

**Structural Organisation in Animals Important Questions With Answers**

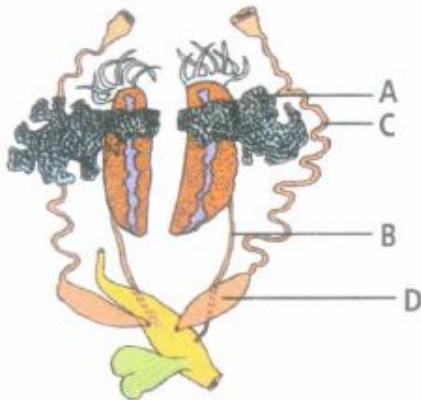
**NEET Biology 2023**

1. Pheretima and its close relatives derive nourishment from:  
 a) Small pieces of fresh fallen leaves of maize, etc    b) Sugarcane roots  
 c) **Decaying fallen leaves and soil organic matter**    d) Oil insects

**Solution : -**

Earthworms are found in moist soil containing rich organic matter, on which they feed.

2. The figure given here is related with female reproductive system of frog. Identify the parts labelled as A to D.



a)

A	B	C	D
Ovary	Ureter	Oviduct	Ovisac

b)

A	B	C	D
Ovisac	Urinogenital duct	Bidder's canal	Ovary

c)

A	B	C	D
Ovary	Urinogenital duct	Ovisac	Oviduct

d)

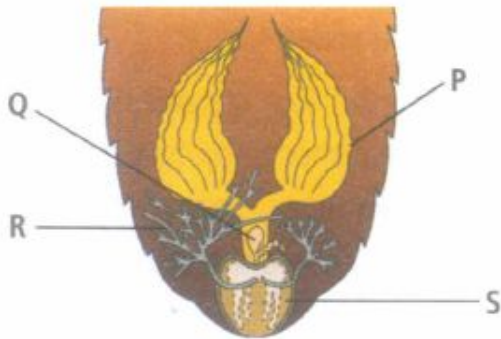
A	B	C	D
Ovisac	Urinogenital duct	Bidder's canal	Oviduct

3. The type of epithelial cells which line the inner surface of Fallopian tubes, bronchioles and small bronchi are known as  
 a) squamous epithelium    b) columnar epithelium    c) **ciliated epithelium**    d) cubical epithelium.
4. Which of the following is a wrongly matched pair?  
 a) Unicellular glandular cells - Goblet cell    b) Saliva - Exocrine secretion    c) Fusiform fibres - Smooth muscle  
 d) **Cartilage - Areolar tissue**

**Solution : -**

Cartilage is a skeletal tissue.

5. Refer to the given figure showing reproductive system of female cockroach.



Identify the parts labelled as P, Q, R and S and select the correct statement regarding these

a)

P represents the ovary of female cockroach, which consists of six ovarioles, each containing a row of developing ova.

**b) Q represents the left spermatheca which stores the sperms received from male during copulation.**

c) R represents the right conglobate gland whose secretions serve to attract the male cockroach during mating

d) S represents the gonapophyses whose secretion produces the egg case of ootheca.

**Solution : -**

In the given figure, P represents the ovary of female cockroach, which consists of eight ovarioles (or ovarian tubules), each containing a row of developing ova. Q represents the left spermatheca, which stores the sperms received from male during copulation. R is the right collaterall gland, whose secretions form the egg case of the ootheca. S is the gonapophyses, which serves as ovipositors.

6. Setae help in locomotion in earthworm but are not uniformly present in all the segments. They are present in

a) 1<sup>st</sup> segment   b) last segment   c) clitellar segment   **d) 20<sup>th</sup> - 22<sup>nd</sup> segment.**

**Solution : -**

In each body segment of earthworm, except the first, last and clitellum, there are rows of setae, embedded in the epidermal pits in the middle of each segment.

7. Match the following with reference to cockroach and choose the correct option.

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

a) A-(iii), B-(iv), C-(ii), D-(i)   **b) A-(iv), B-(iii), C-(ii), D-(i)**   c) A-(iv), B-(ii), C-(iii), D-(i)

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

8. Identify the incorrect statement about frog.

a) Parathyroid and pineal body are present.   **b) There are ten cranial nerves only.**

c) Optic lobes are situated in the mid brain.   d) The ventricle opens into the conus arteriosus.

**Solution : -**

There are 10 pairs of cranial nerves that extend between the brain and various head regions and certain viscera. According to some workers, the 0 or terminal nerves are also present so that the actual number becomes 11 pairs.

9. Consider the following statements (i) - (iii), each with two blanks.

(i) Pseudostratified epithelium lines the (1) tract while transitional epithelium lines the (2) tract.

(ii) Lacunae of bones house (3) while lacunae of cartilage contain (4).

(iii) Tendon contains bundles of (5) fibres and rows of (6) cells between them.

Which one of the following options, gives the correct fill ups for the respective blank numbers from (1) to (6) in the statements?

**a) (1)-respiratory, (2)-urinary, (5)-white, (6)-fibroblast**

b) (1)-urinary, (2)-respiratory, (3)-osteocytes, (4)-chondrocytes

c) (3)-chondrocytes, (4)-osteocytes, (5)-yellow, (6)-fibroblast

d) (3)-chondrocytes, (4)-osteocytes, (5)-yellow, (6)-fibroblast

10. Cardiac muscles are different from skeletal muscles as they are

a) smooth b) voluntary c) non-striated **d) involuntary.**

**Solution : -**

Cardiac muscles are striated, involuntary and have intercalated discs which differentiate them from skeletal muscles which are striated, voluntary and lack intercalated discs.

11. Which of the following features is used to identify a male cockroach from a female cockroach?

a) Forewings with darker tegmina **b) Presence of caudal styles**

c) Presence of boat shaped sternum on the 9th abdominal of anal cerci d) Presence of anal cerci

**Solution : -**

Males bear a pair of short, thread like anal styles which are absent in females.

12. Which one of the following contains the largest quantity of extracellular material?

a) Stratified epithelium b) Myelinated nerve fibres c) Striated muscle **d) Areolar tissue**

**Solution : -**

Areolar tissue has largest quantity of extracellular material as more space is there in between the cells.

13. **Assertion:** Excretion in cockroach occurs by Malpighian tubules.

**Reason:** Each Malpighian tubule is lined by non-ciliated columnar cells.

a) If both assertion and reason are true and reason is the correct explanation of assertion.

b) If both assertion and reason are true but reason is not the correct explanation of assertion.

**c) If assertion is true but reason is false.** d) If both assertion and reason are false.

**Solution : -**

Excretion in cockroach is performed by Malpighian tubules. Each tubule is lined by glandular and ciliated cells. They absorb nitrogenous waste products and convert them into uric acid which is excreted out through the hindgut.

14. Match column I with column II and select the correct option from the codes given below.

Column I	Column II
A. Vermicomposting	(i) Ectonephric
B. Pharyngeal nephridia	(ii) Locomotion
C. Integumentary nephridia	(iii) Earthworm
D. Setae	(iv) Enteronephric
E. Spermathecae	(v) Store spermatozoa

**a) A-(iii), B-(iv), C-(i), D-(ii), E-(v)** b) A-(v), B-(i), C-(iv), D-(ii), E-(iii) c) A-(iii), B-(ii), C(iv). D-(i), E-(v)

d) A-(iii), B-(v), C-(i), D-(iv),E-(ii)

15. Which of the following structures is correctly matched with its description?

a) Septal nephridia and pharyngeal nephridia - Both are exonephric

b) Typhlosole - Helps in grinding the soil particles and decaying leaves.

**c) Sensory system - Possesses light and touch receptors in earthworm**

d) Gizzard - Internal median fold present in the dorsal wall of the intestine of earthworm

**Solution : -**

(i) Septal nephridia and pharyngeal nephridia - Both are enteronephric.

(ii) Typhlosole - Internal median fold present in the dorsal wall of the intestine of earthworm, meant to increase the absorption surface area.

(iii) Gizzard - Helps in grinding the soil particles and decaying leaves.

16. Match column I with column II and select the correct option from the codes given below.

Column I (Parts of alimentary canal of earthworm)	Column II (Respective segments)
A. Buccalcavity	(i) 1-3
B. Pharynx	(ii) 3-4
C. Oesophagus	(iii) 5-7
D. Gizzard	(iv) 8-9
E. Stomach	(v) 9-14
F. Intestine	(vi) 15 to last
G. Typhlosole	(vii) 26-35

- a) **A-(i), B-(ii), C-(iii), D-(iv), E-(v), F-(vi), G-(vii)**    b) A-(i), B-(ii), C-(iii), D-(v), E-(iv), F-(vi), G-(vii)  
 c) A-(i), B-(iii), C-(ii), D-(iv), E-(v), F-(vii), G-(vi)    d) A-(i), B-(iii), C-(ii), D-(v), E-(iv), F-(vii), G-(vi)

17. Which of the following statements is incorrect about the frog?

- (i) Eyes are bulged out and covered by a nictitating membrane that protects them while in water.  
 (ii) On either side of the eyes a membranous tympanum (ear) receives sound signals.  
 (iii) The hind limbs end in four digits and they are larger and muscular than fore limbs that end in five digits.  
 (iv) Feet have webbed digits that help in swimming.  
 (v) Frogs exhibit sexual dimorphism.

- a) (i) and (v)    **b) (iii) only**    c) (ii) and (iii)    d) (iv) only

**Solution : -**

In frog, the hind limbs end in five digits and they are larger and muscular than fore limbs that end in four digits.

18. In frog, mesorchium is a thin fold of membrane extending between

- a) two testes    b) liver and kidneys    c) two kidneys    **d) kidneys and testes.**

**Solution : -**

In frog, there is present a cylindrical testis near each kidney, being suspended by mesorchium. There arise several thin vasa efferentia from each testis that emerges through mesorchium and join the uriniferous tubules of the posterior part of the kidney to open into the Bidder's canal which in turn open into the ureter.

19. Consider the following statements (i) - (iii), each with one or two blanks.

- (i) Bones have a hard and non-pliable ground substance (1) and (2) which give bone its strength.  
 (ii) Some of the columnar or cuboidal cells get specialised for secretion and are called (3) epithelium.  
 (iii) (4) junctions help to stop substances from leaking across a tissue.

Which one of the following options, gives the correct fill ups for the respective blanks from (1) to (4) in the statements?

- a) (3)-glandular, (4)-Tight**    b) (1)-calcium salts, (2)-collagen fibres, (3)-compound, (4) - Excretory  
 c) (3)-glandular, (4)-Adhering    d) (1)-magnesium salts, (2)-elastic fibres, (3)-compound

20. Characteristics of smooth muscle fibres are \_\_\_\_\_.

- a) Spindle-shaped, unbranched, unstriated, uninucleate and involuntary**  
 b) Spindle-shaped, unbranched, unstriped, multinucleate and involuntary  
 c) Cylindrical, unbranched, unstriped, multinucleate and involuntary  
 d) cylindrical, unbranched, unstriated, multinucleate and voluntary

**Solution : -**

Smooth muscle fibres are spindle-shaped, thick in the middle and thin at either ends, uninucleated, no sarcolemma, contraction is slow, involuntary under the control of autonomous nervous system. These muscles are also known as visceral muscles, non-striated, nonskeletal or involuntary muscles.

21. Which one of the following structures in Pheretima is correctly matched with its function?

- a) **Clitellum - secretes cocoon**    b) Gizzard - absorbs digested food    c) Setae - defense against predators  
d) Typhlosole - storage of extra nutrients

**Solution :** -

In Earthworm, fertilisation and development take place in cocoon secreted by the glands of clitellum

22. Earthworms are:

- a) Ureotelic when plenty of water is available    b) Uricotelic when plenty of water is available  
c) Uricotelic under conditions of water scarcity    **d) Ammonotelic when plenty of water is available**

**Solution :** -

Excretion in Earthworms is more or less dependent on the external features of the environment. When there is plenty of water available Earthworm is ammonotelic while in the scarcity of water it is ureotelic.

23. **Assertion :** Connective tissues are the most abundant and widely distributed in the body of complex animals.

**Reason :** Connective tissues link and support other tissues or organs of the body.

**a) If both assertion and reason are true and reason is the correct explanation of assertion.**

b) If both assertion and reason are true but reason is not the correct explanation of assertion.

c) If assertion is true but reason is false.    d) If both assertion and reason are false

24. Where is jelly deposited as a covering on the egg of frog?

- a) In the oviduct**    b) In the water during fertilisation    c) In the water after fertilisation    d) In the ovary

**Solution :** -

Jelly is deposited as a covering on the egg of the frog in the oviduct.

25. Earthworms have no skeleton but during burrowing, the anterior end becomes turgid and acts as a hydraulic skeleton. It is due to \_\_\_\_\_.

- a) Coelomic fluid**    b) Blood    c) Gut peristalsis    d) Setae

**Solution :** -

(i) Earthworms have no skeleton but during burrowing, the anterior end become turgid and acts as a hydraulic skeleton. It is due to coelomic fluid. Coelomic fluid contains water, salt, some proteins and four types of coelomic corpuscles which phagocytes, mucocytes, circular nucleated cells and chloragen cells.

(ii) Earthworm has metameric segmented body. At the middle of each segment, there is a ring of tiny curved bristles called setae or chaetae, formed of a horny nitrogenous organic substance known as chitin. The setae and musculature help in locomotion and anchorage of body firmly in burrow.

26. The ciliated columnar epithelial cells in humans are known to occur in:

- a) Fallopian tubes and urethra    b) Eustachian tube and stomach lining    **c) Bronchioles and fallopian tubes**  
d) Bile duct and oesophagus

**Solution :** -

The ciliated columnar epithelial cells in humans are known to occur in bronchioles and fallopian tubes. They provide movement to particles or mucus or eggs (fallopian tube) in a specific direction over epithelium. These are the columnar epithelial cells which bears cilia on their free surface. This is why they are called ciliated columnar epithelial cells.

27. Given below are four statements (i) - (iv) each with two blanks. Select the option which correctly fills up the blanks in any two of these statements.

(i) The columnar epithelium is composed of (1) and slender cells. Their (2) are located at the base.

(ii) Collagen fibres provide (3) and elastin fibres provide (4) and elasticity to the tissue.

(iii) Adipose tissue is a (5) type of connective tissue located mainly beneath (6).

(iv) Tendons attach (7) to bones and ligaments attach (8) to bones.

- a) (1) tall, (2) nuclei, (7) bones, (8) muscles    b) (1) short, (2) organelles, (3) strength, (4) flexibility

**c) (3) strength, (4) flexibility, (5) loose, (6) skin**    d) (5) dense, (6) muscles, (7) muscles, (8) bones

28. Which cartilage is present at the end of long bones?

- a) Calcified cartilage    **b) Hyaline cartilage**    c) Elastic cartilage    d) Fibrous cartilage

**Solution :** -

At the end of long articular bones, Hyaline cartilage is present. It provides a smooth articular surface to permit movement at joints. Fibro cartilage is a very tough substance and is used in places of the body where shock absorbers are needed. Elastic cartilage is found where support with flexibility is needed such as in external ears.

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

- a) Epithelial    **b) Connective**    c) Muscular    d) Neural

**Solution :** -

Adipose tissue is a fat-storing loose connective tissue found subcutaneously, around the heart, kidney, eyeballs, mesenteries, etc.

30. Choose the incorrect pair from the matches given below.

- a) Antennae - Sensory receptors    b) Metathoracic wings - Flying    c) Malpighian tubule - Excretion

**d) Crop - Food grinding**

**Solution :** -

Crop is a sac-like structure in the digestive system of cockroach that is used for storing the food

31. Read the following statements and select the correct option.

**Statement 1 :** Bone and cartilage are rigid connective tissues.

**Statement 2 :** Blood is a connective tissue with fluid (plasma) matrix.

- a) **Both statements 1 and 2 are correct.**    b) Statement 1 is correct but statement 2 is incorrect.  
c) Statement 1 is incorrect but statement 2 is correct.    d) Both statements 1 and 2 are incorrect.

**Solution :** -

Bone and cartilage are rigid connective tissues. Bones consist of matrix which is hard, non-pliable and is rich in calcium salts and collagen fibres. This gives bone its strength. The intercellular material of cartilage is solid, pliable and resists compression. Blood is a fluid connective tissue consisting of plasma, RBCs, WBCs and platelets.

32. In Pheretima, there are red coloured round bodies in 4<sup>th</sup>, 5<sup>th</sup> and 6<sup>th</sup> segments above the alimentary canal. They are believed to be involved in

- a) respiration    b) digestion    c) reproduction    **d) leucocyte production.**

**Solution :** -

In **Pheretima**, the red coloured bodies found in 4<sup>th</sup>, 5<sup>th</sup> and 6<sup>th</sup> segments above the alimentary canal are called blood glands. These glands serve for the manufacture of blood corpuscles (leucocytes) and haemoglobin.

33. Identify the following simple epithelial tissues and select the correct option.



34. The hind brain in frog consists of

- a) cerebellum    b) medulla oblongata    c) diencephalon    **d) Both (a) and (b)**

35. **Assertion:** Cockroach shows sexual dimorphism.

**Reason :** The female cockroach bears a pair of short thread like anal styles.

- a) If both assertion and reason are true and reason is the correct explanation of assertion.  
b) If both assertion and reason are true but reason is not the correct explanation of assertion.  
**c) If assertion is true but reason is false.**    d) If both assertion and reason are false.

**Solution :** -



In cockroach, males and females have slightly different morphology, hence showing sexual dimorphism. One of the distinguishing features is presence of anal styles, (paired thread-like structure), only in males. Females lack anal styles.

36. Which of the following statements is incorrect about the nervous system of earthworm?

a) **Nervous system is basically represented by ganglia arranged on ventral nerve cord.**

b) In 3<sup>rd</sup> and 4<sup>th</sup> segment, the nerve cord bifurcates and joins the cerebral ganglia dorsally to form a nerve ring.

c)

The cerebral ganglia along with other nerves in the ring integrate sensory input as well as command muscular responses of the body.

d) None of these

37. Match the following and choose the correct answer.

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

a) **A-(ii), B-(iii), C-tiv), D-(i)**    b) A-(iii), B-(ii), C-(iv), D-(i)    c) A-(i), B-(iii), C-(ii), D-(iv)

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

38. Select the correct statement from the ones given below with respect to *Periplaneta americana*.

a)

Nervous system located dorsally, consists of segmentally arranged ganglia joined by a pair of longitudinal connectives.

**b) Males bear a pair of short thread like anal styles.**

c) There are 16 very long Malpighian tubules present at the junctions of midgut and hindgut.

d) Grinding of food is carried out only by the mouth parts.

**Solution : -**

In male cockroach, from the sides of the 9<sup>th</sup> sternum, there arises a paired, small unjointed outgrowths called anal styles. These structures are sensitive to touch. These are absent in female cockroach. Nervous system is located ventrally. There are 100-150 Malpighian tubules. Grinding of food is carried out by mouth parts and gizzard.

39. Which type of tissue is correctly matched with its location?

a)

Tissue	Location
Areolar tissue	Tendons

b)

Tissue	Location
Transitional epithelium	Tip of nose

c)

Tissue	Location
Cuboidal epithelium	Lining of stomach

d)

Tissue	Location
Smooth muscle	Wall of intestine

**Solution : -**

Areolar tissues are present beneath the skin, the cuboidal epithelium is found in ducts of glands and tubular parts of nephrons in kidneys and smooth muscles are found in the wall of internal organs such as the blood vessels, stomach and intestine.

40. Cartilage is formed by

**a) chondrocytes**    b) osteoblasts    c) osteoclasts    d) fibroblasts.

**Solution : -**

Cartilage is a soft skeletal tissue formed by cells called chondrocytes. Chondrocytes are mature, large and rounded cells with few surface projections.

41. Durtigan injury nasal septum gets damaged and for its recovery which cartilage is preferred?

**a) Hyaline cartilage**    b) Elastic cartilage    c) Calcified cartilage    d) Fibrous cartilage

**Solution : -**

Hyaline cartilage is firm but slightly elastic with clear matrix. It is present in larynx, trachea, bronchi, nose. Elastic cartilage occurs in external ear. Calcified cartilage occurs in suprascapula. Fibrous cartilage occurs in intervertebral discs.

42. Cuboidal epithelium with brush border of microvilli is found in:  
a) Proximal convoluted tubule of nephron    b) Eustachian tube    c) Lining of intestine

**d) Ducts of salivary glands**

**Solution : -**

The cuboidal epithelium is composed of a single layer of cube-like cells. This is commonly found in ducts of glands and tubular parts of nephrons in kidneys and its main functions are secretion and absorption.

43. The kind of tissue that forms the supportive structure in our pinna (external ears) is also found in:  
a) Nails    b) Ear ossicles    **c) Tip of the nose**    d) Vertebrae

**Solution : -**

The kind of tissue that forms the supportive structure in our pinna (external ears) is also found in tip of the nose. It is yellow fibrous cartilage tissue.

44. Match the followings and choose the correct answer.

A. Touch	(i)	Nasal epithelium
B. Smell	(ii)	Foramen magnum
C. Cranial nerves	(iii)	Sensory papillae
D. Medulla oblongata	(iv)	Peripheral nervous System

- a) A-(iii), B-(i), C-(ii), D-(iv)    b) A-(ii), B-(i), C-(iv), D-(iii)    c) A-(iii), B-(iv), C-(ii), D-(i)

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

45. Which of the following statements about cell junctions are correct?  
(i) All the cells of the epithelium are held together with little intercellular materials.  
(ii) In almost all animal tissues specialised junctions provide both structural and functional link between their individual cells.  
(iii) Tight junctions prevent substances from leaking across a tissue.  
(iv) Adhering junctions provide cementing to keep neighbouring cells together.  
(v) Gap junctions provide cytoplasmic channels between cells for passage of ions, small molecules and sometimes big molecules.  
a) (ii) and (iii)    b) (i), (ii) and (iii)    c) (iv) and (v)    **d) (i), (ii), (iii), (iv) and (v)**

46. Male cockroach differs from female cockroach in having  
a) antennae    b) labrum    c) maxillae    **d) anal styles.**

**Solution : -**

Males bear a pair of short, thread-like anal styles which are not present in females.

47. Smooth muscles are:  
**a) involuntary, fusiform, non-striated**    b) voluntary, multinucleate, cylindrical  
c) involuntary, cylindrical, striated    d) voluntary, spindle-shaped, uninucleate

**Solution : -**

Smooth muscles are 'involuntary' as their functioning cannot be directly controlled

48. Read the statements regarding frog. Which of the statements is/are correct and incorrect?  
(i) The medulla oblongata passes out through foramen of Monro and continues into spinal cord.  
(ii) Vasa efferentia are 10-12 in number that arise from testes.  
(iii) Ovaries have no functional connection with kidneys.  
(iv) Frogs are uricotelic.



- a) Statements (i), (ii) and (iii) are correct while statement (iv) is incorrect.
- b) Statements (i) and (ii) are correct while statements (iii) and (iv) are incorrect.
- c) Statements (ii) and (iii) are correct while statements (i) and (iv) are incorrect.**
- d) Statements (ii), (iii) and (iv) are correct while statement (i) is incorrect.

**Solution :** -

In frog, the medulla oblongata passes out through foramen magnum and continues into spinal cord. Frogs are ureotelic.

49. In a frog, if a hole is punched in the floor of its buccal cavity, then the frog will not die as
- a) buccal respiration does not stop
  - b) pulmonary respiration occurs**
  - c) it can store oxygen for future use
  - d) respiration other than lungs will continue

**Solution :** -

In addition to buccopharyngeal respiration, frog also respire through lungs (pulmonary respiration). So, if a hole is punched in the floor of its buccal cavity the frog doesn't die.

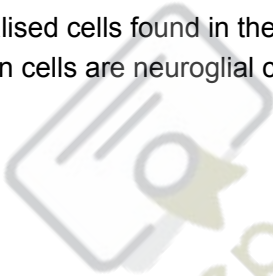
50. **Assertion:** Neurons protect and support the neuroglial cells.

**Reason:** Neuroglial cells make up ninety per cent neural tissue in our body.

- a) If both assertion and reason are true and reason is the correct explanation of assertion.
- b) If both assertion and reason are true but reason is not the correct explanation of assertion.
- c) If assertion is true but reason is false.
- d) If both assertion and reason are false.**

**Solution :** -

Neuroglia or neuroglial cells are specialised cells found in the brain and spinal cord supporting the neurons and their fibres. About 50 percent of all brain cells are neuroglial cells.

  
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