Subjective type question:

1. Tissues are **group of similar** cells performing a specific function. In multicellular organism there are many cells in the body of organism , so the cells get grouped together and form tissues depending on their function. For multiple functions in multicellular organisms tissues are required.
2.

Parenchyma	Collenchyma	Sclerenchyma
1.Most common type of tissue found in almost all plants	Special type of Parenchyma	Present in stems ,leaf veins and hard coverings of seeds and nuts
2.**Thin walled** living cells with intercellular spaces	**Localized thickening of cellulose** and pectin on the cell walls	**Dead**, thick walled due to **deposition of lignin**.
3.Types- Chlorenchyma, Aerenchyma	No such types	Types- Fibres and sclereids
4. Stores food and gives rigidity to plant body	Gives mechanical support and helps plants to resist the bending and stretching caused by wind	Provides mechanical support and protects the plant form various stress and strainof environmental forces

3. Epidermis in plants forms a boundary between the plant and the external environment. The epidermis serves several functions: it protects against water loss, regulates gas exchange, secretes metabolic compounds, and (especially in roots) absorbs water and mineral nutrients.

4. Blood consists of both liquid and cellular medium. The liquid material is called plasma and the cellular material consist of
   a) **RBC**-Carrier of oxygen and consist of protein haemoglobin
   b) **WBC**- Constitute the immune system of our body and hence helps us to fight against various diseases.
   c) **Platelets**- Help in clotting of the blood and prevent the blood loss during an injury.

5.

Character	Striated Muscle	Unstriated Muscle
1.Shape	Cells are long ,cylindrical,non tapering and unbranched	Cells are long with tapering ends and unbranched
2. Nucleus	Many nuclei(multinucleated) situated towards the periphery of muscle fibre	Cells of only one nucleus (uninucleated) situated in the centre.
3.Striation	Alternate light and dark bands	Striations or strips are absent
4.Mode of contraction	Voluntary	Involuntary
Example	Hands, legs and other skeletal muscle	Stomach wall, intestine, ureter, bronchii , etc

6. **Tendon**- A tendon is a fibrous connective tissue which attaches **muscle to bone**. Tendons may also attach muscles to structures such as the eyeball. A tendon serves to move the bone or structure.
Ligament- A ligament is a fibrous connective tissue which attaches **bone to bone**, and usually serves to hold structures together and keep them stable.

7. Heart muscles are involuntary and made up of striated muscles .
Features : a) Non tapering, cylindrical ,branched and non fatigue muscle
b) One or two nuclei at the centre.
c) Cells have faint striations.
Diagram : Refer module differentiation table of muscular tissue

8. Types of meristematic tissues:
a) Based on origin – 1. Promeristem 2. Primary Meristem 3. Secondary Meristem
b) Based on location-
1. **Apical meristem** - Present at growing tips of roots and stems.
2. **Lateral meristem** – Found just below the bark (called cork cambium) and also present in roots.
3. **Intercalary Meristem** – Present at the base of leaves or internodes.

9.

Bone	Cartilage
1. Porous, highly mineralized hard and rigid tissue	Soft connective tissue
2. Matrix filled with salts like calcium phosphate ,calcium carbonate, magnesium phosphate and calcium fluoride	Matrix is solid firm and flexible with small spaces called lacunae.
3. Matrix in form of concentric rings around central canal	Contains cartilage cells called chondrocytes
4. Bone cells called osteocytes are embedded in matrix and occupy small space	Found in nose, external ear, bone joints and supporting rings of trachea

10. **Complex permanent tissue** : Consist of more than one type of cells which work together as a unit . Concerned with transportation of nutrients and food .
    Types-
    1.) **Xylem** : Conducts water and minerals from roots to other parts of the plants .4 types of Xylem- Tracheids, Vessels , Xylem Parenchyma , Xylem Sclerenchyma .
    Xylem also helps in mechanical support.
    2.) **Phloem** : Conducts prepared food materials from leaves to different parts of plant . 4 types of Phloem- Sieve tubes, companion cells, Phloem parenchyma , Phloem Sclerenchyma .
    Sieve tubes play important role in conduction of sugar. Companion cells control the metabolic activities of sieve tubes. Phloem fibres gives mechanical support.

11. Organ system and types - Refer page 25 (Subtopic Organ system and its types description).

Objective type questions :

1. C . Adipose tissue is **animal tissue** which is found beneath the skin and helps as cushion for protection of various organs.
2. B.
3. D. Columnar epithelium is found mostly where absorption and secretions take place. Hence found in all options given.
4. D. Amoeba is unicellular and hence do not contain tissues. Tissues are found in multicellular organisms for multiple functions. Rest all option are multicellular.
5. B. Cardiac Muscles have **special intercalated discs** which connects one end of muscle to other bonding them together.
6. C. The brush border (cilia) moves and helps in movement of egg from fallopian to uterus.
7. C. Cork is sclerenchymatous tissue and hence the tissue cell wall are thick dur to presence of lignin.
8. D. The ground substance or matrix of bone is filled with salts such as calcium phosphate , calcium carbonate, magnesium phosphate and calcium fluoride.
9. A. Tissue connecting bone to bone is ligament and tissue connecting bone to muscle is tendons.
10. B. Lymph consists of lymphocytes which are WBCs .
11. B. Epidermis consists of 3-4 layers of simple epithelium , hence it is considered as stratified epithelium.
12. C. During rigorous exercise and lack of proper oxygen the muscle cells start producing lactic acid instead of pyruvic acid due to anaerobic respiration.
13. D. All visceral organs consist of smooth muscle tissues.
14. B. Adipose tissue are made up of cells called adipocytes which stores fats.
15. B. The masseter is located in the jaw and is one of the muscles of mastication or chewing.
16. A. The two types of plant tissues are Meristematic and Permanent.
17. B. Parenchyma is made of single type of tissue and hence simple tissue . Complex tissues are made up of more than 1 type of tissues.
18. C. Phloem is made up more than 1 type of tissues hence termed as complex tissue.
19. A. Stomata are openings on leaves through which transpiration and exchange of gases takes place.
20. C. Rest all option have types of main animal tissue
21. A. Cardiac muscles also have striations and hence also called as striated muscle .

22. A. Apical meristematic tissues are present at the tips of roots and stem and hence helps in growth of longitudinal growth of the plant i.e height.
23. C. Xylem generally consists of tissue provide mechanical support and hence composed mostly of dead cells.
24. A. Synapse is junction between axonal end of one neuron and dendrite tip of another neuron which helps in transmitting of messages.
25. A. Bone to bone is joined by ligaments and bone and muscle are joined by tendons.

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