Class IX Session 2024-25
Subject - Science
Sample Question Paper - 1

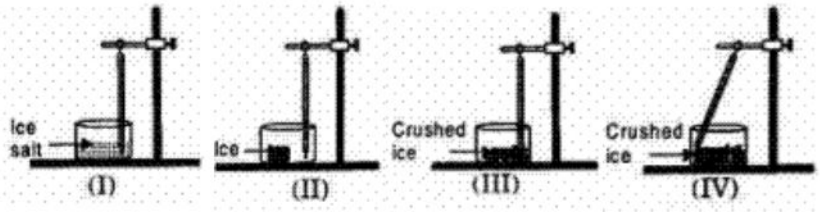
Time Allowed: 3 hours **Maximum Marks: 80**

General Instructions:

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

Section A

1. Which one of the following is the correct set up to determine the melting point of ice? **[1]**



a) I b) III

c) IV d) II

2. Engulfing of food materials or foreign bodies by cells like Amoeba is called: **[1]**

a) plasmolysis b) diffusion

c) osmosis d) endocytosis

3. Which of the following gives both direction and magnitude? **[1]**

a) Unit Scalar b) Scalar

c) Unit Vector d) Vector

4. Which of the following is the fastest growing carp? **[1]**

a) Singhara b) Rohu

c) Mrigal

d) Catla

5. Nerve cell does not contain **[1]**

a) axon

b) nerve endings

c) dendrites

d) tendons

6. Which of the following is correct for the given figure? **[1]**

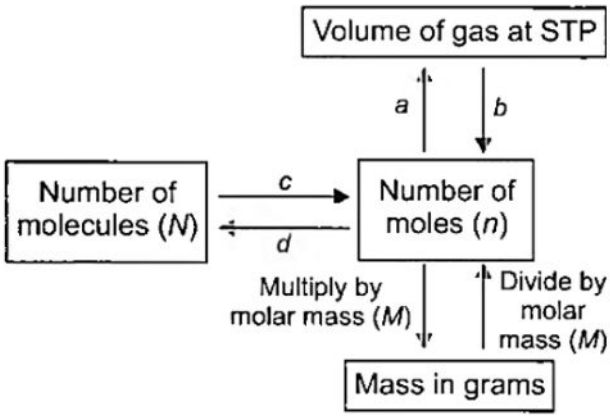
a) The parts labelled ‘a’, ‘b' and ‘c’, all possess photosynthetic pigments such as chlorophyll.

b) The part labelled ‘a’ is the site of dark reaction.

c) The part labelled ‘c’ is called granum.

d) The part labelled ‘b’ is called intergranal thylakoid.

7. What are a and b? **[1]**



a) a = divide by 22.4 L, b - multiply by 22.4 L

b) a = divide by 22.4 L, b = divide by 22.4 L

c) a = multiply by 22.4 L, b = multiply by 22.4 L

d) a = multiply by 22.4 L, b = divide by 22.4 L

8. Smooth muscle consists of _____ filaments that are not arranged into sarcomeres giving it a non-striated pattern. **[1]**

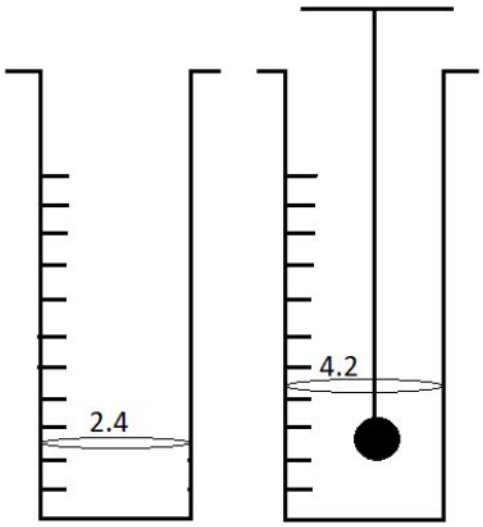
a) plain and large

b) curved and large

c) thick and thin

d) long and straight

9. The position of the water level, in a measuring cylinder, before and after immersing a solid in it, are as shown in the figure given below. The volume of the given solid (in cm^3) is : **[1]**



a) 2.2

b) 1.8

c) 4.2

d) 6.6

10. The speed of a train increases at a constant rate a from zero to v, and then remains constant for an interval, and finally decreases to zero at a constant rate p. If L be the total distance travelled, then the total time taken is **[1]**

a) $\frac{L}{v}+\frac{1}{v}\left(\frac{1}{\alpha}+\frac{1}{\beta}\right)$

b) $\frac{L}{v}+\frac{v}{2}\left(\frac{1}{\alpha}+\frac{1}{\beta}\right)$

c) $\frac{L}{v}+\frac{2}{v}\left(\frac{1}{\alpha}+\frac{1}{\beta}\right)$

d) $\frac{L}{v}+2v\left(\frac{1}{\alpha}+\frac{1}{\beta}\right)$

11. If K, L, M, N, shells of an atom are full. The total number of electrons in that atom are: **[1]**

a) 26

b) 36

c) 60

d) 42

12. To prepare a mount of human cheek cell, the sample is collected from: **[1]**

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

13. Plasmolysis in a plant cell is defined as **[1]**

a) shrinkage of nucleoplasm

b) shrinkage of cytoplasm in hypertonic medium

c) break down (lysis) of plasma membrane in hypotonic medium

d) shrinkage of nucleolus

14. A change is said to be a physical change when **[1]**

a) No energy change occurs

b) All statements are correct

c) The change can be easily reversed

d) No new substances are formed

15. Select the correct statement(s). **[1]**

i. A solution in which size of the solute particles is about 10^{-10} m, is called true solution.

ii. A solution which contains maximum possible amount of solute at any given temperature is called a saturated solution.

iii. In suspension, the size of particles is of the order of 10^{-7} m or larger.

iv. A colloid is a heterogeneous system.

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

16. The enrichment of water bodies with nutrients leading to excessive growth of phytoplankton is known as:- **[1]**

a) Ammonification
b) Nitrification
c) Eutrophication
d) Phyto-enrichment.

17. **Assertion (A):** A boy is enjoying a ride on a merry-go-round which is moving at a constant speed of 10 m/s. The boy is in uniform accelerated motion. **[1]**
Reason (R): A body has a uniform acceleration if it travels in a straight line and its velocity first decreases then increases by equal amounts in equal intervals of time.

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

18. **Assertion (A):** Solids do not diffuse in air. **[1]**
Reason (R): The particles are closely packed in solids.

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

19. **Assertion (A):** Vessel and sieve tubes both are meant for transport purposes. **[1]**
Reason (R): Vessels are lignified.

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.

20. **Assertion (A):** Atom is electrically neutral. **[1]**
Reason (R): A neutral particle, neutron is present in the nucleus of atom.

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

Section B

21. What is the work done by the force of gravity on a satellite moving round the earth? Justify your answer. **[2]**

OR

A boy of mass 40 kg runs up flight of 50 steps each 10 cm high in 5 second. Find

i) the work done by the boy ii) the power developed. ($g = 9.8\ ms^{-2}$)

22. Why do substance undergo change in physical state? **[2]**

23. When vertically jerk is given to a string, transerve waves are formed. Give three features of these waves. **[2]**

24. For any substance, why does the temperature remain constant during the change of state? **[2]**

25. Why do the driver and the person seated in front seat need a seat belt? **[2]**

OR

A stone of 1 kg is thrown with a velocity of 20 ms^{-1} across the frozen surface of the lake and comes to rest after travelling a distance of 50 m. What is the force of friction between the stone and the ice?

26. Helium atom has atomic mass of 4u and has two protons in its nucleus. How many neutrons does it have? **[2]**

Section C

27. Draw a curve showing density or pressure variations with respect to distance for a disturbance produced by sound. Mark the position of compression and rarefaction on this curve. Also, define wavelengths and time period using this curve. **[3]**

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

	X	Y
Protons	6	6
Neutrons	6	8

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

29. Draw the graph for uniform retardation - **[3]**

a. position - time graph

b. velocity - time graph

c. Acceleration- time graph

OR

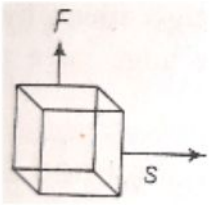
A particle moves in a circle with O as centre and AO = OB = 5 cm, radius, as shown in the figure. It starts from A. Calculate.

a. the distance covered, and

b. the displacement, when it reaches B.

30. In each of the following, a force F is acting on an object of mass m. The direction of displacement is from West to east shown by the longer arrow. Observe the figure carefully and state whether the work done by the force is negative, positive or zero. **[3]**

i.



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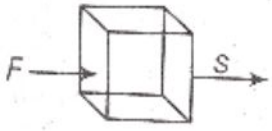
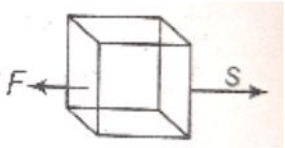


iii. 

31. Give reason for the following: **[3]**

i. Road accidents occurring due to high speeds are much worse than accidents due to low speeds of vehicles.

ii. When a motorcar makes a sharp turn at a high-speed, passenger tends to get thrown to one side.

32. Differentiate between active and passive transport. **[3]**

OR

How can you calculate the magnification of a microscope?

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

Section D

34. i. At some moment, two giant planets Jupiter and Saturn of the solar system are in the same line as seen from the earth. Find the total gravitational force due to them on a person of mass 50 kg on the earth. Could the force due to the planets be important? **[5]**

Mass of the Jupiter = 2×10^{27} kg

Mass of the Saturn = 6×10^{26} kg

The distance of Jupiter from the earth = 6.3×10^{11} m

The distance of Saturn from the earth = 1.28×10^{12} m

ii. A bag of sugar weighs 'w' at a certain place on the equator. If this bag is taken to Antarctica, then will it weigh the same or more or less. Give a reason for your answer.

OR

i. A person weighs 110.84 N on the moon, whose acceleration due to gravity is 1/6 of that the earth. If the value of g on the earth is 9.8 m/s^2, then calculate

a. g on the moon

b. mass of person on the moon

c. weight of person on the earth

ii. How does the value of g on the earth is related to the mass of the earth and its radius? Derive it.

35. What are cell organelles? Write the names of different cell organelles. **[5]**

OR

i. Describe the role played by the lysosomes. Why are they termed as suicidal bags? How do they perform their function?

ii. What happens to the dry raisins, when placed in plain water for some time? State the reason for whatever is observed. What would happen if these raisins are then placed in concentrated salt solution?

36. i. Distinguish among the true solution, suspension and colloid in a tabular form under the following heads: **[5]**

a. Stability

b. Filterability

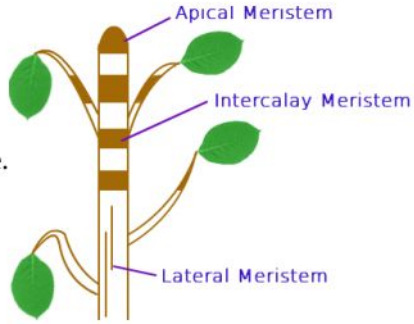
c. Type of mixture

ii. Give the expression for the concentration of a solution. How will you prepare a 10% solution of glucose by mass in the water?

Section E

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

The tissue is a group of cells having similar origin, structure& function. Study of tissues is called Histology. In unicellular organism (Amoeba) single cell performs all basic functions, whereas in multi-cellular organisms (Plants and Animals) shows division of labour as Plant tissue & Animal tissues. Plant tissues are two types: Meristematic & Permanent tissue.



Meristematic tissue: The meristems are the tissues having the power of cell division. It is found on that region of the plant which grows.

Following are the types of Meristems:

The Apical meristems- It is present at the growing tip of the stem and roots and increases the length.

The lateral meristems- It present at the lateral side of stem and root (cambium) and increases the girth.

The intercalary meristems- It present at internodes or base of the leaves and increases the length between the nodes.

i. Which tissue help in the secondary growth of the plant? (1)

ii. In what region of the plant does intercalary meristematic growth occur? (1)

iii. Where does meristematic tissue mostly found in a plant? (2)

OR

Why cambium is called lateral meristem? (2)

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

The practice of keeping or rearing, caring, and management of honey bee on a large scale for obtaining honey and wax is called apiculture. The place where bees are raised is called an apiary. Bee-keeping requires low investment and generates additional income, hence it is done by farmers along with agriculture.

Following are the Honey bee varieties that are used for bee-keeping as follows:

Indigenous varieties	**Exotic varieties**
Apis cerana indica (Indian bee)	Apis mellifera (Italian bee)
Apis dorsata (Rock bee), Apis florae (Little bee)	Apis adamsoni (South African bee)

i. Why bee keeping should be done in good pasturage? (1)

ii. Does honey bee help in pollination? Which type of flowers attracts the honey bee? (1)

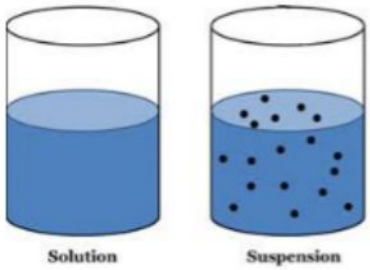
iii. Mention the products obtained from the honey bee. (2)

OR

What is the best season to start beehive? (2)

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

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.



i. Differentiate between Dispersed phase and Dispersion medium? (1)

ii. Differentiate between Homogeneous and Heterogeneous mixture? (1)

iii. What is emulsion? (2)

OR

Give an example of solid sol? (2)