

Directorate of Education, GNCT of Delhi
Class IX Session 2024-25
Subject - Science (086)
Practice Paper

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 be 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 be 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 case-based units of assessment of 04 marks each with sub-parts.

SECTION-A

1. Rutherford scattering experiment fails for very small scattering angles because:-

- (a) velocity of the α -particles is very large.
- (b) gold foil is very thin.
- (c) whole nuclear charge of the target atom is not screened by its electrons at all.
- (d) the impact parameter between the alpha-particles source nucleus of the target is very large as compared to the nucleus to size of the nucleus.

Or

alpha-particles are

- (a) H^+

- (b) He⁺
- (c) He²⁺
- (d) He

2. Usha Swims in a 90 m long pool, she covers 180m in one minute going either way. The average velocity is -

- a) 30m/s
- b) zero
- c) 180m/s
- d) 90m/s

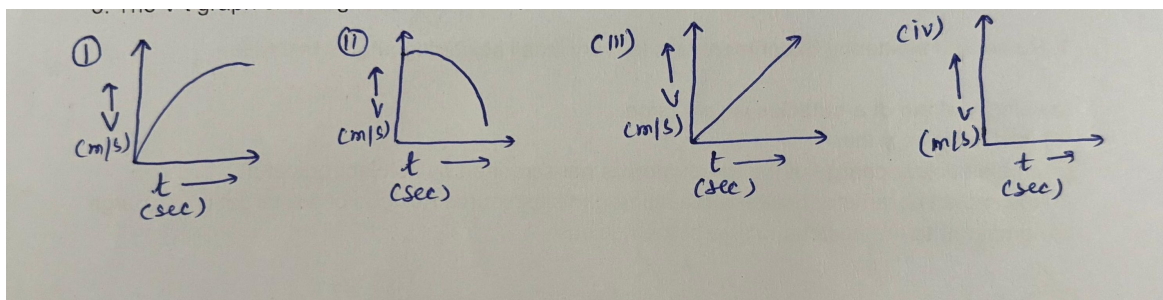
3. Heat affects the formation of solution because change in temperature cause:

- (a) increases the size of water particles
- (b) Changes the shape of water molecules.
- (c) changes the energy of the particles.
- (d) decreases the intermolecular spaces between the particles.

4. Fermentation of grapes is an example of

- (a) Redox Reaction
- (c) Chemical change
- (d) Physical Change
- (b) Muscular Tissue

5. The V-t graph showing motion of a body is an uniformly accelerated motion is



6. What is the angle between directions of force and displacement if work done is maximum?

- (a) 0°
- (b) 30°
- (c) 60°

(d) 90°

7. The mass ratio of N and H in NH_3 is

- (a) 1:3
- (b) 14:3
- (c) 3:14
- (d) 18:3

8. Lysosomes arises from

- a) Nucleus
- b) Golgi apparatus
- c) Endoplasmic reticulum
- d) Mitochondria

9. If the weight of a 60kg mass is W on moon, then W is equal to

- (a) 48N
- (b) 80N
- (c) 96N
- (d) 108 N

10. The Energy currency of the cell is -

- (a) AMP
- (b) GTP
- (c) ATP
- (d) ADP

11. Name a process by which an impure naphthalene sample can be purified

- (a) steam distillation
- (b) Fractional distillation
- (c) Sublimation
- (d) chromatography

12. Identify the incorrect statements.

- (a) Atoms of the same elements may have different masses
- (b) Atoms of different elements may have the same masses.
- (c) Atoms have been found to be made up of subatomic particles.
- (d) None of these

13. Plants can be made disease resistant by -

- (a) both hybridisation and genetic modification
- (b) hybridisation only
- (c) genetic modification only
- (d) use of antibiotic

14. Tyndall effect is observed in which one of the following?

- (a) True Solution
- (b) Starch + water
- (c) NaCl + water
- (d) Alum + water

15. Elements with valency 1 are

- (a) always non-metal
- (b) either metal or non metal
- (c) always metalloids
- (d) always Metals

16. Which of the following is not the character of mechanical waves?

- (a) Propagation depends on the elasticity of medium
- (b) Can be both transverse or longitudinal
- (c) requires a material medium
- (d) Speed is comparatively higher

For question numbers 17 to 20 two statements are given

For Q. No. 17 to 20 two statements are given one labelled as Assertion (A) and the other labelled as Reason (R). Select the correct option to these questions from:

- 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.

17. Assertion (A): A boy goes from A to B with a velocity of 20 m/min and comes back from B to A with a velocity of 30 m/min. The average velocity of the boy during the whole journey is zero.

Reason (R): The ratio of speed to the magnitude of velocity when the body is moving in one direction is equal to one.

18. Assertion (A): Naphthalene, camphor, iodine, ammonium chloride are some common examples of the substances which undergo sublimation.

Reason (R): All solids are first converted to liquids and then gases on heating.

19. Assertion (A): Dendrite is a single, long cylindrical process which forms fine branches terminally.

Reason (R): It consists of short processes arising from the cyton.

20. Assertion (A): For noble gases, valency is zero.

Reason (R): Noble gases have 8 valence electrons.

Section B

21. An electric bulb of 100w works for 4 hours a day. Calculate the units of energy consumed in 15 days.

22. Give reason why the smell of hot sizzling food reaches you several meters away but to get smell from cold food you have to go close?

23. On which day, a hot day or a cold day, an echo is heard sooner. why?

or

How does speed of sound changes with (a) temperature of medium (b) Physical state of medium.

24. why is ice at 273K more effective in cooling than water at the same temperature?

25. A man throws A ball of mass 0.4 kg vertically upwards with a velocity of 10 m/s. What will be its initial momentum at the highest point of its reach?

Or

A stone of 1 kg is thrown with a velocity of 20 m per second across the frozen surface of a lake and comes to rest after travelling a distance of 50 m.

What is the force of friction between stone and the ice?

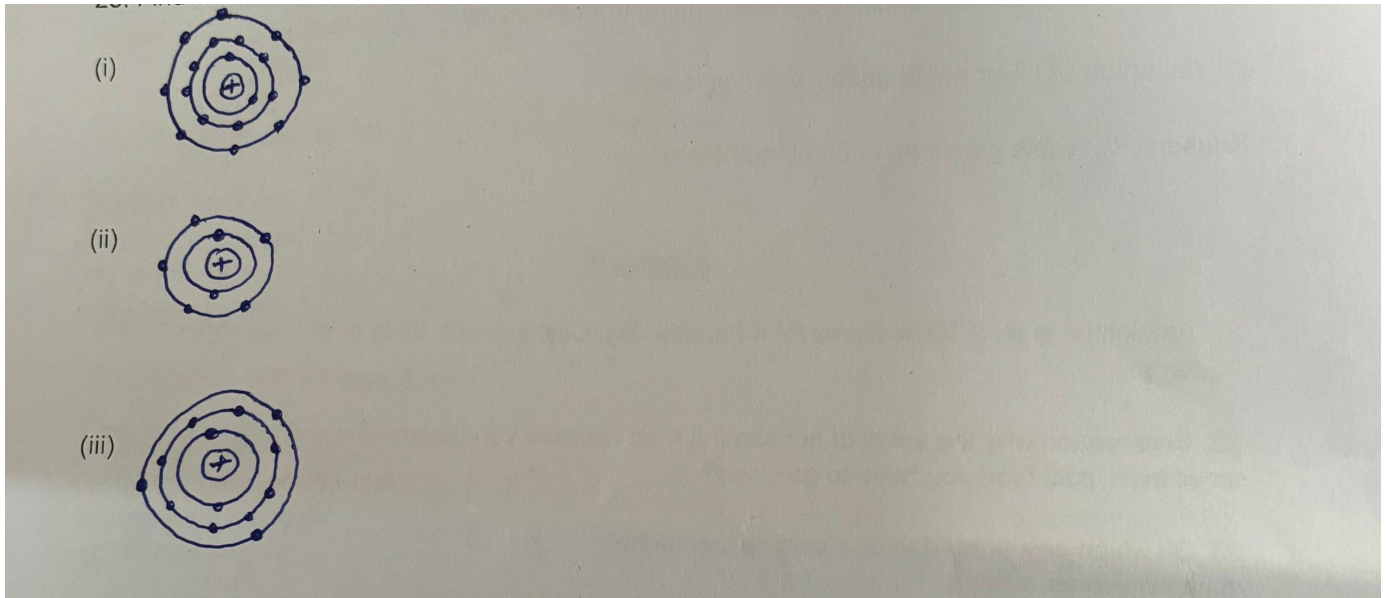
26. An electron is considered as a universal particle explain.

Section C

27. i. What is meant by frequency of sound waves?

- ii. Give the range of frequencies of sound waves that an average human ear can detect.
- iii. A source of wave produces 20 crests and 20 troughs in 0.2 s. The distance between a crest and 50 cm. Find the wavelength and frequency of wave.

28. Find out the valency of atoms represented by the following figures.



29.. The velocity-time graph of a ball moving on the surface of the floor is as shown in the figure. Calculate the force acting on the ball, if mass of the ball is 100 g.

30. Ram's family was worried about heavy electricity bills to be paid. Their neighbour Mohan suggested some easy and effective steps to reduce the same. Next month's bill came as a relief to Ram, as the consumption of electricity had reduced by 50 units and so had the bill.

a. In what other aspects of life can this situation help?

b. What is the unit of energy?

c. Write any three steps that you think Mohan might have suggested to Ram.

31.i. Which characteristic of sound helps to identify your friend by his voice while sitting with others in a dark room?

ii. State the relationship between frequency and time period of a wave. The wavelength of vibrations produced on the surface of the water is 4 cm. If the wave velocity is 20 m/s find the frequency and Time period.

32. What is prokaryotic cell? Differentiate between prokaryotic cell and eukaryotic cell.

33. Differentiate between three types of muscle fibres.

Or

Differentiate between three types of simple permanent tissue.

Section D

34. What is the difference between the mass and the weight of an object.

35. What are cell organelles? Write the names of different cell organelles.

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:

- 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

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 is cambium called lateral meristem? (2)

38. Read the following text carefully and answer the questions that follow:

The practice of keeping or rearing, caring, and managing 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:

<u>Indigenous varieties</u>	<u>Exotic varieties</u>
Apis cerana indica (Indian bee)	Apis mellifera (Italian bee)
Apis dorsata (Rock bee), Apis florea (Little bee)	Apis adamsoni (South African bee)

- 1. 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:

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.