SCIENCE

Class – IX

Time Allowed : 3 hours **Maximum Marks : 90**

General Instructions :

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

All questions are compulsory.

All questions of Section-A and all questions of Section-B are to be attempted separately.

Question numbers 1 to 3 in Section-A are one mark questions. These are to be answered in one word or in one sentence.

Question numbers 4 to 6 in Sections-A are two marks questions. These are to be answered in about 30 words each.

Question numbers 7 to 18 in Section-A are three marks questions. These are to be answered in about 50 words each.

Question numbers 19 to 24 in Section-A are five marks questions. These are to be answered in about 70 words each.

Question numbers 25 to 33 in Section-B are multiple choice questions based on practical skills. Each question is a one mark question. You are to select one most appropriate response out of the four provided to you.

Question numbers 34 to 36 in Section-B are questions based on practical skills are two marks questions.

SECTION-A

1 What is a nucleoid ? 1

2 If the distance between two point masses is doubled what will happen to the gravitational force of attraction between them ? 1

3 Mention the growing season of Kharif crop? 1

4) Among solids, liquids and gases, which one has : 2

(a) maximum force of attraction between the particles

(b) minimum spaces in between constituent particles. Give reason in support of your answer.

What is a tissue ? Justify that blood is a tissue. 2

Identify the meristematic tissues which are located at :

(i) growing tips of roots and stems

(ii) the base of the leaves or internodes on twigs

Akshay is running along a circular path in a park. 2

(a) At what point he changes his direction while running?

(b) If he covered half of the circular path, what will be his displacement? Draw a diagram showing it.

7 List two differences between a pure substance and a mixture. Give one example of each. 3

8 Which technique crystallization or evaporation is better to obtain salt from sea water? 3

9 Sanchit's grandmother was not well. He took his grandmother to the hospital. Doctor suggested some blood tests and urine tests. He went to the diagnostic laboratory with his grandmother for all these tests. 3

(a) Which technique is used in blood tests and urine tests?
Mention values shown by sanchit.

10 (a) Why is the cell called the structural and functional unit of life? 3

(b) Why is the plasma membrane called a selective permeable membrane?

(c) Name the factor which decides the movement of water across the plasma membrane.

11 (a) Name the tissue which joins : 3
(1) Muscles to bones?
(2) Bones to bones?

(b) Which of the two is :
(1) More elastic?
(2) Stronger?

12 (a) Given below are S.I. units of some physical quantities : 3
$kg\text{-}ms^{-2}$, ms^{-1}, $kg\ ms^{-1}$, ms^{-2}.
Which one of the above can be used for measuring momentum of an object? Write the physical quantity that needs to be varied if the momentum of a body of given mass has to be changed.

(b) A constant force acts on an object of mass 2 kg for 10s and increases its velocity from $5ms^{-1}$ to $10ms^{-1}$. Find the magnitude of applied force. If this force was applied for duration of 15s, what would be the velocity of the object?

13 3

Identify and give the formula for the following physical quantities :-

a) Rate of change momentum
b) Change of momentum

14 A body is thrown vertically upwards with a velocity of 50m/s. What will be its velocity at the highest point of the journey? How high would the body rise? What time would it take to reach the highest point? (Take $g=10m/s^2$) 3

15 3

(a) Define average speed.
(b) A bus travels a distance of 120 km with a speed of 40 km/h and returns with a speed of 30 km/h. Calculate the average speed for the entire journey.

16 (a) Name one exotic and one local breed of cow. 3
Mention one character each of exotic and local breed of cow which are desired in the cross – breed.

17 (a) List three factors on which cultivation practices and crop yield depends. 3

(b) Name three stages involved in farming practices.

18 Mention three ways by which the insect pests attack the plants. 3

19 (a) Describe an activity to show that the particles of matter are continuously moving using red ink, honey and water in two beakers. What is the effect of increase of temperature on the movement of particles? Give reason. 5

(b) Why is oxygen called a gas? Give two reasons.

20 (a) How does a solution of sugar in water is different from a solution of starch in water with respect to : 5

(i) Tyndall effect
(ii) Filterability and
(iii) appearance?

(b) Name the technique used to separate the following :

(i) salt from sea water
(ii) cream from milk
(iii) iron pins from sand
(iv) Different pigments from an extract of flower petals.

21 Based upon cell shape, cell wall and intercellular spaces, prepare a comparative study table between parenchyma, collenchyma and sclerenchyma. Which of these tissues is dead? 5

22 (i) Using velocity time graph derive: $v^2 - u^2 = 2as$. 5

(ii) A ball is gently dropped from a height of 20m. If its velocity increases uniformly at the rate of $10m/s^2$, with what velocity will it strike the ground?

23 (a) If every force applied on a body is accompanied with equal and opposite reaction force, then how does a body move? Find out the action and reaction forces in the following cases. 5

(i) Firing a bullet from a gun
(ii) Pushing a wall with palm.

(b) Two bodies have masses in the ratio 6:8. When a force is applied on a first body it moves with an acceleration of $6\ m/s^2$. How much acceleration will the same force produce in the other body?

24 (a) Name two common sources from which fishes are captured? 5

(b) Why are mussels and shell fishes cultivated?

(c) As marine fish stocks get depleted, how the demand for more fishes can be met?

(d) How are marine fishes caught?

(e) Name two marine fishes of high economic values, which are also farmed in sea water.

SECTION - B

25 The steps for conducting the starch test on the given sample of potato are given below. However these steps are not in proper order. 1

(i) Take crushed potato in a test tube
(ii) Add few drops of iodine
(iii) Add water to the test tube
(iv) Boil the contents and filter

The most appropriate order in which the steps should be followed are :-

(a) (i), (iii), (iv), (ii) (b) (iii), (iv), (ii), (i)
(c) (iv), (ii), (i), (iii) (d) (ii), (i), (iii), (iv)

26 Four students, A, B, C and D performed iodine test for the presence of starch in the given food sample. The samples given to each of them were as follows : 1

(A) Paste of rice powder (B) Paste of green peas
(C) paste of tomatoes (D) Paste of boiled potato

The students who are likely to get positive result are :

(a) A, C (b) B, D (c) D, A (d) B, C

27 When carbon disulphide is added to a mixture of iron filings and sulphur powder taken in a boiling tube. Which one of the following is not observed? 1

(a) Iron filings remain unaffected.
(b) Sulphide powder dissolved and yellow solution is formed.
(c) Iron sulphide, a black coloured mass is formed by combination of Iron and sulphur.
(d) Solid sulphur reappears, when yellow solution is evaporated.

28 In the mixture of iron filings and sulphur powder, 1

(a) Iron and sulphur both are magnetic.
(b) Only sulphur is magnetic.
(c) Iron and sulphur both are non-magnetic.
(d) Only iron is magnetic.

29 When dilute sulphuric acid is added to zinc granules, it is observed that : 1

(a) A precipitate is formed.
(b) The reaction mixture turns yellow.
(c) The container becomes cool.
(d) Bubbles start coming out from the surface of zinc granules.

30 A teacher made temporary mounts of human cheek cells and onion peel for evaluation of a class. The correct identifying features given by the students for cheek cells and onion peel cells respectively would be : 1

(a) Blue stain, cell wall present; Pink stain, cell wall absent
(b) Blue stain, no vacuoles; pink stain, vacuole present in the centre
(c) Pink stain, cell wall absent; Blue stain, cell wall present
(d) Pink stain, cell wall present; Blue stain, cell wall absent

31 Reena observed a permanent slide of plant tissue under a microscope. She identified the slide as sclerenchyma. The identifying character of sclerenchyma is : 1

(a) presence of intercellular spaces
(b) presence of thick cell wall
(c) presence of stored food
(d) presence of chlorophyll

32 A mixture can be characterized by : 1

(a) No fixed composition of the components.
(b) Homogeneity.
(c) No occurrence of chemical reaction.
(d) Heterogeneous

33 Net force acting on a body at rest is : 1

(a) zero (b) depends on mass
(c) depends on its weight (d) all of the above

34 Identify two clear and transparent solutions from the following mixtures:- 2

(a) milk and water
(b) sugar and water
(c) chalk powder and water
(d) starch powder and water
(e) glucose and water

35 In an experiment to determine the boiling point of water, state reason for the following precautions:- 2

(i) The bulb of thermometer should not touch the sides of beaker.
(ii) While boiling water, pumice stones should be added.

36 Three students A, B and C were given five raisins each of equal mass. The raisins were soaked in distilled water at room temperature. A soaked the raisins for 10 minutes, B for overnight and C for 60 minutes. Then they calculated the percentage of water absorbed by raisins. 2

Now answer the following questions:-

(a) Name the student whose raisins will show the maximum percentage of water absorbed.
(b) Name the student whose raisins will show the minimum percentage of water absorbed.

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