Sample Question Paper
SCIENCE
Class – IX
Term – I

Time: 3 hrs. MM: 90

GENERAL INSTRUCTIONS:

i) The question paper comprises of two sections, A and B. You are to attempt both the sections.

ii) All questions are compulsory.

iii) There is no overall choice. However internal choice has been provided in all the five questions of five marks category. Only one option in such questions is to be attempted.

iv) All questions of section A and all questions of section B are to be attempted separately.

v) Questions numbers 1 to 3 in section A are one mark questions. These are to be answered in one word or one sentence.

vi) Question numbers 4 to 7 are two marks, to be answered in about 30 words each.

vii) Question numbers 8 to 19 are three mark questions, to be answered in about 50 words each.

viii) Questions numbers 20 to 24 are five mark questions, to be answered in about 70 words each.

ix) Question numbers 25 to 42 in section B are multiple choice questions based on practical skills. Each question is a one mark question. You are to choose one most appropriate response out of the four provided to you.
SECTION – A

1. Name the plastid involved in conversion of a green tomato to red.

2. What is the resultant force of a number of balanced forces acting on body?

3. Why is glass or chinaware packed with straw?

4. Draw a neat diagram of neuron and label on it the following:
   (a) Dendrite
   (b) Axon

5. State one feature that is similar and one feature that is dissimilar with respect to mitochondria and plastids.

6. Calculate the concentration of a solution which contains 12g urea in 160g of solution.

7. State the universal law of gravitation/ Express it mathematically.

8. (i) Name the process or the separation technique you would follow to separate:
   (a) Dyes in black ink
   (b) Butter from cream
   (c) Ammonium chloride and common salt
   (d) Iron filings and sand
   (ii) State the principle used in separation by centrifugation.

9. Which of the following has more inertia and why?
   (a) A rubber ball and a stone of the same size.
   (b) A bicycle and a train.

10. (a) A spoonful a sugar is added to a beaker containing 500mL of water and stir ed for a while. State any two observations that you will make.
    (b) Account for your observations.
11. (a) Which two factors bring about loss of food grains during storage? Give one example for each.

(b) State any two control measures to be taken before grains are stored.

12. Distinguish between homogenous and heterogeneous mixture. Classify the following mixtures as homogenous and heterogeneous –
   (a) Tincture of iodine
   (b) Smoke
   (c) Brass
   (d) Sugar solution

13. Which cell organelles would you associate with elimination of old and worn out cells and why?

14. What happens to the magnitude of the force of gravitation between two objects if –
   (a) Distance between the objects is tripled?
   (b) Mass of both objects doubles?
   (c) Mass of both objects as well as the distance between them is doubled?

15. Why is a person hit harder when he falls on a concrete floor than when he falls on a heap of sand from the same height?

16. With the help of a labelled diagram, describe an activity to show that the particles of matter are very small. Use the following material that has been provided to you.

4 beakers, spatula, 4 test tubes, distilled water and few crystals of potassium permanganate,

17. (a) State two ways in which phloem is functionally different from xylem.

(b) Draw a neat diagram of a section of phloem and label four parts.
18. Give one important functional difference amongst the muscle tissues and draw a labelled diagram of the muscle tissue which never shows fatigue.

19. Show that if a body is taken to a height H above the earth’s surface acceleration due to gravity is decreased by the factor \( \frac{R^2}{(R+H)^2} \), where R is the radius of the earth.

20. Identify whether it is balanced or unbalanced force that causes the following different types of movement.

(i) A person resting in an armchair.
(ii) A cyclist braking
(iii) A lorry travelling at a constant speed on a straight road.
(iv) A car that has a deceleration of \( 10 \, \text{m/s}^2 \).

OR

Explain Newton’s second law can be used to define the unit of force. Define the SI unit of force.

21. (a) Draw a neat and labelled diagram of the apparatus used to separate components of blue-black ink. Name the process and state the principle involved.

(b) Identify the physical and chemical changes from the following:

(i) Burning of magnesium in air.

(ii) Tarnishing of silver spoon.

(iii) Sublimation of iodine.

(iv) Electrolysis of water.
22. The velocity time graph for an object is shown in the following figure.

(i) State the kind of motion that the above graph represents.

(ii) What does the slope of the graph represent?

(iii) What does the area under the graph represent?

(iv) Calculate the distance travelled by the object in 15s.

23. (i) When a horse suddenly starts running, a careless rider falls backwards. Explain why?

(ii) State the action and reaction in the swimming action of a swimmer.

24. Rahul tested the solubility of four substances at different temperatures and found in grams, of each substance dissolved in 200g of water to form a saturated solution.

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Substance Dissolved</th>
<th>Temperature</th>
<th>(K)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(in grams)</td>
<td>293K</td>
<td>313K</td>
</tr>
<tr>
<td>(i)</td>
<td>Ammonium chloride</td>
<td>37g</td>
<td>41g</td>
</tr>
<tr>
<td>(ii)</td>
<td>Potassium chloride</td>
<td>35g</td>
<td>40g</td>
</tr>
<tr>
<td>(iii)</td>
<td>Sodium chloride</td>
<td>36g</td>
<td>36g</td>
</tr>
<tr>
<td>(iv)</td>
<td>Potassium Nitrate</td>
<td>32g</td>
<td>62g</td>
</tr>
</tbody>
</table>
(i) Which substance is least soluble in water at 293K?

(ii) Which substance shows maximum change in its solubility when temperature is raised from 293K to 313K?

(iii) Find the amount of ammonium chloride that will separate out when 155g of its solution at 333K is cooled to 293K?

(iv) What is the effect of change of temperature on the solubility of a salt?

(v) What mass of sodium chloride would be needed to make a saturated solution in 10g of water at 293K?

OR

With the help of labelled diagram, describe an activity to separate a mixture containing ammonium chloride, sodium chloride and sand.
SECTION –B

25. Raj heated a mixture of iron filings and sulphur in a hard glass test tube for sometime till a grey-black product was formed. He cooled the test tube and then added 2 ml carbon-di-sulphide in it and shook the contents of the test tube. The observation made by him was likely to be as shown below:

(a) I
(b) II
(c) III
(d) IV

26. To study the third law of motion, following sets of apparatus are available in a laboratory.

Set 1) one spring balance, two weight boxes, inextensible thread, one pulley with a clamp, two pans of known mass.

Set 2) two identical spring balances, one weight box, inextensible thread, one frictionless pulley with a clamp, one pan of known mass, a rigid support.

Set 3) four identical spring balances, two pulleys, inextensible thread, two clamps, two pans of known masses, two rigid supports.

Set 4) two identical spring balances, two weight boxes, two rigid supports, two pans of known masses, inextensible thread, and two frictionless pulleys with clamps.
To perform the experiment successfully by using minimum apparatus, the best choice would be:

(a) Set 1)
(b) Set 2)
(c) Set 3)
(d) Set 4)

27. On placing an iron nail in a copper sulphate solution, it is observed that:

(a) A soft and black coating is deposited on the iron nail.
(b) A reddish brown coating is deposited on the iron nail.
(c) A smooth and shiny coating is deposited on the iron nail.
(d) A grey and hard coating is deposited on the iron nail.

28. The following substances were added to water in a beaker as shown below. The mixture is stirred well. A suspension was observed in the beaker.

(a) I
(b) II
(c) III
(d) IV
29. A strip of magnesium metal is burnt in the flame. It is observed that

(a) A yellow light appears
(b) A white dazzling light appears
(c) Magnesium starts melting
(d) Lot of black smoke is produced.

30. Which of the following represents a correct set of observations for a mixture of common salt and water?

<table>
<thead>
<tr>
<th>Transparency</th>
<th>Stability</th>
<th>Filtration</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Transparent</td>
<td>Unstable</td>
<td>No residue</td>
</tr>
<tr>
<td>b) Transparent</td>
<td>Stable</td>
<td>No residue</td>
</tr>
<tr>
<td>c) Translucent</td>
<td>Stable</td>
<td>No residue</td>
</tr>
<tr>
<td>d) Opaque</td>
<td>Unstable</td>
<td>Residue</td>
</tr>
</tbody>
</table>

31. The colour of hydrated copper sulphate is:

(a) Blue
(b) Colourless
(c) Brown
(d) Yellow

32. At what temperature ice and water exist together under normal atmospheric pressure?

(a) Below 272.16 K
(b) Above 273.16 K
(c) At 273.16 K
(d) None of these
33. The steps for conducting the starch test on the given sample of rice grains are

(a) Crush the rice grains
(b) Add water to the test tube
(c) Add few drops of iodine
(d) Boil the contents and filter

34. The formula used to calculate the percentage of water absorbed by raisins is

\[ \frac{W_2 - W_1}{W_1} \times 100 \]

\( W_2 \) in the formula refers to:

(a) Mass of raisins before absorption of water
(b) Mass of raisins after absorption of water
(c) Mass of water left in the beaker at the end
(d) Mass of water absorbed by the raisins

35. A pulse is a/an:

(a) An isolated wave a very short duration
(b) Group of 1-3 waves
(c) Group of large number of waves
(d) Electrical in nature having many waves

36. One of the following shows the correct diagrammatic representation of a striped muscle fibre when seen under the low power of a microscope?
37. While determining the boiling point of water, the teacher suggested adding some pumice stone pieces to the hard glass test tube containing water. This was done to:

(a) Avoid bumping
(b) Avoid melting of hard glass test tube
(c) Prevent unnecessary
(d) Spread the heat uniformly

38. Adi added 1 or 2 drops of iodine to three test tubes A, B and C containing 2 ml of food sample. A dark blue black colour appeared in test tubes A and B. The correct order of the food samples taken in the three test tubes A, B and C is:

(a) Rice, dal, potato
(b) Rice, potato, dal
(c) Potato, dal, rice
(d) Rice, dal, dal
39. The equipment required to prepare iron sulphide by heating a mixture of iron filings and sulphur powder is:

(a) Petri-dish
(b) Watch glass
(c) China-dish
(d) Beaker

40. A student takes some water in a beaker and heats it over a flame for determining its boiling point. He keeps on taking its temperature reading. He observes that the temperature of the water

(a) Keeps on increasing regularly
(b) Keeps on increasing irregularly
(c) First increases slowly, then decreases rapidly and eventually becomes constant
(d) First increases gradually and then becomes constant

41. In the laboratory, carbon-di-sulphide is used as a solvent to separate a mixture of iron filings and sulphur powder. What precaution has to be taken with carbon-di-sulphide?

(a) Keep away from water
(b) Keep away from flame
(c) Keep away from air
(d) Keep away from iron-sulphide

42. If a particle moves with a constant speed, the distance time graph is a

(a) Straight line
(b) Circle
(c) Straight vertical line
(d) Polygon