3. ANIMAL TISSUES
TEACHING TASK
NEET LEVEL QUESTIONS

1.Intestine absorbs the digested food materials. What type of epithelial cells are responsible for that?
Answer: B) Columnar epithelium
Explanation: The inner lining of the intestine is made up of **simple columnar epithelium**, which is specialized for absorption. These cells have microvilli that increase the surface area for absorbing digested nutrients. Stratified squamous epithelium is found in areas like the skin, spindle fibers are not epithelial cells, and cuboidal epithelium is typically found in glandular tissues or kidney tubules.

2.Which type of tissue changes the diameter of a blood vessel?
Answer: C) Muscle
Explanation: The walls of blood vessels contain **smooth muscle tissue**, which contracts or relaxes to regulate the diameter of the vessel (vasoconstriction or vasodilation). Connective tissue provides structural support, nervous tissue conducts signals, and epithelial tissue lines the inner surface of blood vessels.

3.Which of the following helps in repair of tissue and fills up the space inside the organ?
Answer: C) Areolar
Explanation: **Areolar tissue** is a loose connective tissue that fills spaces between organs, supports blood vessels, and aids in tissue repair due to its loose arrangement of fibers and cells like fibroblasts. Tendons connect muscles to bones, adipose tissue stores fat, and cartilage provides structural support.

4.Select the incorrect sentence.
Answer: C) Tendon are non-fibrous tissue and fragile
Explanation: **A) Correct**: Blood has a matrix (plasma) containing proteins, salts, and hormones.
B) Correct: Ligaments connect bones to bones.
C) Incorrect: Tendons are **fibrous connective tissues** (made of collagen) and are strong, not fragile. They connect muscles to bones.
D) Correct: Cartilage is a type of connective tissue.

5.A person met with an accident in which two long bones of hand were dislocated. Which among the following may be the possible reason?
Answer: C) Ligament
Explanation: Dislocation of bones occurs when the **ligaments** (which connect bones to bones at joints) are torn or stretched, allowing the bones to move out of alignment. Tendons connect muscles to bones, skeletal muscles are responsible for movement, and areolar tissue is not directly involved in joint stability.

6.Which of the cells is found in the cartilaginous tissue of the body?
Answer: D) Chondrocytes
Explanation: **Chondrocytes** are the cells found in cartilage, responsible for

producing and maintaining the cartilaginous matrix. Mast cells are involved in immune responses, basophils are a type of white blood cell, and osteocytes are found in bone tissue.

7.While doing work and running, you move your organs like hands, legs, etc. Which among the following is correct?
Answer: D) Skeletal muscles contract and pull the tendon to move the bones
Explanation: **Skeletal muscles** (voluntary muscles) contract and pull on **tendons**, which are attached to bones, to produce movement. Ligaments connect bones to bones, not muscles to bones. Smooth muscles are involuntary and not primarily involved in limb movement.

8.Strain is caused by excessive pulling of:
Answer: A) Muscles
Explanation: A **strain** is an injury caused by overstretching or tearing of **muscles** or their associated tendons. Ligaments are associated with sprains, not strains. Nerves are not typically involved in strains.

9.A bone left in dilute HCl for about 3 days will:
Answer: B) become soft and elastic
Explanation: Dilute HCl dissolves the **calcium salts** in the bone, leaving behind the organic matrix (collagen), which makes the bone soft and elastic. The bone does not crack, dissolve completely, or remain unchanged.

10.The muscular tissue which functions throughout life continuously without fatigue is:
Answer: B) Cardiac muscle
Explanation: **Cardiac muscle** is involuntary and contracts rhythmically throughout life without fatigue due to its unique structure and energy supply. Skeletal muscles fatigue, smooth muscles are involuntary but not continuous like cardiac muscle, and voluntary muscle refers to skeletal muscle.

11.Sheath nuclei, Schwann cells, and nodes of Ranvier are found in:
Answer: A) Nervous
Explanation: **Schwann cells** produce the myelin sheath, and **nodes of Ranvier** are gaps in the myelin sheath found in **nervous tissue** (specifically neurons). Osteoblasts are in bone, chondroblasts in cartilage, and gland cells are in epithelial tissue.

12.Choose the wrong statement.
Answer: B) Only iii
Explanation:
(i) Correct: The matrix of connective tissues varies (e.g., liquid in blood, solid in bone).
(ii) Correct: Adipose tissue stores fat below the skin and between organs.
(iii) Incorrect: Epithelial tissues have **minimal or no intercellular spaces**, as cells are tightly packed.
(iv) Correct: Striated (skeletal) muscles are multinucleate and unbranched.

13.Which muscles act involuntarily?
Answer: B) (ii) and (iii)
Explanation: **Striated muscles (i)**: These are skeletal muscles, which are voluntary.
Smooth muscles (ii): Involuntary, found in organs like the stomach.
Cardiac muscles (iii): Involuntary, found in the heart.
Skeletal muscles (iv): Voluntary, same as striated muscles. Thus, smooth and cardiac muscles are involuntary.

14.Assertion: Non-striated muscles are said to be voluntary in nature. Reason: Non-striated muscles can be moved according to will.
Answer: D) A & R are false
Explanation: **Non-striated muscles** (smooth muscles) are **involuntary**, not voluntary, and cannot be moved at will. Both the assertion and reason are false.

15.Assertion: Smooth muscle fibers do not appear to be striated. Reason: This is due to regular alternate arrangement of thick and thin filaments in smooth muscle fibers.
Answer: C) A is true, R is false
Explanation: **Assertion**: True, smooth muscles lack striations. **Reason**: False, smooth muscles lack striations because they do not have a regular arrangement of thick and thin filaments (unlike skeletal muscles). Their actin and myosin are arranged differently, without sarcomeres.

16.Match the following:
Answer: A) 1-c, 2-a, 3-d, 4-b
Explanation: **1. Fluid connective tissue**: **Blood (c)** is a fluid connective tissue with a liquid matrix (plasma).
2. Filling of space inside the organs: **Areolar tissue (a)** fills spaces and supports organs.
3. Striated muscle: **Skeletal muscle (d)** is striated and voluntary.
4. Adipose tissue: Found in the **subcutaneous layer (b)** for fat storage.

17.Match the following:
Answer: C) 1-d, 2-a, 3-b, 4-c
Explanation: **1. Surface of joints**: **Cartilage (d)**, specifically hyaline cartilage, covers joint surfaces.
2. Columnar stratified epithelium: Found in **ducts of glands (a)**.
3. Transitional epithelium: Found in the **urinary bladder (b)**, allowing stretching.
4. Ciliated epithelium: Found in the **respiratory tract (c)**, with cilia for moving mucus.

18.What is the pH of blood?
Answer: B) 7.4
Explanation: The paragraph states that blood is slightly alkaline with a pH of **7.35–7.4**, making 7.4 the closest correct option.

19.Study of blood is called:
Answer: B) Haematology
Explanation: The paragraph explicitly states that the study of blood is called **haematology**.

20.The main components of blood:
Answer: D) All the above
Explanation: The paragraph mentions that the main components of blood are **plasma**, **erythrocytes**, **leucocytes**, and **platelets**, so all are correct.

21.How much water is present in plasma?
Answer: D) 90%Explanation: The paragraph states that blood plasma contains **90–92% water**, so 90% is the correct choice.

22.What is the element present in haemoglobin?
Answer: B) Fe+2
Explanation: Haemoglobin contains **iron (Fe²z)**, which binds oxygen. Magnesium (Mg²z) is in chlorophyll, calcium (Ca²z) is in bones, and sodium (Naz) is in body fluids.

23.Role of haemoglobin in blood:
Answer: B) Transport of gases
Explanation: Haemoglobin's primary role is to **transport oxygen** (and some carbon dioxide) in the blood. It does not fight germs, clean blood, or engulf bacteria.

LEARNERS TASK

NEET LEVEL QUESTIONS
1.Cartilage is not found in
Correct Answer: C) Kidney
Explanation: Cartilage is a connective tissue found in the nose, ear, and larynx, providing structural support and flexibility. Kidneys primarily contain epithelial, connective, and muscular tissues, but not cartilage.

2.Fats are stored in human body as
Correct Answer: B) Adipose tissue
Explanation: Adipose tissue is a specialized connective tissue that stores fat in adipocytes, serving as an energy reserve and providing insulation.

3.Bone matrix is rich in
Correct Answer: B) Calcium and Phosphorus
Explanation: The bone matrix is primarily composed of calcium phosphate, which gives bones their hardness and strength.

4.Contractile proteins are found in
Correct Answer: C) Muscles
Explanation: Contractile proteins (actin and myosin) are present in muscles, enabling contraction and movement.

5.Voluntary muscles are found in
Correct Answer: B) Legs
Explanation: Voluntary muscles (skeletal muscles) are under conscious control and are found in areas like the legs. Alimentary canal, iris, and bronchi have involuntary muscles.

6.Nerve cell does not contain
Correct Answer: C) Tendon
Explanation: Nerve cells (neurons) contain axons, dendrites, and nerve endings but not tendons, which are connective tissues.

7.Nerve cell does not contain
Correct Answer: C) Tendons
Explanation: Same as above; tendons are not components of neurons, which include axons, dendrites, and nerve endings.

8.Adipose tissue is
Correct Answer: A) Connective Tissue
Explanation: Adipose tissue is a type of loose connective tissue specialized for fat storage.

9.Nails, hooves, and horns are examples of
Correct Answer: D) Epidermal tissue
Explanation: These structures are derived from the epidermis (a type of epithelial tissue) and are composed of keratin.

10.Bone-forming cells are
Correct Answer: A) Osteoblast
Explanation: Osteoblasts are cells responsible for bone formation by secreting the bone matrix. Osteocytes are mature bone cells, while chondroblasts and chondroclasts are involved in cartilage formation and resorption.

11.The strongest muscle in the body is present in
Correct Answer: C) Jaw
Explanation: The masseter muscle in the jaw is considered the strongest muscle based on its force of contraction relative to its size.

12.Mast cells occur in

Correct Answer: A) Connective tissue

Explanation: Mast cells, which release histamine and are involved in immune responses, are found in connective tissues.

DESCRIPTIVE TYPE QUESTIONS

1.What will happen if:

a. **Ligament gets overstretched:**

Overstretching a ligament (sprain) causes pain, swelling, and reduced joint stability. Severe cases may lead to ligament tears, impairing joint movement.

b. **Heparin is absent in blood:**

Heparin is an anticoagulant. Its absence increases the risk of blood clot formation, potentially leading to thrombosis or embolism.

c. **Striated muscles contract rapidly for longer duration:**

Rapid, prolonged contraction of striated (skeletal) muscles leads to muscle fatigue due to depletion of energy (ATP) and accumulation of lactic acid, causing cramps or temporary loss of function.

2.Connective tissues A and B:

a. **Tissue A (binds skin to underlying tissues):** Areolar tissue

Explanation: Areolar tissue, a loose connective tissue, anchors the skin to underlying muscles and bones, allowing flexibility.

b. **Tissue B (connects muscles to bones, non-elastic, tough):** Tendon

Explanation: Tendons are dense, fibrous connective tissues made of collagen (white fibers) that connect muscles to bones and are strong and non-elastic.

3.Correct the functions of cells/tissues:

a. **Muscle cells: carry messages**

Corrected: Muscle cells contract and relax to cause movement.

Explanation: Muscle cells (myocytes) contain contractile proteins for movement, not message transmission.

b. **Nerve cells contract and relax to cause movement**

Corrected: Nerve cells transmit impulses to coordinate body functions.

Explanation: Nerve cells (neurons) conduct electrical impulses, not contract.

c. **Blood conducts water, minerals, and organic solutes from one part of the organism to other parts**

Corrected: Blood transports oxygen, nutrients, hormones, and waste products throughout the body.

Explanation: Blood, a connective tissue, serves as a transport medium for various substances, not just water, minerals, and solutes.

4.Give reasons, why ?

a. **Blood is connective tissue:**

Blood is a connective tissue because it has a fluid matrix (plasma) and contains cells (RBCs, WBCs, platelets) that connect and transport substances across the body.

b. **Muscles contain contractile proteins:**

Muscles contain actin and myosin, contractile proteins that enable muscle contraction and movement.

c. **Muscles of the heart are involuntary:**

Cardiac muscles are involuntary because they are controlled by the autonomic nervous system, ensuring continuous, rhythmic contractions without conscious effort.

5.Name the following tissues:

a. Tissue forming the inner lining of the mouth: **Squamous epithelium**
b. Tissue connecting muscle to bone: **Tendon**
c. Tissue storing fat in the body: **Adipose tissue**
d. Connective tissue with a fluid matrix: **Blood**
e. Tissue present in the brain: **Nervous tissue**

6.Identify the type of tissue:

Skin: Epithelial tissue (stratified squamous epithelium)
Bone: Connective tissue (osseous tissue)
Lining of kidney tubule: Epithelial tissue (simple cuboidal epithelium)

ADVANCED LEVEL QUESTIONS

More Than One Answer

1.Which muscles act involuntarily?

Correct Answer: B) ii & iii (Smooth muscles and Cardiac muscles)

Explanation: Smooth muscles (e.g., in the alimentary canal) and cardiac muscles (in the heart) are involuntary, controlled by the autonomic nervous system. Striated (skeletal) muscles are voluntary.

2.Which of the following statements is incorrect?

Correct Answer: B) ii & iii

Explanation:

i: Areolar tissue is widely distributed (correct).
ii: Tendons connect muscles to bones, not bones to bones (incorrect; ligaments connect bones to bones).
iii: Ligaments connect bones to bones, not muscles to bones (incorrect).
iv: Cartilage is non-porous (correct).

3.Which of the following is incorrect?
Correct Answer: D) None
Explanation:
i: RBCs in mammals lack a nucleus when mature (correct).
ii: WBCs exhibit amoeboid movement (correct).
iii: Platelets are critical for blood clotting (correct).
iv: Lymph consists of plasma and WBCs (correct). All statements are correct.
Assertion & Reason
A: Presence of connective tissue inside the brain is essential for conduction of nerve impulse

4.Connective tissue holds together the nerve cells of the brain
Correct Answer: C) A is true, R is false
Explanation: The brain contains connective tissue (e.g., meninges), which supports and protects nerve cells, but nerve impulse conduction is primarily due to neurons, not connective tissue. Thus, A is true, but R is false.

5.Compound epithelium covers surfaces exposed to mechanical or chemical abrasions
R: Protection of underlying tissues is the major function of simple epithelium
Correct Answer: C) A is true, R is false
Explanation: Compound (stratified) epithelium protects against abrasions (A is true). However, simple epithelium is mainly involved in absorption, secretion, or filtration, not primarily protection (R is false).

6.Materials are exchanged between epithelial and connective tissue by diffusion
R: Blood vessels are absent in epithelial tissue
Correct Answer: A) A & R are true, and R explains A
Explanation: Epithelial tissue lacks blood vessels, so materials exchange via diffusion with underlying connective tissue (A and R are true, and R explains A).
Match the Following

MATCH TISSUES WITH THEIR PROPERTIES:

7.Epithelial tissue: d) Ecto, meso & endoderm
Muscular tissue: c) Contraction and relaxation
Connective tissue: a) Mesoderm
Nervous tissue: b) Transmission of impulses
Correct Answer: C) 1-d, 2-c, 3-a, 4-b
Match connective tissues with their cells:

8.Areolar: c) Fibroblasts
Adipose: d) Adipocytes
Cartilage: b) Chondroblasts
Bone: a) Osteocytes
Correct Answer: D) 1-c, 2-d, 3-b, 4-a

COMPREHENSIVE

9.Which are the smallest glial cells?
Correct Answer: C) Microglial cells
Explanation: Microglial cells are described as the smallest glial cells with feathery processes.

10.Which glial cells show phagocytosis?
Correct Answer: B) Microglial cells
Explanation: Microglial cells are involved in phagocytosis, clearing debris in the nervous system.

11.These cells form the blood-brain barrier:
Correct Answer: B) Oligodendrocytes
Explanation: Astrocytes, not oligodendrocytes, form the blood-brain barrier. However, based on the options provided, this appears to be a typo in the question, as astrocytes are not listed. Assuming the intent was astrocytes, the correct answer should be astrocytes.

12.These cells are more in number:
Correct Answer: D) Neurons
Explanation: Astrocytes are stated to form the maximum number of glial cells, but neurons are more numerous overall in the nervous system.

13.In the absence of Schwann cells, which one forms the myelin sheath around axons?
Correct Answer: B) Oligodendrocytes
Explanation: Oligodendrocytes form the myelin sheath in the central nervous system, unlike Schwann cells, which function in the peripheral nervous system.

ADDITIONAL QUESTIONS

1.Histamines are secreted by
Correct Answer: A) Mast cell
Explanation: Mast cells, found in connective tissues, release histamine during

immune responses.

2.White fibers are found in
Correct Answer: C) Collagen
Explanation: White fibers are collagen fibers, found in connective tissues like tendons and ligaments.

3.The junction between the axon of one neuron and the dendrites of the next neuron is called
Correct Answer: B) Synapse
Explanation: A synapse is the junction where nerve impulses are transmitted between neurons.

4.Nissl's granules are present in
Correct Answer: B) Cyton
Explanation: Nissl's granules (rough endoplasmic reticulum) are found in the cell body (cyton) of neurons.

5.Tendons and ligaments are special types of
Correct Answer: D) Fibrous connective tissue
Explanation: Tendons and ligaments are dense fibrous connective tissues, primarily composed of collagen.

6.What will happen if ligaments are cut or broken?
Correct Answer: A) Bones will move freely at joints
Explanation: Ligaments stabilize joints by connecting bones. If cut or broken, bones move excessively, causing instability.