

CLASS: IX**SUBJECT: SCIENCE****TIME ALLOWED: 1 HOUR****MAX. 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. Answers 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

Select and write the most appropriate option out of the four options given for each of the questions 1 - 20. There is no negative mark for incorrect response.

1. The process behind disappearing of naphthalene balls with time is known as: **1**
a) Melting
b) Condensation
c) Sublimation
d) Evaporation
2. Which of the following materials falls in the category of pure substances? **1**
a) Air
b) Mercury
c) Muddy water
d) Milk
3. A piece of chalk can be broken into small particles by hammering but a piece of iron cannot be broken into smaller particles by hammering. It illustrates that **1**
a) Particles of matter have space in between them
b) Particles of matter possess kinetic energy
c) Particles of matter attract one another
d) All of these

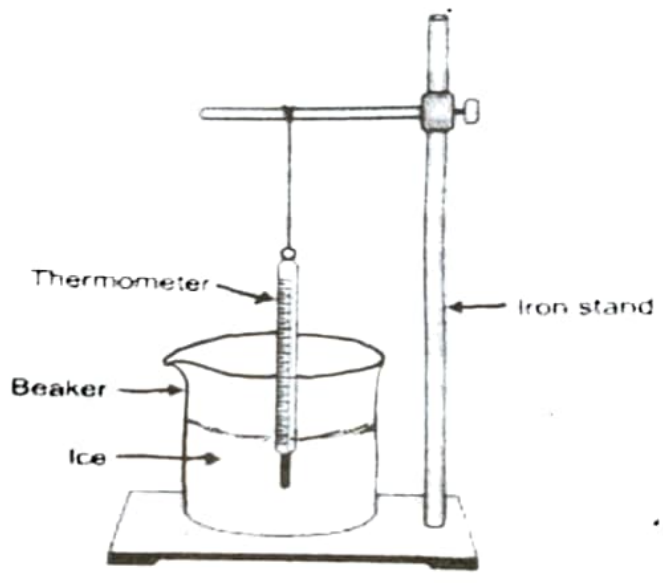
4. The figure given below has four containers that contain the same amount of water.



In which of the following containers will water evaporate the slowest?

- a) P
- b) Q
- c) R
- d) S

5. Sneha set up the experiment for melting of ice in a beaker and noted down the temperature throughout the process.



What do you think she observed when the ice was melting?

- a) The temperature in the thermometer kept increasing till the whole ice melted.
- b) Once the melting process started, the temperature in the thermometer remained constant though the heating was on.
- c) There was no change in temperature throughout the experiment.
- d) Ice did not melt on heating. It was converted to vapours.

6. On converting 25°C, 38°C and 66°C to kelvin scale, the correct sequence of temperature will be:

- a) 298 K, 311 K and 339 K
- b) 298 K, 300 K and 338 K
- c) 273 K, 278 K and 543 K
- d) 298 K, 310 K and 338 K

7. In which of the following colloids the dispersion medium is solid?

- a) Jelly
- b) Face cream
- c) Smoke
- d) Mayonnaise

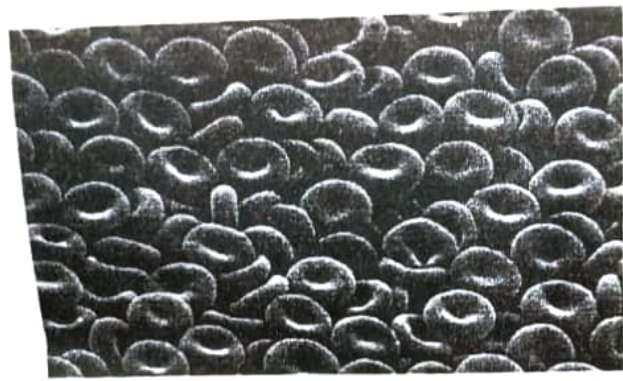
While doing work and running, you move your organs like hands, legs, etc. Which among the following is correct?

- a) Smooth muscles contract and pull the ligament to move the bones
- b) Smooth muscles contract and pull the tendons to move the bones
- c) Skeletal muscles contract and pull the ligament to move the bones
- d) Skeletal muscles contract and pull the tendon to move the bone

9. Cork cells are made impervious to water and gases by the presence of

- a) cellulose
- b) lipids
- c) suberin
- d) lignin

10. This matured animal cell lacks nuclei so that they would also lack in



- a) ribosomes
- b) lysosomes
- c) endoplasmic reticulum
- d) chromosomes

11. Match the following columns.

	Column I		Column II
A.	Lateral meristem	1.	present at base of the leaves.
B.	Intercalary meristem	2.	present at the roots and stems tips
C.	Apical meristem	3.	present on the lateral sides of roots and stem.

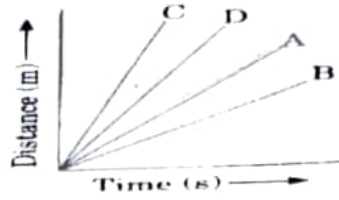
- a) A-3, B-2, C-1
- b) A-3, B-1, C-2
- c) A-2, B-1, C-3
- d) A-1, B-2, C-3

12. Presence of what makes the walls of sclerenchyma tissues thickened?

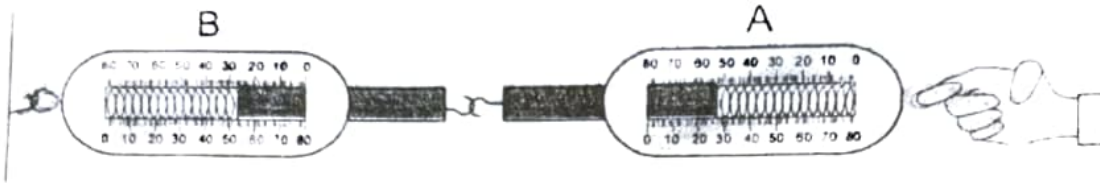
- a) Suberin
- b) Lignin
- c) Chitin
- d) Cork

13. Four cars A, B, C and D are moving on a levelled road. Their distance versus time graphs is shown in the figure given below. Choose the correct statement.

- a) Car A is faster than car D.
- b) Car C is the slowest.
- c) Car D is faster than car A.
- d) Car A is the slowest.



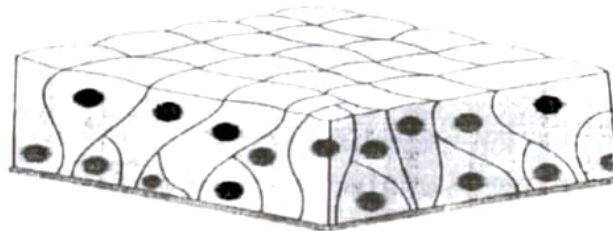
14. Look at the diagram and answer the following questions:



When a force is applied through the free end of the spring balance A, the reading on the spring balance A is 15 g wt. What will be the measure of the reading shown by spring balance B?

- a) 0 g wt
- b) 39 g wt
- c) 15 g wt
- d) 20 g wt

15. Intestine absorb the digested food materials mainly because of the presence of a specialised type of cells. From the diagram given below identify the type of epithelial cells which is responsible for the same.



- a) Stratified squamous epithelium
- b) Columnar epithelium
- c) Spindle fibres
- d) Cuboidal epithelium

16. Which of the following helps in repair of tissue and fills up the space inside the organ?

- a) Tendon
- b) Adipose tissue
- c) Areolar tissue
- d) Cartilage

Question No. 17 to 20 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.

Short on OnePlus
 17. A is false but R is true

17. **Assertion:** Liquids diffuse more easily as compared to gases.
Reason: Intermolecular forces are greater in liquids than in gases. 1
18. **Assertion:** Sieve tubes are tubular cells that helps in conduction.
Reason: Phloem parenchyma gives mechanical support. 1
19. **Assertion:** Mass is a measure of inertia of the body in linear motion.
Reason: Greater the mass, greater is the force required to change its state of rest or motion. 1
20. **Assertion:** The movements of alimentary canal, iris of the eye and bronchi of lungs are not under our will. 1
Reason: These are controlled by voluntary muscles called skeletal muscles.

SECTION-B

Question No. 21 to 26 are very short answer questions.

21. A substance X normally exists in a physical state which can flow easily but does not fill its vessel completely. When substance X is cooled excessively, it changes into a substance Y which has a fixed shape as well as a fixed volume. However, if substance X is heated strongly, it changes into a substance Z which has neither a fixed shape nor a fixed volume. 2
- a) Name the substances. (i) X (ii) Y and (iii) Z.
 b) What is the process of conversion of X into Y known as?

OR

Give reasons for the following:

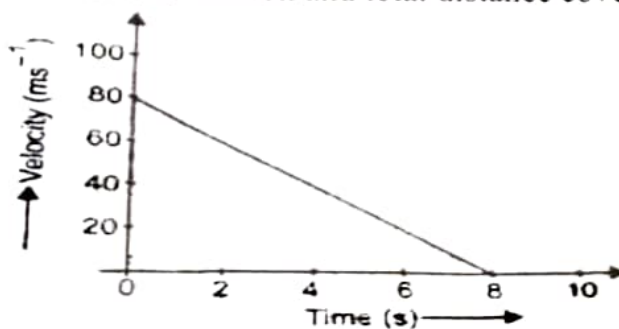
- a) Doctor advises to put strips of wet cloth on the forehead of a person having high fever
 b) Steam produces more severe burns than boiling water at the same temperature.

22. Define the following terms 2
- a) Membrane biogenesis
 b) chromatin

23. Name the following tissues: 2
- a) The connective tissue found between the skin and muscles.
 b) The outer covering tissues seen throughout the entire surface of any plant.
 c) The epithelial tissue which forms the lining of the kidney tubules.
 d) The tissue which is present in the veins of leaves.

24. a) Under what conditions, the average speed is equal to the magnitude of the average velocity. Justify your answer. 2
 b) An artificial satellite is moving in a circular orbit of radius 7000 km and takes 2 hours to revolve once around the earth. Calculate the speed of the satellite.

25. The velocity-time graph of a ball moving on the surface of a floor is shown in the figure given below. Find the value of acceleration and total distance covered by the ball. 2



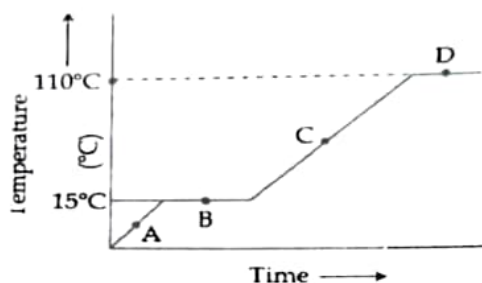
26. Draw a well labelled diagram of Cardiac muscles.

SECTION-C

Question No. 27 to 33 are short answer questions.

27. Give reasons for the following:
- A solution of sugar does not show Tyndall effect.
 - Suspensions are unstable.
 - Water is not a mixture.

28. The graph below shows the heating curve for a pure substance. The temperature rises with time as the substance is heated.



- What is the physical state of the substance at the points A, B, C and D?
 - The substance is not water. How can you justify from the given graph?
29. Write the differentiating points between tendons and ligaments. (Write any three points of differences)

OR

Write the differentiating points between striated muscles and non-striated muscles. (Write any three points of differences)

30. a) State one point of difference between xylem and phloem.
- b) Draw a neat diagram of xylem vessel and a tracheid.

31. a) What do you mean by free fall?
- b) Where is the acceleration due to gravity minimum and maximum on the surface of the earth? Justify your answer.
- c) If the moon attracts the earth with the same force, then why does the earth not move towards the moon?

OR

- What is the difference between 'g' and 'G'.
- How the gravitational force between two bodies changes if the distance between them is tripled. Explain

32. A motor car of mass 1200 kg is moving along a straight line with a uniform velocity of 90 km/h. Its velocity is slowed down to 18 km/h in 4 s by an unbalanced external force. Calculate the acceleration and change in momentum.

33. a) Why is uniform circular motion known as an accelerated motion?
- b) An object starting from rest attains a speed of 25 m/s after travelling a distance of 50 m. Calculate the acceleration produced and the total time taken to cover the distance.

SECTION-D

Question No. 34 to 36 are long answer questions.

34. a) Write any two differences between homogeneous and heterogeneous mixtures. 5
b) What is meant by concentration of a solution?
c) A solution contains 2.5 g of salt dissolved in 50 g of water. Calculate concentration in terms of mass by mass percentage of the solution.
35. a) How is the structure of RER different from that of SER? 5
b) Explain any four functions of endoplasmic reticulum.
c) Water hyacinth can float on the surface of water. Give reason.
36. a) State universal law of gravitation. Derive an expression for gravitational force between two bodies. 5
b) A ball is dropped from a height of 20 m. If its velocity increases uniformly at the rate of 10m/s^2 , with what velocity will it strike the ground? After what time will it strike the ground?

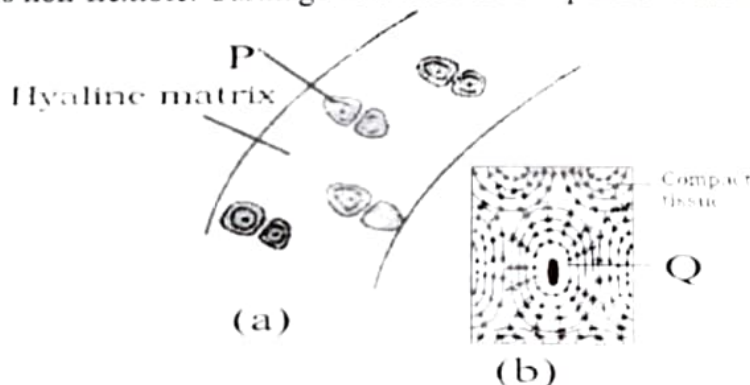
OR

- a) Differentiate between mass and weight. (Any two points)
b) The weight of a man on the surface of the earth is 392 N. What would be his mass on the moon?
c) A stone is thrown vertically upward with a speed of 30 m/s. Find:
(i) the time taken by the stone to reach the maximum height and
(ii) the maximum height reached by the stone.

SECTION - E

Question No. 37 to 39 are case-based/data-based questions with 2 to 3 short sub-parts. Internal choice is provided in one of these sub-parts.

37. Bones and cartilage are coming under connective tissues. They both forms the natural skeleton and gives the body its basic structure and also supports the body. The skeletal system consists of a large number of tendons, ligaments, bones, cartilage, joints, and bursae. The matrix of bone cells is different from that of cartilage. While one is flexible another is non-flexible. Cartilage is seen in certain places in our body. 4



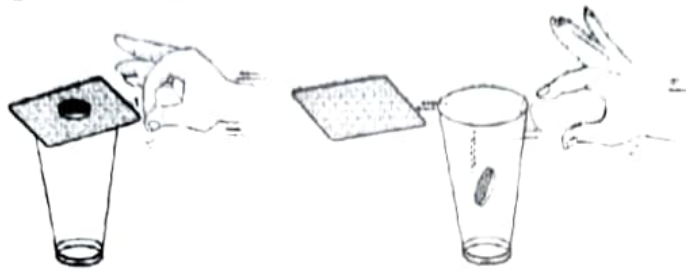
- a) Identify P and Q.
b) Differentiate between bone and cartilage on the basis of matrix and flexibility.
c) Why skeletal system called as frame work of our body.

OR

- c) Mention any two types of white blood cells.

38. The first two laws of motion tell us how an applied force changes the motion and provide us with a method of determining the force. Newton's first law of motion is also known as law of inertia. The third law implies that force always exist in pairs and no single force can exist in nature.

a) In the figure given below, the card is flicked with a push.



(i) What do you observe in this case, and why?

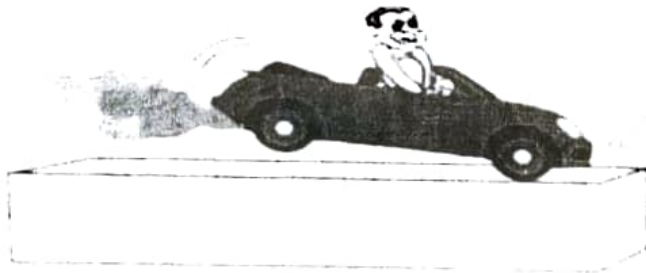
(ii) State the law involved in this case.

b) Action and reaction forces are equal and opposite but even then, they do not cancel each other. Why?

c) A karate player can break a slab of ice or a pile of tiles with a single blow. Explain how.

OR

c) Observe the diagram carefully. A car braked suddenly near a cliff. What will happen to the driver in this situation and why?



39. Sudha tested the solubility of four salts X, Y, Z and T at different temperatures and collected the following data.

Salt dissolved	Temperature in Kelvin				
	290K	313K	323K	343K	353K
	Solubility				
X	22	34	40	93	109
Y	43	43	46	50	50
Z	27	30	34	37	40
T	25	38	42	54	64

Answer the following questions from the table:

a) Define solubility.

- b) What mass of 'T' would be required to make its saturated solution in 200 g of water at 290 K?
- c) Sudha makes a saturated solution of Z in water at 353 K and leaves the solution to cool at room temperature. What would she observe as the solution cools? Explain.

OR

- c) What is meant by a saturated solution?