

Science

Sample Question Paper 3 (Class 9) (Term – 1) (Session 2021-22)

Time: 1 hour 30 minutes

Number of Questions: 50

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

Section - A consists of 24 questions. Attempt any 20 questions from this section.
The first attempted 20 questions would be evaluated.

1. Two elements X and Y combine to give a product Z. The correct statement about Z is:
[A] Z has more mass than that of X.
[B] Z has less mass than that of X.
[C] Z has less mass than that of Y.
[D] Z show same properties as that of X and Y.
2. Which of the following statements is not true about the compound?
[A] Elements are combined chemically to form a compound.
[B] The constituents lose their properties.
[C] The constituents can be separated by simple physical methods.
[D] A compound is always homogeneous in nature.
3. Which of the following are homogeneous in nature?
(i) Ice (ii) Wood
(iii) Soil (iv) Air
[A] (i) and (iii)
[B] (ii) and (iv)
[C] (i) and (iv)
[D] (iii) and (iv)
4. Select the homogeneous mixture from the following:
[A] Carbon dioxide gas dissolved in water.
[B] Air containing suspended particles.
[C] Soap bubbles formed by blowing air into soap solution.
[D] Water in milk.
5. Small pores on epidermis of the leaf are called ____ (A) ____ which are enclosed by ____ (B) ____ cells called guard cells.
[A] A=Stomata, B=Bell-shaped
[B] A=Cuticle, B=Stomata
[C] A=Stomata, B=Kidney-shaped
[D] A=Cuticle, B=Kidney-shaped

6. Match the following columns:

	Column I	Column II
A.	Aerenchyma	1. Stores food
B.	Collenchyma	2. Flexibility
C.	Parenchyma	3. Buoyancy
D.	Chlorenchyma	4. Photosynthesis

[A] A=2, B=3, C=4, D=1

[B] A=1, B=2, C=3, D=4

[C] A=3, B=2, C=1, D=4

[D] A=4, B=3, C=2, D=1

7. Which is not a function of epidermis?

[A] Protection from adverse condition.

[B] Gaseous exchange

[C] Condition of water

[D] Transpiration

8. Survival of plants in terrestrial environment has been made possible by the presence of

[A] Intercalary meristem

[B] Conducting tissue

[C] Apical meristem

[D] Parenchymatous tissue

9. Xylem fibres has role in storage of food:

[A] True

[B] False

[C] Can't say

[D] Partially true or false

10. Fats are stored human body as

[A] Cuboidal Epithelium

[B] Adipose tissue

[C] Bones

[D] Cartilage

11. Match the following columns:

	Column I	Column II
A.	Chlamydomonas	1. Multicellular Organism
B.	Prokaryotes	2. Organism having nuclear membrane
C.	Fungi	3. Unicellular organisms
D.	Eukaryotes	4. Organism without a nuclear membrane

[A] A=3, B=4, C=1, D=2

[B] A=1, B=2, C=3, D=4

[C] A=2, B=4, C=1, D=3

[D] A=4, B=3, C=2, D=1

12. A cell will swell up if

[A] The concentration of water molecules in the Cell is higher than the concentration of water molecules in surrounding medium.

[B] The concentration of water molecules in surrounding medium is higher than water molecules concentration in the cell.

[C] The concentration of water molecules is same in the cell and in the surrounding medium.

[D] Concentration of water molecules does not matter.

13. Select the odd one out:

[A] The movement of water across a semi- permeable membrane is affected by the amount of substances dissolved in it.

[B] Membranes are made of organic molecules like proteins and lipids.

[C] The cell membrane separates the content of the cell from its external environment.

[D] The cell membrane allows the movement of all material across it.

14. Plasmolysis in a plant cell is defined as:

- [A] Breakdown (lysis) of plasma membrane in hypotonic medium.
- [B] Shrinkage of cell content in hypotonic medium.
- [C] Shrinkage of nucleoplasm.
- [D] None of the above.

15. The nucleus has a double layered covering called

- [A] Cell membrane
- [B] Nuclear membrane
- [C] Cell wall
- [D] Plasma membrane

16. The undefined nuclear region of prokaryotes are also known as:

- [A] Nucleus
- [B] Nucleolus
- [C] Nucleic acid
- [D] Nucleoid

17. A particle moving in a straight line covers half the distance with speed of 3 metre per second. Another half of the distance is covered in two equal time intervals with the speed of 4.5 metre per second and 7.5 metre per second respectively. The average speed of the particle duration during this motion is

- [A] 4.0 m/s
- [B] 5.0 m/s
- [C] 5.5 m/s
- [D] 4.8 m/s

18. Rajeev went from Delhi to Chandigarh and return to Delhi on his motorbike. The odometer of that read 4200 km at the start of trip and 4460 km at the end of his trip. If Rajeev took 4 hour 20 minutes to complete his trip, then find the average velocity in kilometre per hour.

- [A] Zero
- [B] 60 km/h
- [C] 6 km/h
- [D] 180 km/h

19. A woman is wearing her seat belt, while driving at 60 km per hour. She finds it necessary to slam on her brakes and slows uniformly to a stop in 1.6 second. What is the average acceleration experienced by her?

- [A] - 10.4 meter per second square
- [B] 10.4 meter per second square
- [C] 1.04 meter per second square
- [D] - 1.04 meter per second square

20. Match the column I with column II and choose the appropriate option from the codes given below:

Column I (Acceleration)	Column II (Example)
A. In the direction of motion.	1. Motion of freely falling body.
B. Against direction of motion.	2. Car moves through congested market.
C. Uniform.	3. Brakes applied to moving car.
D. Non-uniform.	4. Train starts moving from a station.

- [A] A=1, B=2, C=3, D=4
- [C] A=4, B=3, C=1, D=2

- [B] A=3, B=2, C=1, D=4
- [D] A=2, B=4, C=1, D=3

21. An object of mass 2 kg is sliding with a constant velocity of 4 ms⁻¹ on a frictionless horizontal table. The force required to keep the object moving with the same velocity is:

- [A] 32 N
- [B] 0 N
- [C] 2 N
- [D] 8 N

22. What will be the percentage change in momentum of a body when both its mass and velocity are doubled?

[A] 400

[B] 75

[C] 500

[D] 300

23. 1 Newton is defined as the force which gives a mass of 1 kg and acceleration of:

[A] 1 km/h

[B] 1 m/s

[C] 1 km/h²

[D] 1 m/s²

24. What is the numerical formula for force?

[A] $F = ma$

[B] $F = m/a$

[C] $F = ma^2$

[D] $F = a^2m$

SECTION - B

Section - B consists of 24 questions (Sl. No. 25 to 48). Attempt any 20 questions from this section. The first attempted 20 questions would be evaluated.

25. A horse pulling a Tanga moves forward due to the force exerted by



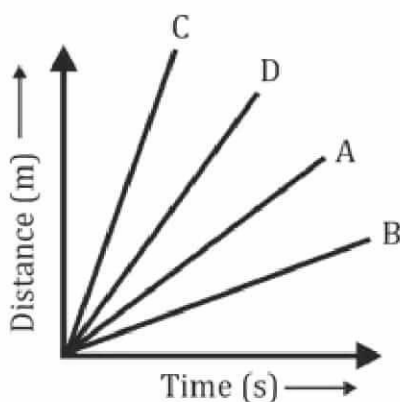
[A] The horse on the ground with his feet.

[B] The horse on the Tanga.

[C] The ground on the horse feet.

[D] The Tanga on the horse.

26. 4 cars A, B, C, D are moving on a levelled road. Their distance versus time graph are shown in figure. Choose the correct statement:



[A] Car A is faster than Car D.

[B] Car B is the slowest.

[C] Car D is faster than Car C.

[D] Car C is the slowest.

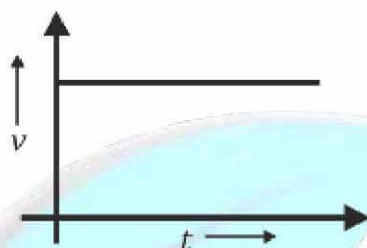
27. The displacement time graph for two particles A and B are straight line inclined at angles of 30° and 60° with the time axis. The ratio of velocities $V_1: V_2$ is

- [A] 1:2 [B] $1:\sqrt{3}$
[C] $\sqrt{3}:1$ [D] 1:3

28. Slope of a velocity time graph gives:

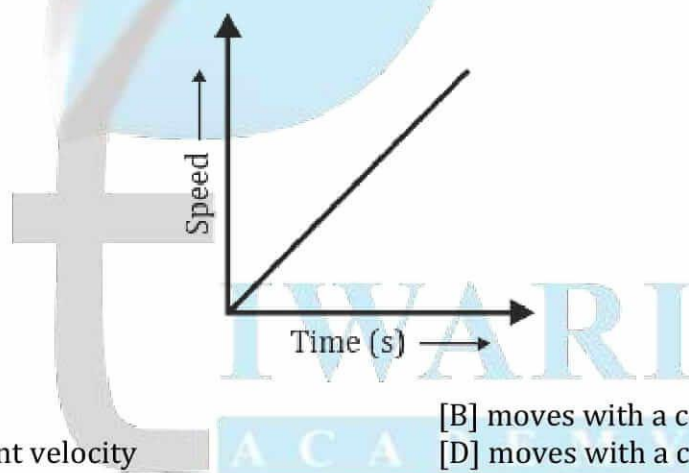
- [A] The distance [B] The displacement
[C] The acceleration [D] The speed

29. From the given V -t graph (see figure), it can be inferred that the object is



- [A] in uniform motion [B] at rest
[C] in non-uniform motion [D] moving with uniform acceleration.

30. The speed-time graph of an object moving in a fixed direction is shown in figure.



The object –

- [A] is at rest [B] moves with a constant speed
[C] moves with a constant velocity [D] moves with a constant acceleration

Question No. 31 to 35 consists of two segments – Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below:

- [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** but **R** is **false**
[D] **A** is **False** but **R** is **true**.

31. Assertion (A): A solution of table salt in a glass of water is homogeneous.

Reason (R): A solution having different composition throughout is homogeneous.

- [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 but R is false
[D] A is False but R is true.

32. Assertion (A): Apical meristematic is present at shoot and roots tips.

Reason (R): It helps in the longitudinal growth of plants.

[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 but R is false

[D] A is False but R is true.

33. Assertion (A): Prokaryotic cells are primitive and larger than Eukaryotic cells.

Reason (R): Prokaryotic cells lack cytoplasmic organelles.

[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 but R is false

[D] A is False but R is true.

34. Assertion (A): The average and instantaneous velocity have same value in a uniform motion.

Reason (R): In uniform motion, the velocity of an object increase uniformly.

[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 but R is false

[D] A is False but R is true.

35. Assertion (A): Inertia is the property by virtue of which the body is unable to change by itself the state of rest only.

Reason (R): The bodies do not change their state unless acted upon by an unbalanced external force.

[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 but R is false

[D] A is False but R is true.

36. Mixture are always combination of the same compounds that are in different states:

[A] True

[B] False

[C] Can't say

[D] Partially true or false

37. Which one of the following statements will result in the formation of a mixture?

I. Crushing marble tile into small particles.

II. Breaking ice cubes into small pieces.

III. Adding sodium metal to water.

IV. Adding milk in water.

[A] I, II and III

[B] I, II and IV

[C] III and IV

[D] Only IV

38. Which of the following statement is correct?

[A] A mixture containing two compounds must be heterogeneous.

[B] A heterogeneous mixture must contain at least 3 elements.

[C] A homogeneous mixture must be uniform.

[D] A Pure substance must contain only one type of atoms.

39. Find out incorrect sentence:

[A] Parenchymatous tissues have intercellular space.

[B] Collenchymatous tissues are irregularly thickened at corners.

[C] Apical and intercalary meristem are permanent tissues.

[D] Meristematic tissues in its early stages lack vacuoles.

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40. On what basis, animal tissues are categorised into four types?

- [A] Functions and origin.
- [B] Origin and structure.
- [C] Functions only.
- [D] Structures and functions.

41. What is true for epithelial cells?

- [A] It is highly vascularized.
- [B] Cells are loosely packed with large intercellular matrix.
- [C] Cells are compactly packed with little intercellular matrix.
- [D] It is a supporting tissue.

42. Choose the incorrect statement

- [A] Lysosomes form the garbage disposal system of animal cells.
- [B] Ribosome carries out the synthesis of proteins.
- [C] Liquid content of the vacuole in a plant cell is called cell SAP.
- [D] The colourless plastids that store proteins, lipids and starch is named xanthophyll.

43. Functional segments of DNA are called ____ (A) ____ In a Cell which is not dividing, the DNA is present as ____ (B) ____ material.

Choose the correct option for A and B respectively are:

- | | |
|-----------------------|----------------------------|
| [A] Chromosomes, gene | [B] Gene, chromatin |
| [C] Chromatin, gene | [D] Chromosomes, chromatin |

44. Cell organelles are present in

- | | |
|---------------|---------------------|
| [A] Cytoplasm | [B] Plasma membrane |
| [C] Nucleus | [D] Nucleoid |

45. Two forces are acting on a body in different direction, then acceleration produced in the body is due to



- | | |
|-------------------------------|------------------------|
| [A] Resultant of both forces | [B] Sum of both forces |
| [C] Difference of both forces | [D] None of the above |

46. A goalkeeper in a game of football pulls his hands backwards after holding the ball shot at the goal. This enables the goalkeeper to

- [A] Exert larger force on the ball.
- [B] Reduce the time for which force is exerted by the ball on hands.
- [C] Increase the rate of change of momentum.
- [D] Decrease the rate of change of momentum.

47. A force acts on a body of mass 5 kg and changes its velocity from 8 metre per second to 12 metre per second in 4 second, then magnitude of force is

[A] 8 N

[B] 4 N

[C] 5 N

[D] 6 N

48. A cell that has large central vacuole is

[A] Plant cell

[B] Animal cell

[C] Bacterial cell

[D] Yeast cell

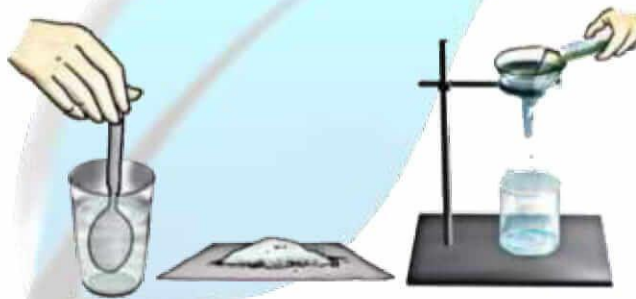
SECTION - C

Section - C consists of three Cases followed by questions. There are a total of 12 questions in this section. Attempt any 10 questions from this section.

The first attempted 10 questions would be evaluated.

Case - 1:

A mixture is composed of two or more types of matter that can be present in different amounts. Mixtures are either homogeneous or heterogeneous. Homogeneous mixtures are uniform in composition but heterogeneous mixtures are not uniform in composition.



Different methods of separation are used to get individual components from a mixture. Separation makes it possible to study and use the individual components of a mixture. Heterogeneous mixtures can be separated into their respective constituents by simple physical methods like hand picking, sieving filtration that we use in our day-to-day life.

Sometimes special techniques have to be used for the separation of the components of a mixture for examples, distillation, centrifugation, chromatography etc.

49. The separation of a mixture is done to

[A] Maintain equal composition of substance.

[B] Obtain a pure sample of a substance.

[C] Make it homogeneous mixture.

[D] All of the above.

50. The mixture of ethyl alcohol and water can be separated by

[A] Distillation

[B] Centrifugation

[C] Filtration

[D] Chromatography

51. Which of the following technique is used by farmers in village to purify food grains?

[A] Sieving

[B] Hand picking

[C] Winnowing

[D] All of these

52. The principle of separation based on

[A] The difference in sizes of constituents.

[B] The difference in physical or chemical properties of constituents.

[C] The different techniques.

[D] All of the above.

Case - 2:

The body of all organisms are made up of tiny microscopic units called cell. All basic function of the body like respiration, excretion are carried out by cell. The shape and size of cells are related to the specific function they perform. Some cells like Amoeba have changing shapes.

In some cases, the cell shape could be more or less fixed and peculiar for a particular type of cell; for example, nerve cells have a typical shape. Each living cell has the capacity to perform certain basic functions that are characteristic of all living forms. There is a division of labour in multicellular organisms such as human beings. This means that different parts of the human body perform different functions.



The human body has a heart to pump blood, a stomach to digest food and so on. Similarly, division of labour is also seen within a single cell. In fact, each such cell has got certain specific components within it known as cell organelles. Each kind of cell organelle performs a special function, such as making new material in the cell, clearing up the waste material from the cell and so on.

A cell is able to live and perform all its functions because of these organelles. These organelles together constitute the basic unit called the cell. Thus, the cell is the fundamental structural unit of living organisms. It is also the basis functional unit of life.

53. The first cell was observed in

- [A] Bread slice
- [C] Cork slice

- [B] Onion peel
- [D] Cheek cells

54. Animal cell lacking nuclei would also lack in

- [A] Ribosomes
- [C] Endoplasmic reticulum

- [B] Lysosomes
- [D] Chromosomes

55. Which of the following statement is correct?

- [A] Prokaryotic cells are surrounded by a cell membrane.
- [B] Prokaryotic cells have a nucleus and cell organelles.
- [C] Eukaryotic cells have membrane bound organelles.
- [D] Eukaryotic cells are associated with nucleoid.

56. In a cell, DNA is found in

- [A] nucleus, mitochondria, and plastids.
- [B] Nucleus, mitochondria and vacuoles.
- [C] Plastids, nucleus and Golgi bodies.
- [D] Mitochondria, Golgi bodies and lysosomes.

Case – 3:

A rocket is used for carrying a satellite, etc. to a suitable height above the ground. Thrust is generated by the propulsion system of the aircraft. For every action there is an equal and opposite reaction. The fuel in the rocket is burnt and exhaust gases are made to escape in the downward direction through a narrow nozzle.



As a reaction, rocket moves upwards. Rocket works on the principle of conservation of momentum. According to the principle of conservation of linear momentum, the linear momentum of mass of rocket at any instant must be equal to vector sum of linear momentum of rocket and linear momentum of exhaust gases as the exhaust gases escape. The residual mass of rocket decreases with time. Motion of rocket is an accelerated motion.

57. How is mass of rocket related to the mass of gases it expels?

- [A] Mass of rocket is greater than mass of gases it expels.
- [B] Mass of rocket is less than mass of gases it expels.
- [C] Mass of rocket is equal to mass of gases it expels.
- [D] Mass of rocket is not related to the mass of gases it expels.

58. The fuel in the rocket is burnt and exhaust gases are made to escape in

- [A] Parallel to rocket
- [B] Upward direction
- [C] Perpendicular to rocket
- [D] Downward direction

59. The statement "For every action there is an equal and opposite reaction", is related to which of the following?

- [A] Newton's first law
- [B] Newton's second law
- [C] Newton's third law
- [D] Law of conservation of momentum.

60. What type of motion is described by the rocket?

- [A] Uniform
- [B] Accelerated
- [C] Both (a) and (b)
- [D] None of these.