

## NCERT Exemplar Solutions of Class 11 Biology – Chapter 7: Structural Organisation in Animals

### MULTIPLE CHOICE QUESTIONS

1. Which one of the following types of cell is involved in making of the inner walls of blood vessels?

- a. Cuboidal epithelium
- b. Columnar epithelium
- c. Squamous epithelium
- d. Stratified epithelium

**Solution:**

**Answer: (c) Squamous epithelium**

**Enhanced Explanation:** The inner lining of blood vessels (endothelium) is composed of simple squamous epithelium. These cells are:

- Flat and thin, allowing efficient diffusion of gases and nutrients
- Single-layered for minimal barrier to substance exchange
- Smooth surface reduces friction for blood flow
- Permeable to allow selective transport of materials between blood and tissues

2. To which one of the following categories does adipose tissue belong?

- a. Epithelial
- b. Connective
- c. Muscular
- d. Neural

**Solution:**

**Answer: (b) Connective**

**Enhanced Explanation:** Adipose tissue is a specialized connective tissue that:

- Stores energy in the form of lipids (triglycerides)
- Provides insulation and cushioning for organs
- Contains adipocytes (fat cells) embedded in an extracellular matrix
- Functions as an endocrine tissue, producing hormones like leptin and adiponectin
- Has two main types: white adipose tissue (energy storage) and brown adipose tissue (thermogenesis)

3. Which one of the following is not a connective tissue?

- a. Bone
- b. Cartilage
- c. Blood
- d. Muscles

**Solution:**

**Answer: (d) Muscles**

**Enhanced Explanation:** Muscle tissue is a separate tissue type characterized by:

- Contractile proteins (actin and myosin)

- Specialized for movement and force generation
- Three types: skeletal, cardiac, and smooth muscle

Connective tissues (bone, cartilage, blood) share common features:

- Cells embedded in an extracellular matrix
- Support, protection, and binding functions
- Derived from mesenchymal cells

**4. Setae help in locomotion in earthworm but are not uniformly present in all the segments. They are present in:**

- a. 1st segment
- b. Last segment
- c. Clitellar segment
- d. 20th - 22nd segment

**Solution:**

**Answer: (b) Last segment**

**Enhanced Explanation:** Setae in earthworms:

- Are chitinous bristles that aid in locomotion by providing grip
- Are present in all segments except the first (peristomium) and last (pygidium) segments
- However, the question asks where they are NOT uniformly present
- The first segment lacks setae completely, but the last segment typically has modified setae
- Each segment usually has 4 pairs of setae arranged in specific patterns

**Note:** This appears to be a trick question - setae are actually absent from the first segment, not the last segment.

**5. Which one of the following statements is true for cockroach?**

- a. The number of ovarioles in each ovary is ten
- b. The larval stage is called caterpillar
- c. Anal styles are absent in females
- d. They are ureotelic

**Solution:**

**Answer: (c) Anal styles are absent in females**

**Enhanced Explanation:** Regarding cockroach characteristics:

- **Ovarioles:** Each ovary contains 8 ovarioles, not 10
- **Larval stage:** Cockroaches undergo incomplete metamorphosis; young forms are called nymphs, not caterpillars
- **Anal styles:** Present only in males (absent in females) - these are sensory structures
- **Excretion:** Cockroaches are uricotelic (excrete uric acid), not ureotelic (excrete urea)

**6. Match the following and choose the correct option:**

Column I	Column II
A. Adipose tissue	i. Nose
B. Stratified epithelium	ii. Blood
C. Hyaline cartilage	iii. Skin
D. Fluid connective tissue	iv. Fat storage

**Options:** a. A-i, B-ii, C-iii, D-iv

b. A-iv, B-iii, C-i, D-ii

c. A-iii, B-i, C-iv, D-ii

d. A-ii, B-i, C-iv, D-iii

**Solution:**

**Answer: (b) A-iv, B-iii, C-i, D-ii**

**Enhanced Explanation:**

- **A. Adipose tissue (iv. Fat storage):** Primary function is lipid storage
- **B. Stratified epithelium (iii. Skin):** Forms the outer protective layer of skin
- **C. Hyaline cartilage (i. Nose):** Provides structural support to nose, trachea, and joints
- **D. Fluid connective tissue (ii. Blood):** Blood is the only fluid connective tissue in the body

**7. Match the following and choose the correct option:**

Column I	Column II
A. Hermaphrodite	i. Produces blood cells and haemoglobin
B. Direct development	ii. Testis and ovary in the same animal
C. Chemoreceptor	iii. Larval form absent
D. Blood gland in earthworm	iv. Sense of chemical substances

**Solution:**

**Answer: (a) A-ii, B-iii, C-iv, D-i**

**Enhanced Explanation:**

- **A. Hermaphrodite (ii):** Organisms with both male and female reproductive organs
- **B. Direct development (iii):** Development without larval stages (like in earthworms)
- **C. Chemoreceptor (iv):** Sensory receptors that detect chemical stimuli
- **D. Blood gland in earthworm (i):** Produces blood cells and haemoglobin in earthworms

**8. Match the following with reference to cockroach and choose the correct option:**

Column I	Column II
A. Phallomere	i. Chain of developing ova
B. Gonopore	ii. Bundles of sperm
C. Spermatophore	iii. Opening of the ejaculatory duct
D. Ovarioles	iv. The external genitalia

**Solution:**

**Answer: (b) A-iv, B-iii, C-ii, D-i**

**Enhanced Explanation:**

- **A. Phallomere (iv):** External male genitalia in cockroaches
- **B. Gonopore (iii):** Opening through which gametes are released
- **C. Spermatophore (ii):** Packet containing sperm
- **D. Ovarioles (i):** Structures containing developing eggs in female cockroaches

**9. Match the following and choose the correct option:**

**Column I**

**Column II**

- |                      |                               |
|----------------------|-------------------------------|
| A. Touch             | i. Nasal epithelium           |
| B. Smell             | ii. Foramen magnum            |
| C. Cranial nerves    | iii. Sensory papillae         |
| D. Medulla oblongata | iv. Peripheral nervous system |

**Solution:**

**Answer: (d) A-iii, B-i, C-iv, D-ii**

**Enhanced Explanation:**

- **A. Touch (iii):** Detected by sensory papillae and mechanoreceptors
- **B. Smell (i):** Olfactory receptors located in nasal epithelium
- **C. Cranial nerves (iv):** Part of the peripheral nervous system
- **D. Medulla oblongata (ii):** Brain stem region connected to spinal cord through foramen magnum