

Directorate of Education, GNCT of Delhi

Practice Paper (Session: 2023-24)

Class: IX

Subject: N. Science(086)

Duration: 3 hours

Maximum Marks: 80

**General Instructions :**

Read the following instructions very carefully and strictly follow them :

- (i) This question paper comprises **39** questions. **All** questions are compulsory.
- (ii) This question paper is divided into **five** sections – **A, B, C, D** and **E**.
- (iii) **Section A** – Questions No. **1** to **20** are multiple choice questions. Each question carries **1** mark.
- (iv) **Section B** – Questions No. **21** to **26** are very short answer type questions. Each question carries **2** marks. Answer to these questions should be in the range of 30 to 50 words.
- (v) **Section C** – Questions No. **27** to **33** are short answer type questions. Each question carries **3** marks. Answer to these questions should be in the range of 50 to 80 words.
- (vi) **Section D** – Questions No. **34** to **36** are long answer type questions. Each question carries **5** marks. Answer to these questions should be in the range of 80 to 120 words.
- (vii) **Section E** – Questions No. **37** to **39** are of 3 source-based / case-based units of assessment carrying **4** marks each with sub-parts.
- (viii) There is no overall choice. However, an internal choice has been provided in some sections. Only one of the alternatives has to be attempted in such questions.

**SECTION-A**

| Q. No. | Questions                                                                                                                                                                                                                                                                                                                                                                                    | Marks |
|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| 1      | The similarity between solid, liquid and gas matter is that, they:<br>a) occupy space      b) have mass      c) both a and b      d) have fixed shape                                                                                                                                                                                                                                        | 1     |
| 2      | When 20 g of potassium permanganate is dissolved in 1000ml of water, there is no increase in volume. This observation indicates that:<br>a) particles of water have spaces between them into which potassium permanganate particles fit.<br>b) particles of water attract each other.<br>c) particle of potassium permanganate attracts each other.<br>d) particles are continuously moving. | 1     |
| 3      | Which of the following is not a Liquid-gas Aerosol:<br>a) mist      b) clouds      c) smoke      d) fog                                                                                                                                                                                                                                                                                      | 1     |
| 4      | The ions present in $\text{Na}_2\text{CO}_3$ are:                                                                                                                                                                                                                                                                                                                                            | 1     |

|    |                                                                                                                                                                                                                                                                                                                                                                                                                                                               |   |
|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
|    | <b>a) <math>\text{Na}^+</math>; <math>\text{CO}_3^{2-}</math></b> <b>b) <math>\text{Na}^{2+}</math>; <math>\text{CO}_3^{2+}</math></b> <b>c) <math>\text{Na}^+</math>; <math>\text{CO}_3</math></b> <b>d) <math>\text{Na}^+</math>; <math>\text{CO}_2^{2-}</math></b>                                                                                                                                                                                         |   |
| 5  | <p>When 6 g of carbon is burnt in 16g oxygen 22g of carbon dioxide is produced. If 6 g of carbon is burnt in 30 g of oxygen then the carbon dioxide produced will be:</p> <p>a) 22 g                                  b) 36 g                                  c) 16 g                                  d) 6 g</p>                                                                                                                                            | 1 |
| 6  | <p>Which of the following statements is incorrect about the structure of an atom?</p> <p>i. the atom is an indivisible particle<br/>ii. the atom as a whole is neutral<br/>iii. the whole mass of an atom is concentrated in the nucleus.</p> <p>Choose the right option among the following:</p> <p>a) i. and iii                                  b) only ii                                  c) only i                                  d) ii. and iii</p> | 1 |
| 7  | <p>Atom of an element have 3 valence electrons in M-shell. The atomic number of this element will be:</p> <p>a) <math>Z=3</math>                                  b) <math>Z=15</math>                                  c) <math>Z=18</math>                                  d) <math>Z=13</math></p>                                                                                                                                                        | 1 |
| 8  | <p>The role of ribosome is:</p> <p>a) site of protein synthesis                                  b) site of respiration<br/>c) site of photosynthesis                                  d) site of packaging protein</p>                                                                                                                                                                                                                                       | 1 |
| 9  | <p>Lotus stem float in water due to the presence of:</p> <p>a) Aerenchyma      b) Parenchyma      c) Collenchyma      d) Sclerenchyma</p>                                                                                                                                                                                                                                                                                                                     | 1 |
| 10 | <p>Which of the following graph shows the uniform motion of an object?</p>                                                                                                                                                                                                                                                                                                                                                                                    | 1 |
| 11 | <p>If an object travels a distance <math>s</math> in time <math>t</math> than its speed will be:</p> <p>a) <math>v = s/t</math>                                  b) <math>s = d/t</math>                                  c) <math>d = v/t</math>                                  d) <math>v = s \times t</math></p>                                                                                                                                         | 1 |
| 12 | <p>A boy in a moving train tosses a coin which falls behind him. It means that train is moving with:</p> <p>a) accelerated motion                                  b) uniform velocity<br/>c) uniform speed                                  d) circular motion</p>                                                                                                                                                                                           | 1 |
| 13 | <p>Object that comparatively has least inertia is:<br/>(consider that all these objects are of the same size)</p> <p>a) a solid iron ball      b) a plastic ball      c) a paper ball      d) a thermocol ball</p>                                                                                                                                                                                                                                            | 1 |
| 14 | <p>The value of acceleration due to gravity is:</p>                                                                                                                                                                                                                                                                                                                                                                                                           | 1 |

|    |                                                                                                                                                          |                                                         |   |
|----|----------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|---|
|    | a) more on equator than poles.<br>c) more on equator.                                                                                                    | b) more on poles.<br>d) increases from pole to equator. |   |
| 15 | The energy derived from atom that is used to run power plants is:<br>a) atomic energy      b) nuclear energy      c) chemical energy      d) hydro power |                                                         | 1 |
| 16 | Compressed spring possesses:<br>a) kinetic energy      b) potential energy      c) heat energy      d) chemical energy                                   |                                                         | 1 |

Q. no 17 to 20 are Assertion - Reasoning based questions.

These consist of two statements – 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

|    |                                                                                                                                                     |   |
|----|-----------------------------------------------------------------------------------------------------------------------------------------------------|---|
| 17 | Assertion (A): Atomicity of water is 3.<br>Reason (R): Atomicity is the number of atoms constituting a molecule.                                    | 1 |
| 18 | Assertion (A): Xylem is a vascular tissue.<br>Reason (R): Water and minerals are transported in the plant through xylem.                            | 1 |
| 19 | Assertion (A): Safety belts are worn to prevent accidents.<br>Reason (R): Safety belts exert a force on our body to make the forward motion slower. | 1 |
| 20 | Assertion (A): Soyabean is a kharif crop.<br>Reason (R): crop grown in rainy season are called rabi crop.                                           | 1 |

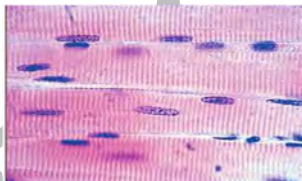
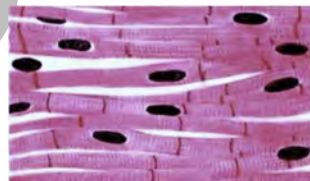
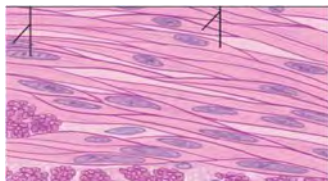
### SECTION-B

Q.no.21 to 26 are very short answer questions.

|    |                                                                                                                                                                                                 |   |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| 21 | In an experiment if you need a freshly prepared 10% solution of sodium hydroxide. How will you prepare this solution by using 90 ml of water if you have crystals of sodium hydroxide with you? | 2 |
| 22 | Write name of any two each unicellular and multicellular organism.                                                                                                                              | 2 |
| 23 | Blood is very important connective tissue. Why?                                                                                                                                                 | 2 |
| 24 | A boy throws a ball weighing 400 g in vertical upward with a initial velocity of 10m/s.<br>a) find the initial momentum and<br>b) find its momentum at the highest point of its flight.         | 2 |
| 25 | Draw diagram to represent two sound wave that have same amplitude but different frequency.                                                                                                      | 2 |

| 26                                                                                                                               | List four water resources available that are used for irrigation purpose in India.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 2                  |                    |                    |   |      |      |   |     |     |   |     |    |   |
|----------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------------|--------------------|---|------|------|---|-----|-----|---|-----|----|---|
| <p style="text-align: center;"><b>SECTION-C</b></p> <p style="text-align: center;">Q.no.27 to 33 are short answer questions.</p> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                    |                    |                    |   |      |      |   |     |     |   |     |    |   |
| 27                                                                                                                               | <p>a) What is the function of vacuoles in:</p> <p style="padding-left: 40px;">i. Plants                      ii. Amoeba</p> <p>b) Which cell organelle is known as suicide bags of a cell?</p>                                                                                                                                                                                                                                                                                                                                                                                                                                    | 3                  |                    |                    |   |      |      |   |     |     |   |     |    |   |
| 28                                                                                                                               | Name any three epithelial tissue and their location in animals.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 3                  |                    |                    |   |      |      |   |     |     |   |     |    |   |
| 29                                                                                                                               | <p>A student start moving on a path along the boundary of a square garden of side 10m. they took 40 second to cover 10m path.</p> <p>i. What will be the magnitude of distance and displacement of the student at the end of 2 minute 20 second?</p> <p>ii. Calculate the speed of the student if they complete the walk of the given square field in 2 minute 40 second.</p> <p style="text-align: center;">Or</p> <p>A car decreases its speed from 80 km/h to 60km/h in 6s. Find the acceleration of the car.</p>                                                                                                              | 3                  |                    |                    |   |      |      |   |     |     |   |     |    |   |
| 30                                                                                                                               | <p>Write three uses of multiple reflection of sound.</p> <p style="text-align: center;">Or</p> <p>a) A boy clapped his hands near a cliff and heard the echo after 6s. What is the distance of the cliff from the boy if the speed of the sound, 'v' is taken as 346 m/s?</p> <p>b) What is reverberation of sound?</p>                                                                                                                                                                                                                                                                                                           | 3                  |                    |                    |   |      |      |   |     |     |   |     |    |   |
| 31                                                                                                                               | List out the various desirable traits for which the cross- breeding programmes of Indian and foreign breeds in poultry farming are developed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 3                  |                    |                    |   |      |      |   |     |     |   |     |    |   |
| 32                                                                                                                               | <p>Write the chemical formula of the following compounds:</p> <p>a. ammonium sulphate.</p> <p>b. sodium nitrate.</p> <p>c. aluminium oxide.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 3                  |                    |                    |   |      |      |   |     |     |   |     |    |   |
| 33                                                                                                                               | <p>Observe the melting and boiling point of substance A, B and C given in the following table:</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Substance</th><th>Melting point (°C)</th><th>Boiling point (°C)</th></tr> </thead> <tbody> <tr> <td>A</td><td>-210</td><td>-196</td></tr> <tr> <td>B</td><td>250</td><td>700</td></tr> <tr> <td>C</td><td>-20</td><td>90</td></tr> </tbody> </table> <p>a) State the physical state of substance A, B and C at room temperature (30 °C).</p> <p>b) Name the substance which will have more compressibility in the given table, and why?</p> | Substance          | Melting point (°C) | Boiling point (°C) | A | -210 | -196 | B | 250 | 700 | C | -20 | 90 | 3 |
| Substance                                                                                                                        | Melting point (°C)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Boiling point (°C) |                    |                    |   |      |      |   |     |     |   |     |    |   |
| A                                                                                                                                | -210                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | -196               |                    |                    |   |      |      |   |     |     |   |     |    |   |
| B                                                                                                                                | 250                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 700                |                    |                    |   |      |      |   |     |     |   |     |    |   |
| C                                                                                                                                | -20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 90                 |                    |                    |   |      |      |   |     |     |   |     |    |   |
| <p style="text-align: center;"><b>SECTION-D</b></p> <p style="text-align: center;">Q.no.34 to 36 are long answer questions.</p>  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                    |                    |                    |   |      |      |   |     |     |   |     |    |   |

|                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |   |
|----------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| 34                                                                                                                   | <p>a) How <math>^{35}\text{Cl}_{17}</math> and <math>^{37}\text{Cl}_{17}</math> are related to each other?</p> <p>b) If both of these forms of Cl occurs in nature as 75% and 25% respectively. Calculate the average atomic mass of Chlorine atom.</p> <p>c) Draw the labelled schematic atomic structure of Chlorine atom having <math>Z=17</math>.</p> <p style="text-align: center;">Or</p> <p>a) Distinguish between the properties of electrons, protons, and neutrons with respect to position, charge and mass.</p> <p>b) Write the valency and atomic symbol of the following element:</p> <p>i. Sodium (<math>Z=11</math>)</p> <p>ii. Aluminium (<math>Z=13</math>)</p> <p>iii. Potassium (<math>Z=19</math>)</p> <p>iv. Calcium (<math>Z=20</math>)</p> | 5 |
| 35                                                                                                                   | <p>a) Plastids are present only in the plant. Which types of plastids are present in :</p> <p>i. Petals;            ii. Leaves;            iii. fruit pulp</p> <p>b) What happen if chloroplast is removed from the plant. Explain.</p> <p style="text-align: center;">Or</p> <p>To test the effect of the concentration of the solution on the cell a student placed some plant cell and animal cell (RBC) for 15 minute in the hypertonic solution and then shifted them into hypotonic solution.</p> <p>Answer the following question:</p> <p>a) What is hypotonic solution.</p> <p>b) What will the expected observation in the above situation.</p> <p>c) what is the role of cell wall in the cell in above situation.</p>                                   | 5 |
| 36                                                                                                                   | <p>a) Explain universal law of gravitation also write its mathematical expression.</p> <p>b) Write three importance of this law.</p> <p style="text-align: center;">Or</p> <p>Give reason:</p> <p>a) carry a bag with broader strap is easy than a thin strap bag.</p> <p>b) why sharp knife cut easy in comparison with the blunt knife.</p> <p>c) camel can run in a desert easily.</p>                                                                                                                                                                                                                                                                                                                                                                          | 5 |
| <p><b>SECTION-E</b></p> <p>Q.no.37 to 39 are case based / source- based questions with 2 to 3 short sub - parts.</p> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |   |

|    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                             |   |
|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|---|
| 37 | <p>Mixture are constituted by more than one kind of pure form of matter, known as a substance. A student mixes salt and egg white in two separate beaker A and B respectively filled with water. They pass a beam of light through the mixture in the beaker in dark and observed that the path of light is visible in one beaker only.</p> <p>Answer the following questions:</p> <ol style="list-style-type: none"> <li>Name the mixture formed in both the beakers.</li> <li>What are the two components called in beaker B?</li> <li>Why the path of light is visible only in beaker B?</li> </ol> <p style="text-align: center;">Or</p> <ol style="list-style-type: none"> <li>Can the solute particle of the mixture formed in beaker A be separated? Explain.</li> </ol>                                                                                                                                                                                                                                                                                                                                     |  <p style="text-align: center;">A                  B</p> | 4 |
| 38 | <p>The form of energy can be changed from one form to another. Whenever energy gets transformed, the total energy remains unchanged. The law of conservation of energy is valid in all situations and for all kinds of transformations. Thus during motion the sum of the potential energy and kinetic energy of the object would be the same at all points. That is, potential energy + kinetic energy = constant. and called as mechanical energy.</p> <ol style="list-style-type: none"> <li>State law of conservation of energy.</li> <li>If mechanical energy of a working system is 800 J and the kinetic energy is 389J than what will be the potential energy of that system?</li> <li>An object of mass 20kg is dropped from a height of 5m. Calculate its potential energy? List the factors on which the potential energy of an object depends.</li> </ol> <p style="text-align: center;">Or</p> <ol style="list-style-type: none"> <li>Write the energy transformation of energy in the glowing bulb connected to a battery.</li> </ol>                                                                 |                                                                                                                                             | 4 |
| 39 | <p>A student observed three permanent slide A, B and C of muscle tissue under the microscope as shown below: Observe these and answer the following question:</p> <div style="display: flex; justify-content: space-around; align-items: center;">    </div> <p style="text-align: center;">A                          B                          C</p> <ol style="list-style-type: none"> <li>Identify and name the following muscle tissue which they observed under the microscope.</li> <li>Which of the above muscle is voluntary and involuntary in nature?</li> <li>Write two characteristics of muscle B.</li> </ol> <p style="text-align: center;">Or</p> <ol style="list-style-type: none"> <li>For movement the muscles are attached to the bones with the help of a connective tissue. Name that muscle and the connective tissue.</li> </ol> |                                                                                                                                             | 4 |