

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 Brown
2. A) Schleiden and Schwann
3. A) ribosome
4. B) cytoplasm
5. A) plasmolysis
6. A) Leeuwenhoek
7. C) sclerenchyma
8. D) phloem fibres
9. C) platelets
10. B) ligament

SECTION – B

3 × 2 = 6

11. The plasma membrane allows only some substances (like water, oxygen, carbon dioxide) to enter or leave the cell and prevents the movement of others. So it is called selectively permeable.
12. Lysosomes contain powerful digestive enzymes. When a cell is damaged, lysosomes may burst and their enzymes digest the cell itself. So they are called the 'suicide bags' of the cell.
13. Any two:
 Xylem carries water and minerals; phloem carries food.
 Xylem moves materials upward only (from roots); phloem moves materials in both directions.
 Most xylem elements are dead (except xylem parenchyma); most phloem elements are living (except phloem fibres).

SECTION – C

2 × 4 = 8

14. Any four:

Meristematic tissue	Permanent tissue
Cells divide actively	Cells have lost the ability to divide
Cells are small, with dense cytoplasm and a large nucleus	Cells are larger, with a large vacuole
Vacuoles absent or very small	Vacuoles are large
Found at growing regions — tips of root and stem, cambium	Found in all mature parts of the plant
Thin cell walls, no intercellular space	Walls may be thin or thick; intercellular spaces may be present

15. A) Animal cell — labels: cell membrane, nucleus, nucleolus, cytoplasm, mitochondria, Golgi apparatus, endoplasmic reticulum, lysosome, centrosome (any four).

- 15. B)** Muscle fibres — striated (long, cylindrical, unbranched, many nuclei, light and dark bands), smooth (spindle-shaped, one nucleus), cardiac (cylindrical, branched, one nucleus, intercalated discs). Labels: nucleus, striations, spindle shape, branches.

SECTION – D

2 × 8 = 16

- 16. A)** Diffusion: spontaneous movement of a substance from a region of high concentration to a region of low concentration (e.g. CO₂, O₂ through the cell membrane).
Osmosis: movement of water molecules through a selectively permeable membrane from a region of high water concentration to low water concentration.
Activity: remove the shell of an egg by dissolving it in dilute hydrochloric acid. Put the egg in pure water — it swells (water enters). Put it in a strong salt solution — it shrinks (water comes out).
Endosmosis: water enters the cell (cell placed in hypotonic solution). Exosmosis: water moves out of the cell (cell placed in hypertonic solution).
Marks: definitions 2, activity 4, endo/exosmosis 2.
- 16. B)** Mitochondria: double membrane; outer smooth, inner folded into cristae; site of cellular respiration; release energy as ATP — 'powerhouse of the cell'.
Plastids: present only in plant cells. Chloroplasts (green, have chlorophyll, photosynthesis); chromoplasts (coloured, give colour to flowers and fruits); leucoplasts (colourless, store starch, oils, proteins).
Both have their own DNA and ribosomes, so they can make some of their own proteins — hence they are called semi-autonomous organelles.
Marks: mitochondria 3, plastids 3, semi-autonomous 2.

- 17. A)** Comparison (with diagrams):

Feature	Striated (skeletal)	Smooth (unstriated)	Cardiac
Shape	Long, cylindrical, unbranched	Long, spindle-shaped	Cylindrical, branched
Nuclei	Many (multinucleate)	One	One
Bands	Light and dark bands present	Absent	Faint bands present
Control	Voluntary	Involuntary	Involuntary
Location	Attached to bones (limbs)	Iris, alimentary canal, ureters, blood vessels	Heart
Function	Movement of body parts	Movement of food, change in size of pupil	Rhythmic contraction of the heart throughout life

Marks: comparison 6, diagrams 2.

- 17. B)** Blood: fluid matrix (plasma) with RBCs, WBCs and platelets; transports gases, food, hormones and wastes.
Bone: hard, strong matrix of calcium and phosphorus; forms the framework; supports the body and anchors muscles.
Cartilage: widely spaced cells in a solid matrix of proteins and sugars; found in nose, ear, trachea, larynx and at joints; smoothens bone surfaces at joints.
Areolar tissue: found between skin and muscles, around blood vessels and nerves, in bone marrow; fills spaces inside organs, supports them and helps repair tissues.
Adipose tissue: found below the skin and between internal organs; cells filled with fat globules; stores fat and acts as an insulator.
(Ligament and tendon may also be mentioned.)
Marks: 1½ each for five tissues + ½ for overall presentation.

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