

TERM 1

BVP/SCI/IX/2022-23

Time-3 hours

M.M.80

Attempt all questions.

Section A: All questions carry 1 mark each.

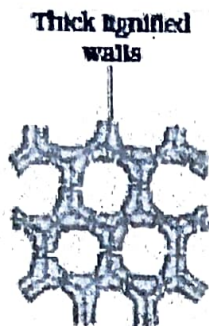
Section B: All questions carry 2 marks each.

Section C: All questions carry 3 marks each.

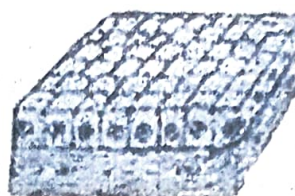
Section D: All questions carry 5 marks each.

Section A

1. Identify the following type of tissue:



(a)



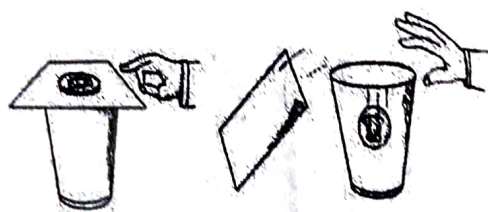
(b)

2. Why mitochondria is semi-autonomous cell organelle?
3. If stomatal pores are present on the upper epidermis, what would happen to the plant?
4. A boy gets tired in short span of time. He worked hard and gained stamina by doing consistent physical exercise. Which cell organelle is in concern here? Write any one characteristic of the cell organelle.
5. What is the role of ribosomes in a cell?
6. A trolley, while going down an inclined plane, has an acceleration of 2 cm s^{-2} . What will be its velocity 3 s after the start?
7. What is acceleration in case of free fall?
8. A boy was playing with the ball on the roof of his building. He dropped the ball from the building of height 5m. The ball of 2g moves at speed 100m/s. Calculate the momentum of the ball.
9. A passenger sitting in a bus tends to fall backwards if the bus starts moving suddenly from halt. Give reason.
10. Convert 45°F to Celsius.
11. We are able to sip hot tea or milk faster from a saucer rather than a cup. Comment.
12. Identify the dispersed phase and the dispersion medium in "Cheese".
13. A rubber band can change its shape on stretching but still it is called a solid. Why?

14. THE PLEASURE OF FINDING THINGS OUT WITH RICHARD FEYNMAN – "Great physicist"

He had taught me to notice things and one day when I was playing with what we call an express wagon, which is a little wagon which has a railing around it for children to play with, that they can pull around. It had a ball in it-I remember this-it had a ball in it, and I pulled the wagon and I noticed something about the way the ball moved, so I went to my father and I said, "Say, Pop, I noticed something: When I pull the wagon, the ball rolls to the back of the wagon, and when I'm pulling it along and I suddenly stop, the ball rolls to the front of the wagon," and I says, "why is that?" And he said, "That nobody knows," he said. "The general principle is that things that are moving try to keep on moving and things that are standing still tend to stand still unless you push on them hard." And he says, "This tendency is called with a special name but nobody knows why it's true." Now that's a deep understanding he doesn't give me a name, he knew the difference between knowing the name of something and knowing something, which I learnt very early.

- (a) Based on the observation made by Feynman, identify the law of motion responsible for the motion of the ball on express wagon.
- (b) "This tendency is called with a special name but nobody knows why it's true." Which property of the body is discussed in context of physics?
- (c) It is observed that a coin falls into the glass if the cardboard is flicked suddenly.



Are the situations discussed by Feynman with his father and the above (coin-glass), work on same principle? Evaluate.

(d) Define the relationship between mass and inertia.

15. Many people believe that the Moon does not have any gravity. In fact, the Moon, like every other massive object in the Universe, attracts every other massive object gravitationally. When an object is tossed off a building top or a cliff apex, for instance, it accelerates toward the ground at 9.8 meters per second per second. The Moon's surface gravity is weaker because it is far less massive than Earth. A body's surface gravity is proportional to its mass, but inversely proportional to the square of its radius.

Choose the correct option for following questions:

- (a) A body of mass 10kg is taken from the surface of the earth to moon. Its mass on the surface of the moon is :
 - (i) Remains same (ii) decreases (iii) increases (iv) cannot be estimated
- (b) What is the ratio of the weight of the body on earth by the weight of body on moon?

- (i) 1 (ii) $1/6$ (iii) 6 (iv) $1/10$
- (c) Which is NOT true about mass and weight?
- (i) Weight remains constant while mass varies from planet to planet
- (ii) Weight is measured using spring balance and mass is measured with beam balance.
- (iii) Weight depends on acceleration due to gravity while mass is a fundamental quantity.
- (iv) Weight is a vector while mass is a scalar.
- (d) What is the S.I unit of weight?
- (i) Pa (ii) m (iii) N (iv) kg

16. During vacation, Neha got an opportunity to visit a village. She found ladies cooking food in open pans. She sat with them for some time and advised them to use pressure cookers instead of open containers in order to save time as well as fuel.

- (a) At hill stations, the boiling point of water will be:
- (i) same as at sea level.
- (ii) less than that at sea level.
- (iii) more than that at sea level.
- (iv) Equal to the melting point of ice.
- (b) The atmospheric pressure at high altitudes is:
- (i) low (ii) same (iii) high (iv) can't say
- (c) The boiling point of water depends upon:
- (i) atmospheric pressure (ii) density (iii) mass (iv) volume
- (d) When vapour pressure of a liquid is equal to the atmospheric pressure, what happens to the liquid?
- (i) The liquid freezes.
- (ii) The liquid evaporates.
- (iii) The liquid boils.
- (v) The liquid does not undergo any change.

17. Read the Passage and answer the following questions:

A few layers of cells beneath the epidermis are generally simple permanent tissue. Parenchyma is the most common simple permanent tissue. It consists of relatively unspecialized cells with thin cell walls. They are living cells. Collenchyma allows bending of various parts of the plant-like tendrils and stems of climbers without breaking. Sclerenchyma tissue makes the plant hard and stiff. We have seen the husk of a coconut. It is made of sclerenchymatous tissue. They are long and narrow as the walls are thickened due to lignin. The tissue is present in stems, around vascular bundles, in the veins of leaves and in the hard covering of seeds and nuts.

- (a) Which tissue gives the flexibility to the plants?
- (i) Collenchyma (iii) Parenchyma

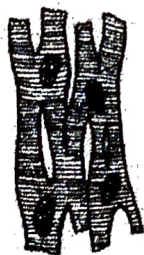
24. What happens to the bicycle, if we stop paddling?
25. Justify with reasons: Water as ice has a cooling effect whereas water as steam may cause burns.
26. What will happen if a saturated solution a) Heated b) Cooling

Section C

27. (a) Rain water stored in a tank contains sand grains, unfiltrable clay particles, calcium carbonate, salt, pieces of paper and some air bubbles. Select from amongst these one example each of a solvent, a solute, a colloid and a suspension.
- (b) Explain why is it not possible to distinguish particles of a solute from the solvent in true solutions?
28. (a) Suggest an activity to show that the rate of diffusion of liquids decreases with increase in density of the liquid.
- (b) A student heats a beaker containing ice and water. He measures the temperature of the content of the beaker as a function of time. Draw a graph showing the correct representation of the result.
29. Tincture of iodine is a mixture of two materials X and Y. The material X has a property that its solid form can be converted directly into vapours on heating by a process called Z.
- (a) What could X be?
- (b) What could Y be?
- (c) Name the process Z.
30. (a) The teacher asked students to draw striated muscle fibres. The following diagram is drawn by two students.



Student A



Student B

Evaluate their diagrams with suitable reasons.

- (b) How do muscles found in your limbs and ribs containing lungs differ from each other structurally and functionally?
31. (a) Write an activity to demonstrate osmosis process. Explain with well labelled diagram
- (b) Raisin swells when place in tap water but shrink when swollen are placed in sugar solution. Why?
32. Answer the following:
- (a) Draw displacement-time graph for an object moving with zero acceleration.
- (b) A bullet hits a sand box with velocity of 20m/s and penetrates into it till 6 cm before coming to rest. Calculate its deceleration in the sand box.

33. Answer the following:

- (a) State the source of centripetal force that a planet requires to revolve around the sun.
- (b) On what factors does that force depend?
- (c) Suppose this force suddenly becomes zero, then in which direction will the planet begin to move if no other celestial body affects it?

Section D

34. (a) Fill the table

	Areolar	Ligaments	Adipose	Cartilage
Structure				
Function				

Note: Only one Point in each blank space

- (b) Compare between squamous and columnar epithelium in terms of shape and function.
35. (i) Three students A, B and C prepared mixtures using chalk powder, common salt and milk respectively in water. Whose mixture:
- (a) Would not leave residue on filter paper?
 - (b) Would show Tyndall effect?
 - (c) Would give transparent / clear solution?
 - (d) Would settle down at the bottom when left undisturbed?
 - (e) Could be filtered by filter paper?
- (ii) A solution has been prepared by mixing 5.6 ml of alcohol with 75ml of water. Calculate the percentage (by volume) of alcohol in the solution.
36. An insect moves along a circular path of radius 10cm with a constant speed .It takes 1 minute to move from point to the diametrically opposite point, find
- (a) The distance covered
 - (b) The speed of the insect
 - (c) The displacement for the journey
 - (d) The average velocity for the given journey
 - (e) Is this motion an example of accelerated motion? Justify.