

Plant cell and animal cell: 30 questions with answers (Class 9 and Class 8)

Ten MCQs (1 mark), ten short answers (2 marks), five on the differences (3 marks), five diagram and reasoning questions (3 to 5 marks). NCERT Class 9 Chapter 5 and Class 8 Cell: Structure and Functions.

Questions

1. The cell wall of a plant cell is made of (A) cellulose (B) protein (C) chitin (D) lipid
2. Present in an animal cell but absent in most plant cells: (A) ribosome (B) vacuole (C) centriole (D) nucleus
3. The organelle called the powerhouse of the cell is the (A) nucleus (B) mitochondrion (C) Golgi (D) ribosome
4. The large central vacuole of a plant cell is filled with (A) cell sap (B) cytoplasm (C) starch (D) air
5. The organelle that packages and dispatches materials: (A) ER (B) lysosome (C) Golgi apparatus (D) plastid
6. The site of protein synthesis is the (A) nucleus (B) ribosome (C) mitochondrion (D) vacuole
7. A plant cell in a concentrated salt solution will (A) burst (B) swell (C) undergo plasmolysis (D) divide
8. The control centre of the cell is the (A) nucleus (B) cytoplasm (C) membrane (D) Golgi
9. The cell membrane is selectively permeable because (A) it is thin (B) it is rigid (C) it lets some substances through and not others (D) it has pores
10. Chromoplasts colour fruits and flowers; leucoplasts (A) make food (B) store starch, oils and proteins (C) digest (D) respire
11. Why is the cell called the fundamental unit of life?
12. State two functions of the cell membrane.
13. Why are mitochondria called the powerhouse of the cell?
14. What is the function of the cell wall, and what would happen to a plant without it?
15. Name the organelle that contains chlorophyll and state its function.
16. What is the difference between diffusion and osmosis?
17. Why are lysosomes called suicide bags of the cell?
18. What is the function of the nucleus, and what does it contain?
19. What is the endoplasmic reticulum, and what is the difference between rough and smooth ER?
20. What happens to an animal cell in pure water, and why does a plant cell not burst?
21. Give three differences between a plant cell and an animal cell, naming the feature.
22. Why do plant cells have a fixed shape while animal cells can change shape?
23. Plant cells have chloroplasts. Why do they also need mitochondria?
24. 'Animal cells do not have vacuoles.' Correct the statement.
25. Three organelles found in a leaf cell but not a cheek cell, with what each does.
26. Draw a labelled plant cell with seven labels.
27. Draw a labelled animal cell with six labels.
28. A cell is rectangular, green, with a large clear space in the middle. Identify it with two reasons.
29. Explain how a raisin swells in water, naming the process and the structure.
30. If the chloroplasts were removed from a plant cell, which two things could it no longer do, and could it survive?

Answers, as they are marked

Q	Answer
1-10	1 A 2 C 3 B 4 A 5 C 6 B 7 C 8 A 9 C 10 B
11	All living things are made of cells, and the cell is the smallest unit that carries out all life processes; the organism's functions are the sum of its cells' functions.
12	Separates and holds the cell's contents; selectively permeable, controlling what enters and leaves by diffusion and osmosis.
13	They release the energy in glucose by respiration and store it as ATP for all the cell's activities.
14	Fixed shape and strength; withstands the pressure of water entering by osmosis. Without it the plant could not stand and its cells would burst in water.
15	Chloroplast: contains chlorophyll, traps light energy, carries out photosynthesis.
16	Diffusion: any substance, high to low concentration. Osmosis: water only, through a selectively permeable membrane, from higher to lower water concentration.
17	They contain digestive enzymes; when the cell is damaged or old they burst and digest the cell's own contents.
18	Controls all cell activities and carries hereditary information; contains chromosomes (DNA and protein) and a nucleolus.
19	A network of membrane tubes and sheets that transports materials. Rough ER has ribosomes and makes proteins; smooth ER has none and makes lipids.
20	The animal cell takes in water by osmosis, swells and may burst (no wall). The plant cell becomes turgid; the rigid wall resists the pressure.
21	Cell wall present/absent; chloroplasts present/absent; vacuole one large central / small or absent; centrioles absent/present; shape fixed/irregular (any three).
22	The rigid cellulose cell wall outside the membrane holds a fixed shape; the animal cell has only the flexible membrane.
23	Chloroplasts make glucose only in light; every cell, including roots, needs energy released from glucose day and night, which is respiration in mitochondria.
24	Animal cells do have vacuoles, but small and temporary; it is the large permanent central vacuole they lack.
25	Cell wall (shape, protection), chloroplasts (photosynthesis), large central vacuole (stores cell sap, keeps the cell turgid).
26	Labels: cell wall, cell membrane, cytoplasm, nucleus, large central vacuole, chloroplast, mitochondrion. Neat pencil, label lines not crossing.
27	Labels: cell membrane, cytoplasm, nucleus, mitochondrion, small vacuole, centriole.
28	A plant cell: rectangular (cell wall), green (chloroplasts), the clear space is the central vacuole. Any two.
29	Osmosis (endosmosis): water moves from the water outside into the raisin through its selectively permeable membranes, so it swells.
30	No photosynthesis, no food made, loses its green colour. It survives for a while on stored food, as root cells do; a whole plant without chloroplasts would die.

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