

JB ACADEMY
Half Yearly Examination
Class IX, Science

Max. Marks: 80

Time Allowed: 3 hours

General Instructions:

- i. This question paper consists of 39 questions in 5 sections.
- ii. All questions are compulsory. However, an internal choice is provided in some questions.
- iii. Section A consists of 20 objective type questions carrying 1 mark each.
- iv. Section B consists of 6 Very Short questions carrying 02 marks each. Answers to these questions should be in the range of 30 to 50 words.
- v. Section C consists of 7 Short Answer type questions carrying 03 marks each. Answers to these questions should be in the range of 50 to 80 words.
- vi. 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.
- vii. Section E consists of 3 source-based/case-based units of assessment of 04 marks each with sub-part.

Section-A

Select and write the most appropriate option out of the four options given for each of the questions 1 - 20. There is no negative mark for incorrect response.

1. Which of the following substance is unable to undergo sublimation
a) Camphor b) Naphthalene c) Common salt d) dry Ice
2. Which of the following is a set of Metalloids
a. Silver, Gold, Platinum b. Boron, Silicon, Germanium
c. Aluminium, Zinc, Silicon d. Germanium, Uranium, Plutonium
3. A mixture of sulphur in carbon di sulphide is
a. Heterogeneous and show Tyndall effect
b. Heterogeneous and don't show Tyndall effect
c. Homogeneous and show Tyndall effect
d. Homogeneous and doesn't show Tyndall effect
4. Arun has prepared 0.01% (by mass) solution of sodium chloride in water. Which of the following represents the correct composition of the solution
a) 1.00g of NaCl + 100 g of water b) 0.11g of NaCl + 100 g of water
c) 0.01g of NaCl + 99.99 g of water d) 0.10 g of NaCl + 99.90g of water
5. Which of the following is a matter.
a. Joy b) Sorrow c) gratitude d) Tears
6. Consider the following statements about gasses
i) Gases exert pressure ii) The intermolecular forces is very strong in gasses
iii) Gases are highly compressible iv) Gases have weaker diffusion rate.

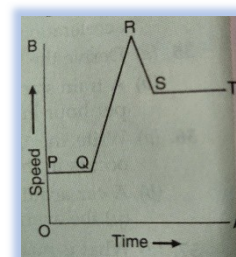
The correct statement are

- a. i ii and iii only b) ii iii iv only c) i and iii only d) ii and iii only

7. An object is thrown vertically upwards with a velocity u , the greatest height h to which it will rise before falling back is given by
 a. u/g b. $u^2/2g$ c. u^2/g d. $u/2g$
8. Plasmolysis in a plant cell is defined as
 a. breakdown of plasma membrane in hypotonic medium.
 b. shrinkage of cytoplasm in hypertonic medium.
 c. shrinkage of nucleoplasm.
 d. none of these.
9. Rough endoplasmic reticulum is the site for synthesis of
 a. carbohydrates b. protein c. cholesterol d. Saccharides
10. Organised chromatin material for cell division is
 a. Genes b. Nucleus c. Chromosomes d. None of these
11. Meristematic tissues in plants are
 a. localised and permanent b. not limited to certain regions.
 c. localised and dividing cells d. growing in volume.
12. In desert plants, rate of water loss is reduced due to the presence of
 a. cuticle b. stomata c. lignin d. Suberin
13. An object of mass 2 kg is sliding with a constant velocity of 4m/s on a frictionless horizontal table. The force required to keep this object moving with the same velocity is:
 a. 32 N b. 0 N c. 2 N d. 8 N
14. The inertia of a moving object depends on:
 a. Momentum of the object b. Speed of the object
 c. Mass of the object d. Shape of the object
15. A motorcycle is being driven at a speed of 20 m/s when brakes are applied to bring it to rest in five seconds. The deceleration produced in this case will be:
 a. $+4 \text{ m/s}^2$ b. -4 m/s^2 c. $+0.25 \text{ m/s}^2$ d. -0.25 m/s^2

16. A student draws a distance-time graph for a moving scooter and finds that a section of the graph is a horizontal line parallel to the time axis. Which of the following conclusion is correct about this section of the graph?

- a. the scooter has uniform speed in this section
 b. the distance travelled by scooter is the maximum in this section
 c. the distance travelled by the scooter is the minimum in the section
 d. the distance travelled by the scooter is zero in this section



Question No. 17 to 20 consist of two statements – Assertion (A) and Reason (R). Answer these questions by 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.

17. Assertion: - If the dispersed phase is liquid and the dispersion medium is solid, the Colloid is called Emulsion.

Reason: - Milk is a well-known example of Emulsion.

18. Assertion: Every object exerts gravitational force on each other.

Reason: Gravitational force is inversely proportion to the square of the distance

19. Assertion: Jet Aeroplane utilize the principal of Action and Reaction.

Reason: According to the Newton's third law of motion every Action has equal and opposite Reaction.

20. Assertion: Most mature plants have a large central vacuole.

Reason: The large central vacuole helps in removing the excess water entering the cell and prevents it from bursting.

Section-B

Question No. 21 to 26 are very short answer questions

21. Identify solute and solvent in the following mixtures -

- a.. Tincture of Iodine b) Air c) Aerated drinks d) Ink

22. How temperature in Celsius and Kelvin are related to each other? Convert the following : 375 K to Celsius scale and 50^o Celsius to Kelvin scale.

23. Give one word or phrase for the following statements.

- Organelle responsible for lysosome formation.
- Organelle other than nucleus having its own genetic material.
- Organelle which is also known as suicidal bag of the cell.
- Plastids that contain pigments other than chlorophyll.

24. A train travelling at 20 m/s accelerates at 0.5 m/s² for 30s. How far will it travel in this time?

25. Do action and Reaction act on the same body or different bodies? How are they related in magnitude and direction? Are they simultaneous or not ?

26. Why are large cavities found in parenchyma of aquatic plants? What are such type of parenchyma tissues called?

Section-C

Question No. 27 to 33 are short answer questions

27.a) A solution is prepared by dissolving 2g of salt and 4g of sugar in 90g of water.

Calculate the concentration of the solution. Which method of concentration is used here?

b) Which property of gas is used in supplying oxygen cylinders to Hospitals?

28. Give reason - (Any three)

- Change in colour of black tea on adding lemon juice is a chemical change.
- Boiling is a bulk phenomenon whereas Evaporation is a surface phenomenon.
- Particles of true solution do not scatter the beam of light passing through them.
- On suffering from high fever keeping wet cloth strips on the forehead, lowers down the temperature.

29. Name the following.

- Non-living elongated cell of xylem with tapering ends.
- Tissue that gives crunchy feeling in pear.

- c. Tissue that makes husk of coconut.
- d. Cell organelle that helps in synthesis of lipids or fat.
- e. A non-living component of phloem tissue.
- f. Cell organelle that helps in cell respiration.

30. Give reasons. (Any three)

- a. Viruses are an exception to cell theory.
- b. Salt is added to cut pieces of mango before making pickles.
- c. RBCs shrink when kept in concentrated sugar solution.
- d. Meristematic cells do not have vacuole but have a prominent nucleus.

31. Draw and identify different elements of phloem. Write functions of living components of phloem.

OR

- 31. a)** If the tip of a sugarcane plant is removed from the field, even then it keeps on growing in length. Explain.
b) The root tips of a plant were cut and the plant was replanted. What will happen to the plant and why?

32. Calculate the value of acceleration due to gravity on the surface of the moon.
 (Given: Mass of moon = 7.4×10^{22} kg; Radius of moon = 1740 km; $G = 6.7 \times 10^{-11}$ Nm²/kg²)

33. To estimate the height of a bridge over a river, a stone is dropped freely in the river from the bridge. The stone takes 2 seconds to touch the water surface in the river. Calculate the height of the bridge from the water level ($g = 9.8$ m/s²).

Section-D

Question No. 34 to 36 are long answer questions

34. Differentiate between Solid, Liquid and Gaseous state of matter on the basis of Interparticle space, Interparticular force, Kinetic energy, Diffusion, Rigidity/Fluidity With suitable examples.
 Write one similarity in the three states of matter.

OR

- a) Air is a mixture and not a compound. Give reasons to justify this statement
 - b) List any three differences between Suspension and Colloid with examples.
- 35. a)** Differentiate between sclerenchyma and collenchyma tissues. Draw well labelled diagrams also.
b). What are protective tissues in plants. Name them and explain their functions.
- 36. (a)** State and explain Newton's second law of motion.
(b) A 1000 kg vehicle moving with a speed of 20 m/s is brought to rest in a distance of 50 meters:
 (i) Find the acceleration.
 (ii) Calculate the unbalanced force acting on the vehicle.

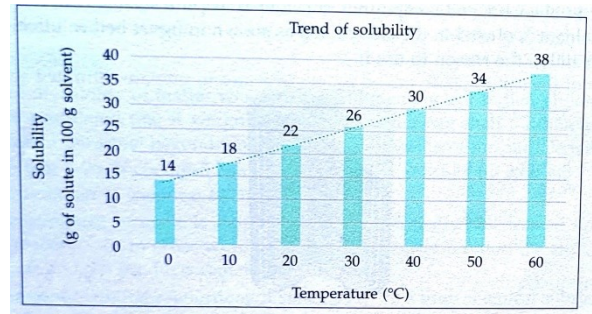
Section – E

Question No.37 to 39 are case-based/data-based questions with 2 to 3 short sub-parts. Internal choice is provided in one of these sub-parts.

37. A solution is a homogeneous mixture of two or more substances. Some of the common examples of a solution are salt solution, air, vinegar, etc. Generally, there are two components of a solution, the solute and the solvent. The solute is the one that is

dissolved into the solvent. The amount of solute that can be dissolved in a solvent depends on the temperature. The temperature dependence of solubility is given for a solution of common salt in water.

On the basis of the above case and the related studied concepts, answer the following questions:



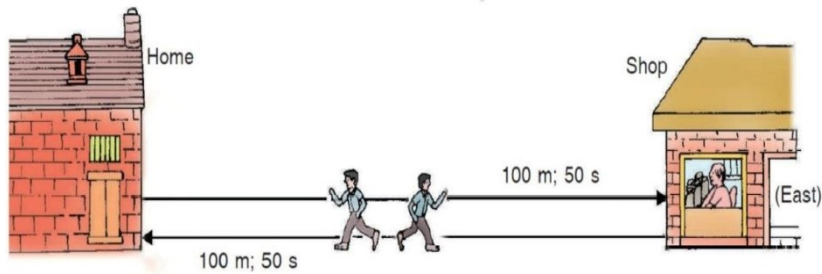
- (a) On increasing the temperature, solubility
 (i) increases (ii) decreases
 (iii) remains constant (iv) first increases and then decreases
- (b) What is the solubility of the substance at 30 °C?
 (i) 22 g (ii) 38 g (iii) 25 g (iv) 26 g
- (c) Solubility depends upon in
 (i) nature of solute (ii) temperature (iii) nature of solvent (iv) all of the above
- (d) What is a saturated solution?

38. Read the passage and answer the questions.

When the cells formed by meristematic tissues take up a specific role and lose the ability to divide, they are called permanent tissues. Permanent tissues may be simple or complex. Complex permanent tissues consist of more than one type of cells, which coordinate to perform a common function. Xylem and phloem are examples of such complex tissues. They are also called conducting tissues as they transport essential substances within the plant body.

- a. Which of the following is the dead cell?
 (i) sieve tube (ii) companion cell (iii) phloem fibre (iv) phloem parenchyma.
- b. Which of the following statement/s is or are correct?
 (i) Tracheid and vessels are tubular structures.
 (ii) Xylem fibres are supportive in function.
 (iii) Sieve cells are a living component of phloem.
 (iv) All the above statements are correct.
- c. Name the living component of xylem and state its function.
- d. State main characteristics of complex tissues.

39. Suppose the boy first runs a distance of 100 metres in 50 seconds in going from his home to the shop in the East direction, and then runs a distance of 100 metres again. in 50 seconds in the reverse direction from the shop to reach back home from where he started (see Figure). **[Attempt any four]**



(i) Find the speed of the boy.

- (a) 1 m/s (b) 2 m/s (c) 3 m/s. (d) none of these

(ii) Find the Velocity of the boy.

- (a) 1 m/s (b) 2 m/s (c) 3 m/s (d) 0 m/s

(iii) A boy is sitting on a merry-go-round which is moving with a constant speed of 10m/s. This means that the boy is:

- (a) at rest (b) moving with no acceleration
 (c) in accelerated motion (d) moving with uniform velocity

(iv) In which of the following cases of motion, the distance moved and the magnitude of displacement are equal ?

- (a) if the car is moving on straight road (b) if the car is moving on circular road
 (c) if the pendulum is moving to and fro (d) if a planet is moving around the sun

(v) A particle is moving in a circular path of radius r . The displacement after half a circle would be :

- (a) 0 (b) πr (c) $2r$ (d) $2\pi r$

