bronchi of lungs.

19. **(b)** $\frac{u^2}{2g}$
Explanation: If a body is thrown vertically upwards with initial velocity "u"
Maximum Height of body = $\frac{u^2}{2g}$
As $2gh = v^2 - u^2$
At maximum height final velocity of body is zero.
$\Rightarrow v = 0$
So, $2gh = v^2 - u^2$
$2gh = -u^2$
$h = -\frac{u^2}{2g}$
Distance can't be negative so, $h = \frac{u^2}{2g}$.

20. **(d)** 0.5
Explanation: Impulse can also be expressed as the rate of change of momentum.
And Momentum= force × time $= 5 \times 0.1$
$= 0.5$ kg m/s

21. **(d)** Bromine
Explanation: Non-metals are not lustrous, sonorous, or malleable. Since bromine is a non-metal so 'Y' is bromine.

22. **(d)** Smooth endoplasmic reticulum
Explanation: The smooth endoplasmic reticulum lacks ribosomes and functions in lipid manufacture and metabolism, the production of steroid hormones, and detoxification.

23. **(a)** intercalary meristem
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.

24. **(d)** velocity of A exceeds beyond 10 ms^{-1}
Explanation: Distance = Velocity $\times$ Time $= 10 \times$ Time
The v-t graph shown here depicts the motion of A and B such that velocity of A exceeds beyond 10ms^{-1}.

Section B

25. **(b)** 1-B, 2-D, 3-A, 4-C
Explanation:
- Inertia depends on the mass of object.
- Friction is a necessary evil because neither movement of bodies not holding anybody would have been possible without friction.
- Momentum can be given as the product of mass and velocity.
- Force can be defined as the rate of change of momentum.

26. **(a)** 10
Explanation: Mitosis is a part of the cell cycle where replicated chromosomes are separated into two new nuclei. During mitotic division, the number of chromosomes in the daughter cells remains the same. Therefore, a cell having 10 chromosomes will produce daughter cells that have 10 chromosomes each.

27. **(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.

28. **(d)** tendons
Explanation: Each nerve cell or neuron Is composed of three parts
i. Cyton or cell body It contains central nucleus and cytoplasm with characteristic deeply stained particles called Nissl's granules (i.e., clumps of ribosome).
ii. Dendron These are short processes arising from cyton and further branching into dendrites.
iii. Axon It is a single long cylindrical process of uniform diameter which forms fine branches terminally. The dendrites receives impulses and the axon takes impulses away from the cell body.

29. **(a)** Ribosome
Explanation: Ribosomes are non membrane bound organelles that are found freely occurring in the cytoplasm.

30. **(b)** the acceleration
Explanation: The area under a velocity-time graph represents the distance covered and the gradient of a velocity-time graph represents the acceleration.

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

32. **(a)** Both A and R are true and R is the correct explanation of A.
Explanation: Exocytosis or cell vomiting is a process in which the waste materials from the cell are extruded through the plasma membrane by diffusing the vesicles containing materials that need to be taken out of the body. This process occurs in cells to remove undigested substances, secrete hormones, enzymes, and transport various substances.

33. **(c)** A is true but R is false.
Explanation: The surface of the skin is impervious to water because it is covered by stratified keratinized squamous epithelium. This epithelium has many superficial layers of horny, scale-like remains of dead squamous cells and several deeper layers of living polygonal cells. Heavy deposits of the insoluble protein keratin are present in the dead superficial layers which make this epithelium impervious to water. Stratified cuboidal epithelium, on the other hand, lines the inner surface of the sweat gland, large salivary, and pancreatic ducts.

34. **(b)** Both A and R are true but R is not the correct explanation of A.
Explanation: The speedometer of a car measures the instantaneous speed of the car.

35. **(a)** Both A and R are true and R is the correct explanation of A.
Explanation: Lysosomes help in autodigestion of cells hence they are regarded as a suicidal bag.

36. **(d)** All of these
Explanation: Iron filings and sulphur powder will form a heterogeneous mixture, particles can be easily seen and iron filings can be easily seen and iron filings can be removed by a magnet.

37. **(a)** magnetic separation followed by sublimation
Explanation: Sublimation is the best method for separating iodine from common salt (NaCl). Since iodine is sublimable, it will change to vapour state directly from solid when heated slightly and the iodine vapours can be collected while common salt remains as such.
Magnetic Separation method of separation is exemplified by the separation of iron filings.

38. **(c)** Conduction of water
Explanation: Skin has three layers: The epidermis, the outermost layer of skin, provides a waterproof barrier and creates our skin tone. The dermis, beneath the epidermis, contains tough connective tissue, hair follicles, and sweat glands. The deeper subcutaneous tissue (hypodermis) is made of fat and connective tissue

39. **(d)** move forwards
Explanation: Water moves forward due to inertia of motion. Inertia is an inherent property of an object to resist any change in its state of rest or of uniformmotion.

40. **(b)** Only kinetic energy remains conserved.
Explanation: When the body is dropped from a height, the potential energy decreases, and kinetic energy increases. After being fallen on the sand potential energy becomes zero and kinetic energy becomes maximum. Thus, a ball dropped from a height will conserve only kinetic energy.

41. **(b)** vacuole
Explanation: Vacuoles occupy a very large part of the cell volume in plants. Upton 95% of cellular volume can be occupied by them.

42. **(d)** Sclerenchyma
Explanation: Sclerenchyma Tissue makes the plant hard and stiff, thickened due to lignin and no inter cellular space. Cells of this tissue are dead and commonly seen in the husk of coconut.

43. **(b)** 1-C, 2-B, 3-D, 4-A
Explanation:
    - Frictional force is a contact force that opposes the motion of a body.
    - The force which is just enough to bring about change in state and tend a body to motion is called limiting force of friction.
    - The force of friction which is just sufficient to make a body slide over any surface is called sliding friction.
    - rolling friction acts upon when a body rolls over any surface.

44. **(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.

45. **(d)** Mixture of iron and sulphur reacts with HCl to give H_2 gas

    Explanation: If we will take a mixture of Fe and sulfur and add Dilute HCl only iron will react to form $FeCl_2$, reaction will takes place as follows

    $Fe + 2HCl \rightarrow FeCl_2 + HCl$

    But if the mixture of Fe and S is heated they form FeS. If we add HCl in FeS it will release H_2S, Reaction takes place as follows:
    $FeS + 2HCl \rightarrow FeCl + H_2S$

46. **(c)** The cytoplasm is called as protoplasm.
Explanation: Protoplasm is considered as the physical basis of life. The protoplasm of a cell consists of a

nucleus, cell membrane, and cytoplasm. Thus, the cytoplasm is a part of the protoplasm of the cell. The protoplasm is bound by the plasma membrane whereas the cytoplasm is the part of the protoplasm which surrounds the nucleus.

47. **(b)** muscle to bone
Explanation: A tendon is a fibrous connective tissue that attaches muscle to bone. Tendons may also attach muscles to structures such as the eyeball.

48. **(c)** heart
Explanation: Involuntary muscles are found in walls of hollow tubular organs like an alimentary canal, ducts of glands, urogenital ducts, and blood vessels except the heart. They show slow contractions but remain contracted for a long period of time.

Section C

49. **(b)** water is solvent and sugar is solute
Explanation: water is solvent and sugar is solute

50. **(b)** 1 nm in diameter
Explanation: 1 nm in diameter

51. **(d)** Pure substances contain only one kind of particle.
Explanation: Pure substances contain only one kind of particle.

52. **(b)** 30% zinc and 70% copper
Explanation: 30% zinc and 70% copper

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. **(a)** 8m
Explanation: 8m

58. **(c)** Car B is the slowest
Explanation: Car B is the slowest

59. **(d)** uniform acceleration
Explanation: uniform acceleration

60. **(d)** (I), (II) and (III)
Explanation: (I), (II) and (III)