Model Question Paper 2

9th Standard CBSE

Science

Reg.No. :

Time : 02:00:00 Hrs

Total Marks : 100

Section-A

1) A group of cells similar in form, function and origin is known as   **1**

   (a) parenchyma cells   (b) xylem cells   (c) cork cells   (d) sclerenchyma cells

2) Which of the following cells are living cells?   **1**

   (a) Fibres   (b) Vessels   (c) Collenchyma   (d) all of these

3) Which of the following cells help sieve tubes to translocate food?   **1**

   (a) Xylem parenchyma   (b) Phloem parenchyma   (c) Phloem fibre   (d) Companion cell

4) Striated squamous epithelium occurs on surfaces which take part in   **1**

   (a) absorption   (b) secretion   (c) protection   (d) both (a) and (b)

5) A neuron consists of   **1**

   (a) cell body   (b) dendrites   (c) axon   (d) all of these

6) Five kingdom classification, was proposed by   **1**

   (a) Linnaeous   (b) Aristotle   (c) Lamark   (d) Whittaker

7) The fundamental basic taxonomical unit of classification is   **1**

   (a) species   (b) genus   (c) class   (d) kingdom

8) Which of the following statement is not true for fungi?   **1**

   (a) They can be saprophyte.   (b) They can be prokaryote   (c) Their cell wall is formed of chitin.

   (d) They may be symbiotic.

9) m/s^{-2} is the SI unit of   **1**

   (a) distance   (b) displacement   (c) velocity   (d) acceleration

10) The velocity of a particle increases from u to V in time t during which it covers a distance s If the particle has a uniform acceleration, then which of the following equations does not apply to the motion?   **1**

   (a) 2s=(v+u)t   (b) $v^2 = u^2 - 2as$ (c) $a = \frac{v-u}{t}$ (d) $s = \left(u + \frac{1}{2}at\right)t$

11) The fig 8.39 shows how the speed of a marble changes as it rolls down an inclined plane A , travels on a flat horizontal surface and then on another inclined plane B Then the total time during which the marble is in motion is   **1**

   (a) 10s   (b) 40s   (c) 80s   (d) 100s

12) The above problem can be explained on the basis of the property of   **1**

   (a) inertia   (b) force   (c) torque   (d) momentum

13) momentum gives a measure of **1**

   (a) mass   (b) weight   (c) velocity   (d) quantity of motion

14) The rate of change of momentum w.r.t. time is measures in **1**

   (a) $kg \quad ms^{-2}$ (b) $kg \quad ms^{-1}$ (c) kg m   (d) kg

15) A block of mass M is pulled with a force F along a smooth horizontal surface with a rope of mass m. The acceleration of the block will be **1**

   (a) $\frac{F}{M}$ (b) $\frac{F}{m}$ (c) $\frac{F}{M+m}$ (d) $\frac{F}{M-m}$

16) When a fruit falls from a tree, **1**

   (a) only the earth attracts the fruit   (b) only the fruit attracts the earth

   (c) both the earth and the fruit attract each other   (d) they repel each other

17) All bodies whether large or small fall with the **1**

   (a) same force   (b) same acceleration   (c) same velocity   (d) same momentum

18) Newton's law of gravitation **1**

   (a) can be verified in the laboratory   (b) cannot be verified but is true   (c) is valid only on earth

   (d) is valid only in the solar system

19) The weight of a body of mass 1 kg on earth is **1**

   (a) 1 kg   (b) 1 N   (c) 9.8 N   (d) none of these

20) In vacuum all freely falling objects **1**

   (a) have the same speed   (b) have the same velocity   (c) have the same acceleration

   (d) have the same force

Section-B

21) Give one example of uniformly accelerated motion? **2**

22) Name the instrument which is used to determine the density of a liquid. **2**

23) State the S.I unit of speed A girl moves with the speed of 6 km/h for 2 h and with the speed of 4 km/h for the next 3 h find the average speed of the girl and the total distance moved. **2**

24) What is the difference between ligament and tendon? **2**

25) How do tissues formed in multicellular organisms? **2**

26) What are the characteristics of plant tissues? **2**

27) What are structural and functional difference between plants and animals? **2**

28) What is the main function of meristematic tissue? **2**

29) What is the difference between **2**

   (i) meristematic cells and permanent cells?

   (ii) parenchyma and collenchyma?

30) What is epithelial tissue? **2**

31) Why do we classify organisms? **2**

32) Explain the three basic features for grouping all organisms into five major kingdoms. **2**

33) In which kingdom will you place an organism which is single-celled, eukaryotic and photosynthetic? **2**

34) Which division among plants has simplest organisation? **2**

35) You are given an assortment of plants on your laboratory table. What characters will you look in order to label **2**
a particular specimen as:

(i) Angiosperm

(ii) Moss

(iii) Alga

36) Define the following: **2**

(a) Radial symmetry

(b) Bilateral symmetry

37) Who is known as Father of Taxonomy? **2**

38) Explain the basis for grouping organisms into five kingdoms. **2**

39) Rossy wants to leftover piece of bread which was two-three days old. Her mother asked her not to eat the **2**
piece. She showed the cottony white patch on the bread. Rosy asked

(a) What is this? From where it has come on the piece of bread?

(b) From where it get food?

(c) Whether they help us in some way?

40) Define the term velocity .What is its SI unit? Is it a scalar or vector quantity? **2**

Section-C

41) What does the odometer of an automobile measure? **5**

42) A car travels a certain distance with a speed of 50 km/h and returns with a speed of 40 km/h Calculate the **5**
average speed for the whole journey

43) A bus decreases its speed from 80 km h^{-1} to 60 km h^{-1} in 5 s. Find the acceleration of the bus. **5**

44) What is the nature of the distance time graphs for uniform and non-uniform motion of an object? **5**

45) Two bodies of different masses are allowed to fall freely. How do their accelerations vary? **5**

46) State any three differences between mass and weight. **5**

47) What do you mean by buoyancy? In which direction does the buoyancy force on an object immersed in a **5**
liquid act?

48) A scotter starts from rest moves in a straight line with a constant acceleration and covers a distance of 64 m in **5**
4s.

(i) Calculate its acceleration and its final velocity.

(ii) At what time the scooter had covered half the total distance?

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Section-A

1) (a) parenchyma cells **1**

2) (c) Collenchyma **1**

3) (d) Companion cell **1**

4) (c) protection **1**

5) (d) all of these **1**

6) (d) Whittaker   **1**

7) (a) species   **1**

8) (b) They can be prokaryote   **1**

9) (d) acceleration   **1**

10) (b) $v^2 = u^2 - 2as$ **1**

11) (d) 100s   **1**

12) (a) inertia   **1**

13) (d) quantity of motion   **1**

14) (a) $kg \quad ms^{-2}$ **1**

15) (c) $\frac{F}{M+m}$ **1**

16) (c) both the earth and the fruit attract each other   **1**

17) (b) same acceleration   **1**

18) (a) can be verified in the laboratory   **1**

19) (a) 1 kg   **1**

20) (c) have the same acceleration   **1**

Section-B

21)   **2**

22) The instrument which is used to determine the density of liquid is "hydrometer."   **2**

23) SI unit of speed is meter per second. Average speed of the body is given by   **2**

$v_{av} \quad = \frac{v_1 t_1 + v_2 t_2}{t_1 + t_2}$

Here, v_1= 6 km/h, t_1 =2 h,v_2 = 4 km/h,t_2 = 3 h

$v_{av} \quad = \frac{6 \times 2 + 4 \times 3}{2+3}$ = 4.8 km/h

$\therefore$ Total distance = $v_1 t_1 + v_2 t_2$ = $6 \times 2 + 4 \times 3$ = 24km

24) The differences between tendon and ligament are as follows: **2**

Tendon	Ligament
It is strong and non-flexible in nature.	It is elastic and flexible in nature.
It joins muscles to bones	It joins bones to bones.
It is formed of white fibrous connective tissue.	It is formed of yellow fibrous connective tissue.

25)   **2**

During development, from zygote (formed by the union of egg and sperm) a large number of cells are formed. These cells undergo differentiation to produce various specialised cells/tissue to perform different functions in the living body.

26)   **2**

Plants are stationary or fixed, they do not need much energy. So most of the tissues they have are supportive, which provide them with structural strength. Most of these tissues are dead; they do not contain living protoplasm.

27)   **2**

S.No.	Plants	Animals
1.	Plants are stationary, they do not move. They do not need much energy.	1. Animals move in search of food, mate and shelter. They need more energy as compared to plants.
2.	Their most of the tissues are dead and supportive which provide structural strength.	2. Most of the tissues they contain are living and contain protoplasm.
3.	In plants, growth is limited to certain regions.	3. In animals, growth is uniform and not limited to certain regions.

28)   **2**

The main function of meristematic tissue is to form continuously new cells for increasing cell number, length and the girth of the plant.

29)   **2**

(i) Difference between Meristematic cells and Permanent cells

Meristematic Cells	Permanent Cells
1. They have dense cytoplasm and a large centrally placed nucleus.	1. They have a large central vacuole, and normal nucleus.
2. These cells are capable of dividing to produce new cells.	2. They attain permanent shape and are not capable of producing new cells.

(ii) Difference between Parenchyma and Collenchyma

Parenchyma	Collenchyma
1. It is living and mainly storage tissue.	1. It is living and mainly provides tensile strength to stem and leaf stalk.
2. Parenchymatous cells have large intercellular spaces. Their walls do not have thickening at the corners.	2. Collenchymatous cells have very little intercellular spaces. They have thickening at the corners of cell walls.

30)   **2**

Epithelial Tissue. Epithelial tissue forms covering of entire surface of the body and lines the internal organs. Because of this epithelial tissue is also called protective tissue. It also forms a barrier to keep different body system separate. In this tissue cells are closely associated and arranged on a very thin extracellular fibrous basement membrane. Epithelial tissue may be composed of one (simple epithelium) or more layers of cells (compound epithelium). The skin, lining of mouth and alimentary canal, lung alveoli etc. are made of epithelial tissues.

31) **2**

  We classify organisms due to the following reasons:

  (i) Classification makes the study of huge varieties of organisms easy.

  (ii) It reveals before us a picture of all forms of organisms at a glance.

  (iii) It helps us to understand the interrelationship among different groups of organisms.

  (iv) It serves as a base for the development of other pure biological science e.g., biogeography i.e., geographical distribution of plants and animals.

  (v) It also helps in understanding and development of other applied branches of science such as agriculture, public health and environmental biology.

32) **2**

  (i) Nature of cell i.e., the organisms has eukaryotic cells which have membrane bound organelles, including a nucleus or prokaryotic cell that do not has clearly demarcated nucleus.

  (ii) Organisms is unicellular or multicellular.

  (iii) Whether the organisms produce their own food through photosynthesis or procure food from outside.

33) Protista **2**

34) Thallophyta. **2**

35) (i) Angiosperm **2**

   (a) Presence of flowers, seeds and fruits.

   (b) Presence of root, stem and leaves.

   (c) Presence of xylem vessels and phloem sieve tubes.

   (ii) Moss

   (a) Absence of roots.

   (b) Presence of rhizoids.

   (c) Leaves one cell thick.

   (iii) Alga

   (a) Green in colour.

   (b) Plant body is thalloid.

36) **2**

  (a) Radial symmetry: When any plane passing through the central axis of the body divide the animal into two exact halves that are approximately mirror images it is called radial symmetry. For examples, sponges, coelenterates and adult Echinoderms (e.g., starfish).

  (b) Bilateral symmetry: An animal is said to have bilateral symmetry if its body can be divided into two halves by only one vertical plane passing through centre. Examples: Arthropodes (housefly), Molluscs (snail, octopus), Man, etc.

  Most bilateral animals have dorsal surface (the keeps upwards) and ventral surface (faces the ground).

37) Carolus Linnaeus. **2**

38) **2**

The basis for grouping organisms into five kingdoms are:

(i) Whether the organisms are made of prokaryotic or eukaryotic cells.

(ii) Whether the organism is unicellular i.e., a cell living singly or organised into multicellular and thus complex organisms.

(iii) Whether the cells have a cell wall or not.

(iv) Whether they prepare their own food or get their food from outside.

39) **2**

(a) This cottony mass is of bread mould, belong to the group fungi. The spores of the mould present in air, settle down on the moist bread piece (and also on other moist dead organic matter). Spores grow into small or big colonies (patch) consisting of thread like structure called hyphae. Eating of such spoiled bread causes diseases.

(b) Fungi (mould) do not have chlorophyl. They obtain their food from dead decaying organic matter, such as bread or other food materials, so they are called saprophytes.

(c) Fungi decompose complex dead organic materials into usable simpler forms. Thus, they help in recycling of materials. Also help in cleaning of the environment.

40) **2**

Velocity. It is physical quantity that gives both the speed and direction of motion of the body

Velocity of a body is defined as the displacement produced per unit time. It is also defined as the speed of a body in a given direction.

Velocity=$\frac{Displacement}{Time}$

If s is the distance travelled by a body in a given direction and t is the time taken to travel that distance,then the velocity v is given by

$v = \frac{s}{t}$

The SI unit of velocity is ms^{-1}

Section-C

41) The odometer of an automobile measures the distance moved by it. **5**

42) Let the one way distance =X km **5**

Time taken in the forward journey at a speed of 50 km/h =$\frac{Distance}{Speed} = \frac{X}{50}h$

Time taken in the return journey at a speed of 40 km/h=$\frac{X}{40}h$

Total time for the whole journey =$\frac{x}{50} + \frac{x}{40} = \frac{4x+5x}{200} = \frac{9x}{200}h$

Total distance covered =x+x=2x km

∴ Average speed =$\frac{Total \quad distance}{Total \quad time}$

$= \frac{2x}{9x} = \frac{2xX200}{9x} = \frac{400}{9} = $ 44.44 km/h

43) Initial speed,u = $80\frac{km}{h} = \frac{80X1000m}{3800s} = \frac{800}{36}ms^{-1}$ **5**

Final speed,v= $60\frac{km}{h} = \frac{60X1000m}{3800s} = \frac{600}{36}ms^{-1}$

Acceleration,u = $a = \frac{v-u}{t} = \frac{\frac{600}{36} - \frac{800}{36}}{5} = \frac{200}{36X5}ms^{-2}$

$= -\frac{10}{9}ms^{-2} = -1.11ms^{-2}$

44)   **5**

   For uniform motion the distance time graph is a straight line inclined with the time-axis for non-uniform motion.

45)   **5**

   The time of fall t is given by $h = \frac{1}{2}gt^2$ $\quad or \quad$ $t = \sqrt{\frac{2h}{g}}$ As the time t is independent of the mass of falling bodies, the two bodies will hit the ground in the same time interval.

46)   **5**

   Difference between mass and weight:

Mass	Weight
1. Mass is the quantity of matter contained in a body and is the measure of its inertia.	Weight of a body is the force which a body is attracted towards the centre of the earth.
2. Its value remains constant at all places.	Its value (W=mg) changes from place to place due to the change in the value of acceleration due to gravity 'g'.
3. It is a scalar quantity.	It is a vector quantity.
4. It is measured by a pan balance.	It is measured by a spring balance.
5. Mass of a body is never zero.	Weight of a body is zero at the centre of the earth because there 'g' becomes zero.
6. Its unit is kg	Its unit is Newton or kg-wt.

47)   **5**

   When a body is immersed partially or wholly in a fluid (liquid or gas), it displaces fluid. The displaced fluid tends to regain its original condition. In doing so, it exerts an upward force on the body. the upward force acting on a body immersed in a fluid is called upthrust or force of buoyancy and phenomenon is called buoyancy. For example, a cork taken inside water experiences an upwards thrust and comes to the surface. Similarly, while drawing water from a well, a bucket is found too much lighter when it is inside water than when it comes out of it. The buoyancy acts through the centre of gravity of the displaced fluid which is called centre of buoyancy.

48) a=8 ms^{-2},v=32 ms^{-1} (ii) t=2$\sqrt{2\quad}$ s **5**