

Notes for valuers

- Value points are given for descriptive answers; accept the same ideas in the student's own words.
- Diagrams: neat diagram half the marks, correct labels the other half.

SECTION – A**10 × 1 = 10**

1. B) Robert Hooke
2. C) mitochondria
3. A) chloroplast
4. B) lysosomes
5. B) osmosis
6. C) cell wall
7. A) apical meristem
8. B) water and minerals
9. C) cardiac muscle
10. B) tendon

SECTION – B**3 × 2 = 6**

11. Prokaryotic: nuclear region not bounded by a membrane (nucleoid); membrane-bound organelles absent; e.g. bacteria.
Eukaryotic: well-defined nucleus with nuclear membrane; membrane-bound organelles present; e.g. plant and animal cells.
12. The raisins swell. The concentration of water outside is higher than inside the raisin, so water enters the raisin by osmosis (endosmosis).
13. Blood has a fluid matrix (plasma) in which red blood cells, white blood cells and platelets are suspended. It connects and carries materials between different parts of the body, so it is a connective tissue.

SECTION – C**2 × 4 = 8**

14. Any four:

Plant cell	Animal cell
Has a cell wall outside the cell membrane	No cell wall
Plastids (chloroplasts) present	Plastids absent
Large central vacuole	Vacuoles small or absent
Centrioles usually absent	Centrioles present
Usually rectangular in shape	Usually round or irregular

15. A) Plant cell — labels: cell wall, cell membrane, nucleus, nucleolus, cytoplasm, chloroplast, vacuole, mitochondria, Golgi apparatus, endoplasmic reticulum (any four).
15. B) Neuron — labels: dendrites, cell body (cyton), nucleus, axon, nerve ending (any four).

16. A) Nucleus: double-layered nuclear membrane with pores; contains chromosomes (DNA). Controls all activities of the cell and carries hereditary information.

Endoplasmic reticulum: network of membrane-bound tubes. Rough ER has ribosomes and makes proteins; smooth ER makes fats/lipids; helps in transport of materials.

Golgi apparatus: stack of flattened sacs (cisterns). Stores, modifies and packages materials made in the ER; forms lysosomes.

Vacuoles: storage sacs for solid or liquid contents. Large in plant cells, give turgidity; small in animal cells.

Marks: 2 for each organelle.

16. B) Materials: onion, forceps, watch glass, water, safranin, glycerine, slide, coverslip, needle, microscope.

Procedure: peel a thin transparent layer from the inner side of an onion scale; put it in water in a watch glass; stain with a drop of safranin; place on a slide with a drop of glycerine; cover gently with a coverslip avoiding air bubbles; observe under low and then high power.

Observation: many rectangular cells arranged closely; each has a cell wall, cytoplasm, a darkly stained nucleus and a vacuole.

Diagram of onion peel cells with labels.

Marks: procedure 4, observation 2, diagram 2.

17. A) Parenchyma: living cells with thin walls, loosely packed with intercellular spaces; found in soft parts of stem, root, leaf; stores food; chlorenchyma (with chlorophyll) does photosynthesis; aerenchyma (with air cavities) helps aquatic plants float.

Collenchyma: living, elongated cells, thickened at the corners, little intercellular space; found in leaf stalks below the epidermis; gives flexibility and mechanical support.

Sclerenchyma: dead cells, long and narrow, walls thickened with lignin, no intercellular space; found in stems, around vascular bundles, veins of leaves, husk of coconut; gives strength and hardness.

Diagrams of all three (transverse/longitudinal sections).

Marks: 2 each + 2 for diagrams.

17. B) Epithelial tissue covers most organs and cavities; cells are tightly packed with no intercellular spaces.

Simple squamous epithelium: thin, flat cells; lines blood vessels, lung alveoli, oesophagus and mouth; allows diffusion.

Stratified squamous epithelium: cells in many layers; forms the skin; prevents wear and tear.

Cuboidal epithelium: cube-shaped cells; lines kidney tubules and ducts of salivary glands; gives mechanical support; forms glandular epithelium.

Columnar epithelium: tall pillar-like cells; lines the inner surface of the intestine; helps absorption and secretion.

Ciliated columnar epithelium: has cilia; lines the respiratory tract; pushes mucus forward to clear it.

Marks: introduction 1, each type with location and function ~1½ (any five types).

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