

**PARA – 7.1.1 EPITHELIAL TISSUES**

1. Consider the following statements: **[Pg-100,101,E]**

- a) A tissue is composed of similar cells which perform specific functions.  
b) Epithelial tissues are characterized by a free surface toward body fluid or outside environment.

Select the correct option.

- A) a is true, b is false  
B) Both a and b are true  
C) a is false, b is true  
D) Both a and b are false
2. Simple epithelium consists of **[Pg-101,E]**

- A) large intercellular spaces  
B) single layer of cells  
C) flat cells without nucleus  
D) all of these

3. Human skin is composed of **[Pg-101,E]**

- A) compound epithelium  
B) squamous epithelium  
C) columnar epithelium  
D) ciliated epithelium

4. Match the following columns. **[Pg-101,M]**

|   | Column-I            |     | Column-II                 |
|---|---------------------|-----|---------------------------|
| a | Squamous epithelium | (1) | Stomach and intestine     |
| b | Cuboidal epithelium | (2) | Lungs and blood vessels   |
| c | Columnar epithelium | (3) | Tubular parts of nephrons |

Select the correct option

- |    |          |          |          |
|----|----------|----------|----------|
|    | <b>a</b> | <b>b</b> | <b>c</b> |
| A) | 3        | 1        | 2        |
| B) | 1        | 2        | 3        |
| C) | 2        | 3        | 1        |
| D) | 3        | 2        | 1        |

5. The inner walls of large blood vessels are formed by **[Pg-101,E]**

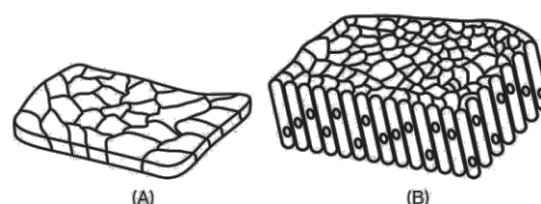
- A) pseudostratified epithelium  
B) squamous epithelium  
C) ciliated epithelium  
D) columnar epithelium

6. What is the similarity between cuboidal epithelium and columnar epithelium?

**[Pg-101,E]**

- A) They are composed of two layers of cells.  
B) They are composed of phagocytic cells.  
C) They perform the functions of secretion and absorption.  
D) All of these

7. Identify the tissues A and B shown in the following diagram: **[Pg-101,E]**



Select the correct option

|    | A                   | B                   |
|----|---------------------|---------------------|
| A) | Squamous epithelium | Columnar epithelium |
| B) | Cuboidal epithelium | Squamous epithelium |
| C) | Columnar epithelium | Cuboidal epithelium |
| D) | Compound epithelium | Pseudostratified    |

8. Efficient gaseous exchange in the air sacs of the lungs occur due to the presence of **[Pg-101,E]**

- A) numerous microvilli  
B) ciliated epithelium  
C) flat cells  
D) columnar epithelium

9. The inner surface of hollow organs are lined by **[Pg-101,E]**

- A) columnar epithelium  
B) compound epithelium  
C) squamous epithelium  
D) ciliated epithelium

10. The ciliated epithelial cells are required to move particles or mucus in a specific direction. In humans, these cells are mainly present in **[Pg-101,E]**

- A) fallopian tubes and pancreatic duct  
B) Eustachian tube and salivary duct  
C) bronchioles and fallopian tubes  
D) bile duct and bronchioles

11. Match the following columns.

**[Pg-101,102,M]**

| Column-I | Column-II |
|----------|-----------|
|----------|-----------|

|    |                 |     |                                    |
|----|-----------------|-----|------------------------------------|
| a. | Goblet cells    | (1) | Multicellular glandular epithelium |
| b. | Salivary glands | (2) | Unicellular glandular epithelium   |
| c. | Buccal cavity   | (3) | Compound epithelium                |
| d. | PCT             | (4) | Cuboidal epithelium                |

Select the most appropriate option.

- |    |          |          |          |          |
|----|----------|----------|----------|----------|
|    | <b>a</b> | <b>b</b> | <b>c</b> | <b>d</b> |
| A) | 2        | 1        | 3        | 4        |
| B) | 3        | 2        | 4        | 1        |
| C) | 4        | 3        | 1        | 2        |
| D) | 1        | 4        | 2        | 3        |

12. All the listed glands pour their secretions into ducts except **[Pg-102,E]**

- A) salivary gland  
B) digestive glands  
C) pineal gland  
D) mammary glands

13. Select the incorrect statement.

**[Pg-102,E]**

- A) Multicellular glandular epithelium is formed of clusters of cells.  
B) Compound epithelium is actively involved in secretion and absorption of substances.  
C) Pancreatic and salivary ducts are internally lined by compound of epithelium.  
D) None of these

14. Cell junctions **[Pg-102,M]**

- a) Are formed in epithelial tissues  
b) Provide structural and functional link between adjacent cells of tissues  
c) Are alternatively called gap junctions  
Select the most appropriate option.

- A) a, b, c are correct  
B) Only a is correct  
C) b and c are correct  
D) a and b are correct

15. Match the following cell structure with its characteristic feature: **[Pg-102,M]**

|    | Column-I           |     | Column-II                                                                |
|----|--------------------|-----|--------------------------------------------------------------------------|
| a. | Tight junctions    | (1) | Cement neighbouring cells together to form sheet                         |
| b. | Adhering junctions | (2) | Transmit information through chemical to another cells                   |
| c. | Gap junctions      | (3) | Establish a barrier to prevent leakage of fluid across epithelial cells  |
| d. | Synaptic junctions | (4) | Cytoplasmic channels to facilitate communications between adjacent cells |

Select the most appropriate option.

- |    |          |          |          |          |
|----|----------|----------|----------|----------|
|    | <b>a</b> | <b>b</b> | <b>c</b> | <b>d</b> |
| A) | 4        | 3        | 1        | 2        |
| B) | 2        | 4        | 1        | 3        |
| C) | 4        | 2        | 1        | 3        |
| D) | 3        | 1        | 4        | 2        |

16. The function of the gap junction is to **[Pg-102,E]**

- A) stop substance from leaking across a tissue.  
B) perform cementing to keep neighbouring cells together.  
C) facilitate communication between adjoining cells by connecting the cytoplasm for rapid transfer of ions, small molecules and some large molecules.  
D) separate two cells from each other.

17. Assertion: Squamous epithelium helps in the diffusion of gases in lungs.

Reason: Squamous epithelium bears microvilli. **[Pg-101,H]**

- A) Both assertion and reason are true, assertion is incorrect explanation of assertion  
B) Both assertion and reason are true, reason is not the correct explanation of assertion  
C) Assertion is true, reason is false  
D) Both assertion and reason are false

18. Assertion: Compound epithelium is composed of two or more layers of cells. Reason: Compound epithelium has protective functions. **[Pg-102,H]**

- A) Both assertion and reason are true, assertion is incorrect explanation of assertion  
B) Both assertion and reason are true, reason is not the correct explanation of assertion  
C) Assertion is true, reason is false  
D) Both assertion and reason are false

### PARA-7.1.2

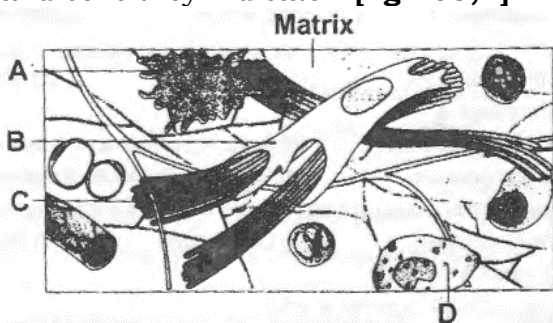
### CONNECTIVE TISSUES

19. Select the incorrect statement regarding connective tissues: **[Pg-102,103,E]**

- A) It helps to connect and support other tissues of the body.  
B) Blood is a fluid connective tissue.  
C) It is composed of structural protein fibres, viz, collagen or elastin.  
D) Their ground substance is composed of polypeptides and its derivatives.

20. Areolar tissue is a type of **[Pg-103,E]**

21. Areolar tissues contain **[Pg-103,E]**  
 A) loose connective tissue  
 B) compound epithelium  
 C) dense connective tissue  
 D) specialized connective tissue
22. Fat-storing adipose tissue is **[Pg-103,E]**  
 A) loose connective tissue  
 B) dense regular connective tissue  
 C) dense irregular connective tissue  
 D) specialized connective tissue
23. Consider the following statements:  
**[Pg-103,M]**  
 a) In dense connective tissues, fibroblasts are compactly packed.  
 b) In dense regular connective tissues, collagen fibers are arranged in parallel rows.  
 Select the correct option  
 A) a is true, b is false  
 B) a is false, b is true  
 C) Both a and b are false  
 D) Both a and b are true
24. In the below diagram of areolar connective tissue, the different cells and parts have been indicated by alphabets. Choose the answer in which these alphabets correctly match with the parts and cells they indicate – **[Pg-103,E]**



|    | A          | B               | C               | D          |
|----|------------|-----------------|-----------------|------------|
| A) | Adipocyte  | Collagen fibres | Microfilament   | Mast cells |
| B) | Macrophage | Collagen fibres | Microfilament   | Mast cells |
| C) | Macrophage | Collagen fibres | Microtubule     | RBC        |
| D) | Macrophage | Fibroblast      | Collagen fibres | Mast cells |

25. Ligaments contain **[Pg-103,E]**  
 A) loose bundles of fibres  
 B) large fat storage areas  
 C) parallelly arranged collagen fibres  
 D) irregularly placed elastin fibres

26. Match the following columns:  
**[Pg-103,104,E]**

|   | Column-I       |     | Column-II                         |
|---|----------------|-----|-----------------------------------|
| a | Skin           | (1) | Loose connective tissue           |
| b | Tendon         | (2) | Specialized connective tissue     |
| c | Adipose tissue | (3) | Dense regular connective tissue   |
| d | Cartilage      | (4) | Dense irregular connective tissue |

Select the correct option

- a      b      c      d  
 A)    3      1      2      4  
 B)    4      3      1      2  
 C)    2      4      3      1  
 D)    1      2      4      3
27. The intracellular material of cartilage is **[Pg-104,E]**  
 A) solid and pliable  
 B) solid and non-pliable  
 C) hollow and soft  
 D) hollow and jelly-like
28. Select the incorrect statement: **[Pg-104,E]**  
 A) Most of cartilage in vertebrate embryo gets replaced by bones in adults.  
 B) Chondrocytes are cartilage cells which are found in between collagen fibres.  
 C) Cartilage form the human nose except its tips.  
 D) Bones of vertebral column are composed of cartilage.
29. Bones are hard and non-pliable due to the presence of **[Pg-104,E]**  
 A) calcium salts    B) elastin fibres  
 C) chondrocytes    D) all of these
30. The spaces in which osteocytes are present are called **[Pg-104,E]**  
 A) osteoclast    B) sinuses  
 C) lacunae    D) canaliculi
31. The fluid connective tissue contains all of the following cells, except **[Pg-104,E]**  
 A) platelets    B) fibroblasts  
 C) WBCs    D) RBCs
32. Match the following columns: **[Pg-103,104,E]**

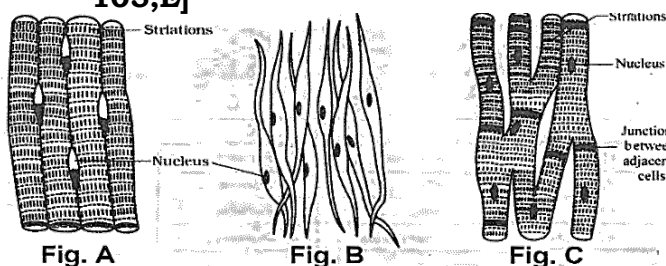
|   | Column-I                |     | Column-II                  |
|---|-------------------------|-----|----------------------------|
| a | Adipose tissue          | (1) | Blood                      |
| b | Hyaline cartilage       | (2) | Macrophages and mast cells |
| c | Fluid connective tissue | (3) | Fat storage                |
| d | Areolar tissue          | (4) | Nose                       |

Select the correct option

|    | <b>a</b> | <b>b</b> | <b>c</b> | <b>d</b> |
|----|----------|----------|----------|----------|
| A) | 4        | 3        | 2        | 1        |
| B) | 2        | 4        | 1        | 3        |
| C) | 1        | 2        | 3        | 4        |
| D) | 3        | 4        | 1        | 2        |

### PARA-7.1.3 AND 7.1.4 MUSCLE TISSUE AND NEURAL TISSUE

33. Myofibrils are [Pg-104,E]  
 A) contracted muscle fibres  
 B) structural components of all muscle fibres  
 C) striated muscle fibres  
 D) skeletal muscle fibres
34. Skeletal muscles are [Pg-104,E]  
 A) striated in appearance  
 B) smooth in appearance  
 C) involuntary muscles  
 D) both A and C
35. Go through the following figures. [Pg-105,E]



Identify these muscles (A, B and C).

|    | <b>A</b>            | <b>B</b>         | <b>C</b>         |
|----|---------------------|------------------|------------------|
| A) | Smooth muscles      | Striated muscles | Cardiac muscles  |
| B) | Cardiac muscles     | Smooth muscles   | Striated muscles |
| C) | Striated muscles    | Smooth muscles   | Cardiac muscles  |
| D) | Involuntary muscles | Voluntary muscle | Heart muscle     |

36. Involuntary muscle fibers in human body are found in [Pg-105,E]  
 A) heart  
 B) blood vessels  
 C) intestine  
 D) all of these
37. Consider the following statements: [Pg-105,M]  
 a) All involuntary muscles are smooth in appearance.  
 b) All striated muscles are voluntary muscles.  
 Select the correct option  
 A) a) is true, b) is false  
 B) Both a) and b) are true

- C) a) is False, b) is true  
 D) Both a) and b) are false
38. Which type of tissue correctly matches with its locations? [Pg-103,104,105,E]

|    | <b>Tissue</b>           | <b>Location</b>   |
|----|-------------------------|-------------------|
| A) | Areolar tissue          | Tendons           |
| B) | Transitional epithelium | Tip of nose       |
| C) | Cuboidal epithelium     | Lining of stomach |
| D) | Smooth muscle           | Wall of intestine |

39. The muscular layer lining the stomach and intestine is [Pg-105,E]  
 A) striated in appearance  
 B) smooth in appearance  
 C) multinucleated  
 D) characterized by intercalated discs
40. Heart cells have the ability to contract as a unit to the presence of [Pg-105,E]  
 A) multinucleate condition  
 B) fusiform shape  
 C) intercalated discs  
 D) striations
41. The structural and functional unit of nervous system is [Pg-105,E]  
 A) neuron  
 B) neuroglia  
 C) oligodendrocyte  
 D) ganglia
42. The neurons in the neural system are protected by [Pg-105,E]  
 A) dendrites  
 B) neuroglial cells  
 C) axons  
 D) Nissl's granules
43. Assertion: Both skeletal muscles and cardiac muscles are striated appearance. Reason: Cardiac muscles are involuntary in nature. [Pg-104,105,H]  
 A) Both assertion and reason are true, assertion is incorrect explanation of assertion  
 B) Both assertion and reason are true, reason is not the correct explanation of assertion  
 C) Assertion is true, reason is false  
 D) Both assertion and reason are false
44. Assertion: Neurons are excitable cells. Reason: Neurons are found abundantly throughout the body. [Pg-105,H]  
 A) Both assertion and reason are true, assertion is incorrect explanation of assertion  
 B) Both assertion and reason are true, reason is not the correct explanation of assertion  
 C) Assertion is true, reason is false

D) Both assertion and reason are false

## **PARA-7.4** **COCKROACH**

45. Identify A to E. [Pg-111,E]

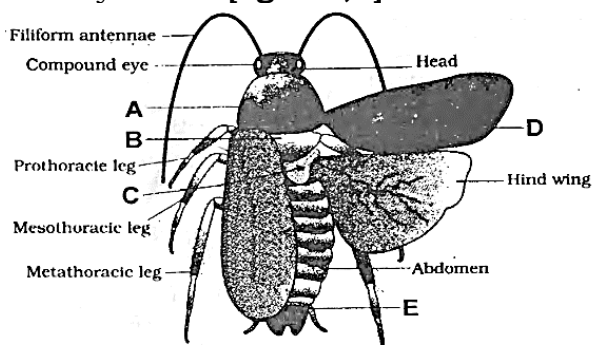


Figure — External features of cockroach

|    | A        | B          | C          | D       | E          |
|----|----------|------------|------------|---------|------------|
| A) | Pronotum | Mesothorax | Metathorax | Tegmina | Pleura     |
| B) | Pronotum | Mesothorax | Metathorax | Tegmina | Sternum    |
| C) | Pronotum | Mesothorax | Metathorax | Tegmina | Anal cerci |
| D) | Pronotum | Mesothorax | Metathorax | Tegmina | Anal style |

46. The body of cockroach can be morphologically distinguished as [Pg-111,E]

- A) head and abdomen
- B) head, thorax and abdomen
- C) head, abdomen and tail
- D) head and trunk

47. Consider the following statements: [Pg-111,M]

- a) Body of cockroach is covered by hard exoskeleton made up of chitin.
- b) In male cockroach, the wings extend beyond the abdomen.

Select the correct option

- A) a is true, b is false
- B) Both a and b are false
- C) a is false, b is true
- D) Both a and b are true

48. The chitinous exoskeleton of arthropods is formed by the polymerization of [Pg-111,E]

- A) lipoglycans
- B) keratin sulphate and chondroitin sulphate
- C) D – glucosamine
- D) N – acetyl glucosamine

49. Hardened plates of exoskeleton in cockroaches are known as [Pg-111,E]

- A) capsids
- B) spicules
- C) sclerites
- D) metamere

50. Dorsal and ventral sclerites in cockroach are [Pg-111,E]

- A) tergites and sternites, respectively
- B) sternites and pleurites, respectively
- C) pleurites and tergites, respectively
- D) pleurites and sternites, respectively

51. The triangular head of cockroach [Pg-112,E]

- (1) bear compound eyes
  - (2) is formed by the fusion of two segments
  - (3) bear chewing and lapping mouthparts
- Select the correct option

- A) 1, 2, 3 are correct
- B) Only 1 is correct
- C) 2 and 3 are correct
- D) 1 and 2 are correct

52. The mouth parts of cockroach contain [Pg-112,E]

- A) two mandibles, two maxillae, labrum, labium and hypopharynx
- B) two mandibles and maxillae each, two labrum and labium each
- C) one mandible and maxilla each, labrum and hypopharynx
- D) one mandible, labrum, labium and hypopharynx

53. Select the incorrect statement regarding cockroach: [Pg-112,E]

- A) Hypopharynx acts as a tongue.
- B) Head is mobile in all directions due to flexible neck.
- C) Antennae possess sensory receptors to monitor the environment.
- D) Thorax is greatly reduced and non-divisible.

54. Paired walking legs in cockroaches are found on [Pg-112,E]

- A) each thoracic segments
- B) mesothorax and metathorax
- C) prothorax and metathorax
- D) metathorax only

55. Forewings and hindwings in cockroaches arises from [Pg-112,E]

- A) mesothorax and metathorax
- B) prothorax
- C) metathorax
- D) prothorax and metathorax

56. Match the following columns. [Pg-112,E]

|   | Column-I |     | Column-II         |
|---|----------|-----|-------------------|
| a | Sclerite | (1) | Forewings         |
| b | Tegmina  | (2) | Simple eye        |
| c | Ocellus  | (3) | Exoskeleton plate |

Select the correct option

- |    |          |          |          |
|----|----------|----------|----------|
|    | <b>a</b> | <b>b</b> | <b>c</b> |
| A) | 3        | 2        | 1        |
| B) | 2        | 1        | 3        |

- C) 3 1 2  
D) 2 3 1
57. How the forewings of cockroaches are distinguished from the hindwings? **[Pg-112,E]**  
A) Forewings are leathery while hindwings are membranous.  
B) Forewings are much longer while hindwings are vestigial.  
C) Forewings are much reduced and hindwings are highly evolved.  
D) Forewings are transparent while hindwings are opaque.
58. In female cockroach **[Pg-112,E]**  
A) forewings help in flight  
B) abdomen consists of 8 segments  
C) seventh sternum is boat shaped  
D) all of these
59. Which of the following sterna form the brood pouch in female cockroach? **[Pg-112,E]**  
A) 8th, 9th B) 7th, 8th, 9th  
C) 6th, 7th, 8th D) 8th, 9th, 10th
60. Which of the following features is used to identify a male cockroach from a female cockroach? **[Pg-112,E]**  
A) Presence of a boat shaped sternum on the 9th abdominal segment  
B) Presence of caudal styles  
C) Forewings with darker tegmina  
D) Presence of anal cerci
61. Select the incorrect statement: **[Pg-112,M]**  
A) Genital pouch in male cockroach is dorsally bounded by 9th and 10th terga.  
B) Male genital pouch contains genital pore only.  
C) 10th segment in male and female cockroach possess anal cerci.  
D) Female genital pouch contains collateral glands.
62. Which among the following structures are found in male cockroaches only? **[Pg-112,E]**  
A) Collateral glands and anal cerci  
B) Anal cerci and spermathecal pores  
C) Spermathecal pores and collateral glands  
D) Gonapophysis and anal styles
63. Match the following columns: **[Pg-112,M]**

|   | Column-I   |     | Column-II      |
|---|------------|-----|----------------|
| a | Anal cerci | (1) | 7th in females |

|   |                     |     |                                        |
|---|---------------------|-----|----------------------------------------|
| b | Boat-shaped sternum | (2) | 9th segment in males                   |
| c | Anal styles         | (3) | 10th segment                           |
| d | Genital pouch       | (4) | Bounded by 9th and 10th terga in males |

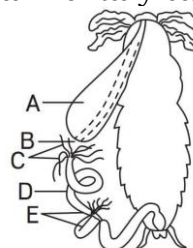
Select the correct option

- |    |          |          |          |          |
|----|----------|----------|----------|----------|
|    | <b>a</b> | <b>b</b> | <b>c</b> | <b>d</b> |
| A) | 4        | 2        | 1        | 3        |
| B) | 2        | 3        | 4        | 1        |
| C) | 1        | 4        | 3        | 2        |
| D) | 3        | 1        | 2        | 4        |
64. What is the correct arrangement of structures in Cockroach's alimentary canal? **[Pg-113,E]**  
A) Oesophagus, Gizzard, Crop  
B) Gizzard, Oesophagus, Crop  
C) Crop, Oesophagus, Gizzard  
D) Oesophagus, Crop, Gizzard
65. Match the following. **[Pg-113,M]**

|   | Column-I           |     | Column-II                     |
|---|--------------------|-----|-------------------------------|
| a | Proventriculus     | (1) | Food storage                  |
| b | Crop               | (2) | Grinding food particles       |
| c | Hepatic Caeca      | (3) | Secretion of digestive juices |
| d | Malpighian tubules | (4) | Removal of excretory products |

Select the correct option

- |    |          |          |          |          |
|----|----------|----------|----------|----------|
|    | <b>a</b> | <b>b</b> | <b>c</b> | <b>d</b> |
| A) | 4        | 3        | 2        | 1        |
| B) | 2        | 1        | 3        | 4        |
| C) | 2        | 4        | 1        | 3        |
| D) | 3        | 2        | 4        | 1        |
66. How many chitinous teeth are present in the gizzard of cockroach? **[Pg-113,E]**  
A) Two B) Six  
C) Ten D) Fourteen
67. Refer to the given diagram of cockroach's alimentary canal: **[Pg-113,E]**



Which of the following options represent correct name and characteristic of labelled structures?

- A) A – Gizzard – Food grinding structure  
B) C – Hepatic caeca – Secretory digestive juices

- C) D – Ileum – Food absorption  
D) E – Malpighian tubules – 6–8 blind tubules
68. Select the correct sequence of organs in the alimentary canal of cockroach starting from mouth. **[Pg-113,E]**  
A) Pharynx → Oesophagus → Gizzard → Crop → Ileum → Rectum  
B) Pharynx → Oesophagus → Gizzard → Ileum → Crop → Colon → Rectum  
C) Pharynx → Oesophagus → Ileum → Crop → Gizzard → Colon → Rectum  
D) Pharynx → Oesophagus → Crop → Gizzard → Ileum → Colon → Rectum
69. During anatomical studies of cockroach, how would you differentiate malpighian tubules (A) from gastric caeca (B)? **[Pg-113,E]**  
A) A – 6–8 in number, B – 200–300 in number  
B) A – Present at the junction of midgut and hindgut B – Present at the junction of foregut and midgut  
C) A – Blind, black-coloured tubules B – Hollow, yellow-coloured tubules  
D) All of these
70. Select the incorrect statement regarding cockroach: **[Pg-113,E]**  
A) Cockroaches possess open circulating system.  
B) Blood vessels are highly developed and open into heart.  
C) Visceral organs found in hemocoel are bathed in hemolymph.  
D) Alary muscles associated with heart are contractile muscles.
71. The heart of cockroach possess **[Pg-113,E]**  
A) 10 chambers B) 8 chambers  
C) 13 chambers D) 12 chambers
72. Match the following columns. **[Pg-113,M]**

|   | <b>Column-I<br/>(Structures in cockroach)</b> |     | <b>Column-II<br/>(Number)</b> |
|---|-----------------------------------------------|-----|-------------------------------|
| a | Spiracles                                     | (1) | 6–8                           |
| b | Heart chambers                                | (2) | 100–150                       |
| c | Hepatic ceca                                  | (3) | 13                            |
| d | Malpighian tubule                             | (4) | 10                            |

Select the correct option

- |    |          |          |          |          |
|----|----------|----------|----------|----------|
|    | <b>a</b> | <b>b</b> | <b>c</b> | <b>d</b> |
| A) | 2        | 4        | 3        | 1        |
| B) | 3        | 2        | 4        | 1        |
| C) | 1        | 4        | 2        | 3        |
| D) | 4        | 3        | 1        | 2        |

73. Select the incorrect statement regarding cockroach **[Pg-113,114,E]**  
A) Exchange of gases occurs by diffusion at the tracheoles.  
B) Malpighian tubules remain lined by glandular and ciliated cells.  
C) Uricose glands are principal reproductive glands in female cockroach  
D) Fat bodies and nephrocytes help in excretion of nitrogenous waste
74. The principal nitrogenous waste in cockroach is **[Pg-114,E]**  
A) ammonia B) vasa  
C) guanine D) uric acid
75. The body cells in cockroach discharge their nitrogenous waste in the hemolymph mainly in the form of **[Pg-114,E]**  
A) calcium carbonate  
B) ammonia  
C) potassium urate  
D) urea
76. How many ganglia are found in the thorax and abdomen of male cockroach? **[Pg-114,E]**  
A) 3 and 6 B) 6 and 4  
C) 5 and 5 D) 6 and 3
77. Consider the following statements: **[Pg-114,M]**  
a) Cockroaches remain alive for several hours even after its head is cut off.  
b) Nervous system of cockroach is dorsally placed along the whole body.  
Select the correct option  
A) a is true, b is false  
B) Both a and b are true  
C) a is false, b is true  
D) Both a and b are false
78. Which of the following statements is incorrect? **[Pg-114,M]**  
A) Female cockroach possesses sixteen ovarioles in the ovaries.  
B) Cockroaches exhibit mosaic vision with less sensitivity and more resolution.  
C) A mushroom-shaped gland is present in the 6th-7th abdominal of male cockroach.  
D) A pair of spermatheca is present in the 6th segment of female cockroach.
79. Match the following columns **[Pg-114,E]**

|   | <b>Column-I</b> |     | <b>Column-II</b> |
|---|-----------------|-----|------------------|
| a | Testes          | (1) | 2nd –6th segment |
| b | Ovaries         | (2) | 4th –6th segment |
| c | Spermatheca     | (3) | 6th segment      |

|   |                 |     |                 |
|---|-----------------|-----|-----------------|
| d | Mushroom glands | (4) | 6th–7th segment |
|---|-----------------|-----|-----------------|

Select the correct option

|    | <b>a</b> | <b>b</b> | <b>c</b> | <b>d</b> |
|----|----------|----------|----------|----------|
| A) | 3        | 2        | 4        | 1        |
| B) | 2        | 1        | 3        | 4        |
| C) | 4        | 3        | 1        | 2        |
| D) | 1        | 4        | 2        | 3        |

80. The bundles of sperms are called [Pg-114,E]  
 A) phallomere B) gonapophysis  
 C) spermathecal D) spermatophores
81. Phallomere in cockroaches [Pg-114,E]  
 A) helps to store spermatophores  
 B) is chitinous external genitalia  
 C) is accessory reproductive gland  
 D) represents ejaculatory duct
82. Ovarioles are [Pg-114,E]  
 A) bundles of ova  
 B) ovarian tubules  
 C) immature ovaries  
 D) capsule containing fertilized ova
83. Match the following columns.

[Pg-114,M]

|   | <b>Column-I</b> |     | <b>Column-II</b>            |
|---|-----------------|-----|-----------------------------|
| a | Ovarioles       | (1) | Opening of ejaculatory duct |
| b | Gonopore        | (2) | Chain of developing ova     |
| c | Phallomere      | (3) | Bundles of sperms           |
| d | Spermatophore   | (4) | External genitalia          |

Select the correct option

|    | <b>a</b> | <b>b</b> | <b>c</b> | <b>d</b> |
|----|----------|----------|----------|----------|
| A) | 3        | 2        | 1        | 4        |
| B) | 4        | 3        | 2        | 1        |
| C) | 1        | 4        | 3        | 2        |
| D) | 2        | 1        | 4        | 3        |

84. Which of the following structure encase the fertilized eggs of cockroaches?

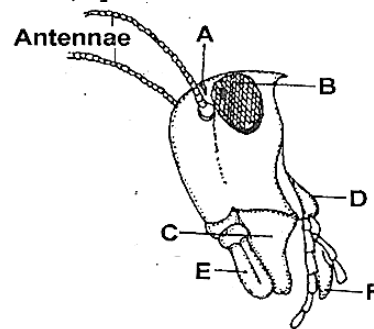
[Pg-114,E]

- A) Spermatheca B) Ovariole  
 C) Cocoon D) Ootheca

85. Select the incorrect statement. [Pg-114,115,M]

- A) Female cockroaches produce one ootheca at a time.  
 B) The nymphs of cockroach resemble adults.  
 C) The nymphs of cockroach moults about 13 times to reach adult form.  
 D) Only adult cockroaches have wings.

86. The following figure is related to head region of cockroach. Identify A to F. [Pg-112,E]



|    | <b>A</b>     | <b>B</b>     | <b>C</b> | <b>D</b> | <b>E</b> | <b>F</b> |
|----|--------------|--------------|----------|----------|----------|----------|
| A) | Compound eye | Ocellus      | Maxilla  | Mandible | Labrum   | Labium   |
| B) | Ocellus      | Compound eye | Mandible | Maxilla  | Labrum   | Labium   |
| C) | Ocellus      | Compound eye | Mandible | Maxilla  | Labium   | Labrum   |
| D) | Ocellus      | Compound eye | Maxilla  | Mandible | Labium   | Labrum   |

87. Match the following columns. [Pg-113,114,115,M]

|   | <b>Column-I</b>  |     | <b>Column-II</b>                          |
|---|------------------|-----|-------------------------------------------|
| a | Collateral gland | (1) | Stimulatory organ in male                 |
| b | Titillator       | (2) | Anal appendage which helps in oviposition |
| c | Gonapophysis     | (3) | Helps in the formation of egg cases       |

Select the correct option

|    | <b>a</b> | <b>b</b> | <b>c</b> |
|----|----------|----------|----------|
| A) | 2        | 3        | 1        |
| B) | 1        | 2        | 3        |
| C) | 3        | 1        | 2        |
| D) | 2        | 1        | 3        |

- 88.

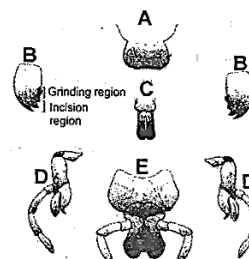


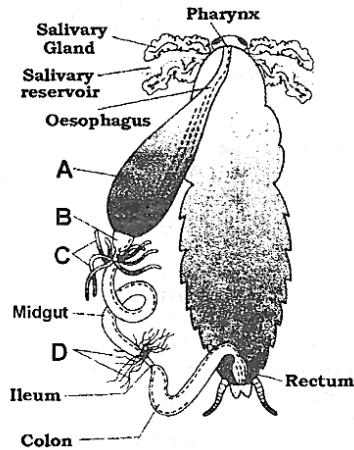
Fig. Mouthparts of cockroach.

The above figure is related with mouth parts of cockroach. Identify A to E -

|    | <b>A</b> | <b>B</b>    | <b>C</b> | <b>D</b> | <b>E</b>    |
|----|----------|-------------|----------|----------|-------------|
| A) | Maxilla  | Hypopharynx | Labium   | Mandible | Labrum      |
| B) | Mandible | Labium      | Maxilla  | Labrum   | Hypopharynx |

|    |        |             |             |         |          |
|----|--------|-------------|-------------|---------|----------|
| C) | Labrum | Mandible    | Hypopharynx | Maxilla | Labium   |
| D) | Labium | Hypopharynx | Labrum      | Maxilla | Mandible |

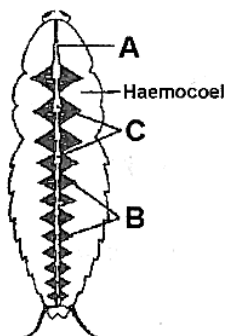
89.



Identify structures A to D –

|    | A       | B       | C                  | D                  |
|----|---------|---------|--------------------|--------------------|
| A) | Gizzard | Crop    | Hepatic caecae     | Malpighian tubules |
| B) | Crop    | Gizzard | Hepatic caecae     | Malpighian tubules |
| C) | Crop    | Gizzard | Malpighian tubules | Hepatic caecae     |
| D) | Gizzard | Crop    | Malpighian tubules | Hepatic caecae     |

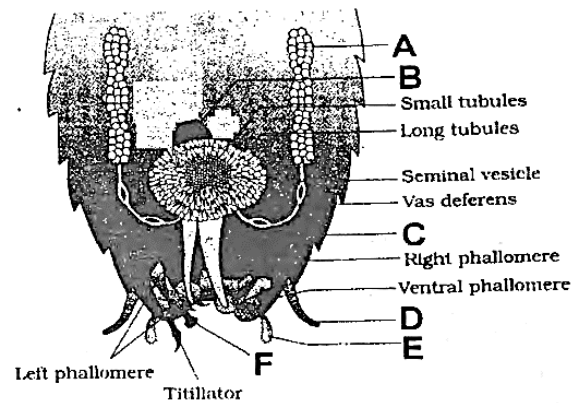
90.



The above figure shows open circulatory system of cockroach. Identify A, B and C.

|    | A               | B               | C                 |
|----|-----------------|-----------------|-------------------|
| A) | Posterior aorta | Alary muscles   | Chambers of heart |
| B) | Anterior aorta  | Ciliary muscles | Chambers of heart |
| C) | Anterior aorta  | Alary muscles   | Chambers of heart |
| D) | Anterior aorta  | Ciliary muscles | Chambers of heart |

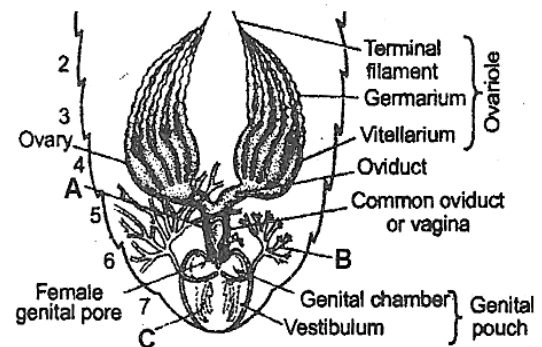
91.



Identify A to F in above diagram –

|   | A)               | B)               | C)               | D)               |
|---|------------------|------------------|------------------|------------------|
| A | Testis           | Testis           | Testis           | Testis           |
| B | Collateral gland | Collateral gland | Phallic gland    | Phallic gland    |
| C | Ejaculatory duct | Ejaculatory duct | Ejaculatory duct | Ejaculatory duct |
| D | Anal cercus      | Terga            | Anal cerci       | Caudal style     |
| E | Caudal style     | Caudal style     | Caudal style     | Caudal style     |
| F | Pseudopenis      | Pseudopenis      | Pseudopenis      | Pseudopenis      |

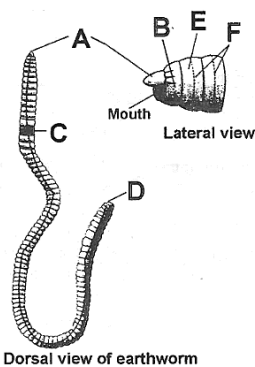
92. Figure refers to reproductive system of female cockroach. The correct labellings indicated by alphabets are respectively- [Pg-115,E]



|    | A             | B                  | C            |
|----|---------------|--------------------|--------------|
| A) | Spermatheca   | Collateral glands, | Gonapophyses |
| B) | Phallic gland | Collateral glands, | Gonapophyses |
| C) | Spermatheca   | Seminal vesicles   | Gonapophyses |
| D) | Spermatheca   | Collateral glands, | Tegmina      |

### PARA-7.3 AND 7.5 EARTHWORM AND FROG

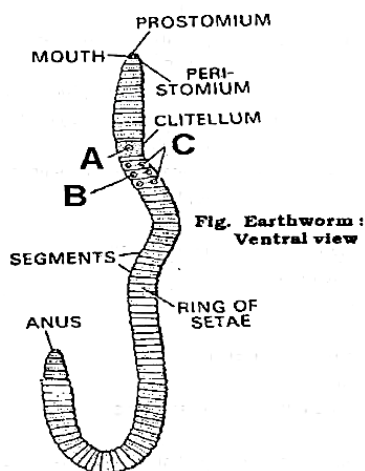
93.



Go through the above figure. Identify A to F.

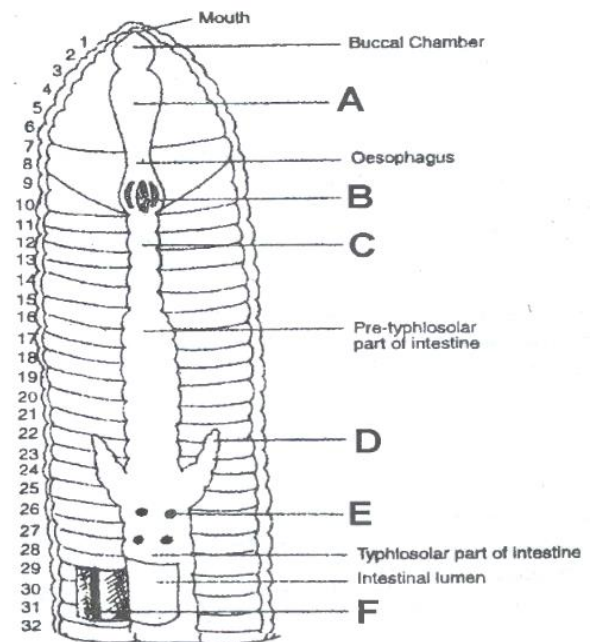
|   | A)            | B)            | C)            | D)            |
|---|---------------|---------------|---------------|---------------|
| A | Peristomium   | Prostomium    | Prostomium    | Prostomium    |
| B | Prostomium    | Peristomium   | Peristomium   | Peristomium   |
| C | Clitellum     | Clitellum     | Endosteu      | Endosteu      |
| D | Anus          | Anus          | Anus          | Cloaca        |
| E | Metamer       | Metamer       | Metamer       | Metameres     |
| F | Ring of setae | Ring of setae | Ring of setae | Ring of setae |

94.



|    | A                   | B                   | C                 |
|----|---------------------|---------------------|-------------------|
| A) | Excretory pore      | Female genital pore | Male genital pore |
| B) | Male genital pore   | Female genital pore | Genital papilla   |
| C) | Female genital pore | Genital papilla     | Male genital pore |
| D) | Female genital pore | Male genital pore   | Genital papilla   |

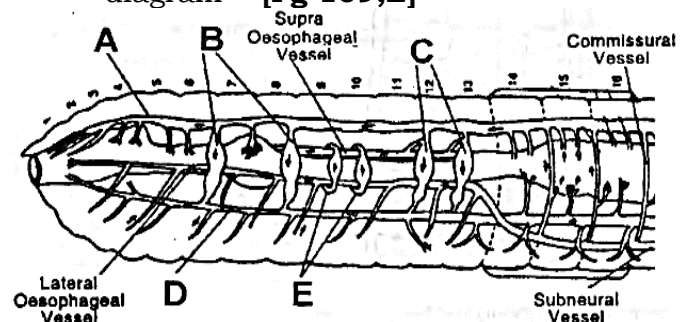
95.



Choose the correct option of labeling from the options given-

|   | A)          | B)          | C)          | D)         |
|---|-------------|-------------|-------------|------------|
| A | Pharynx     | Gizzard     | Pharynx     | Pharynx    |
| B | Stomach     | Pharynx     | Gizzard     | Gizzard    |
| C | Gizzard     | Stomach     | Stomach     | Stomach    |
| D | Caecae      | Caecae      | Caecae      | Liver      |
| E | Lymph gland | Lymph gland | Lymph gland | Villi      |
| F | Typhlosole  | Typhlosole  | Typhlosole  | Typhlosole |

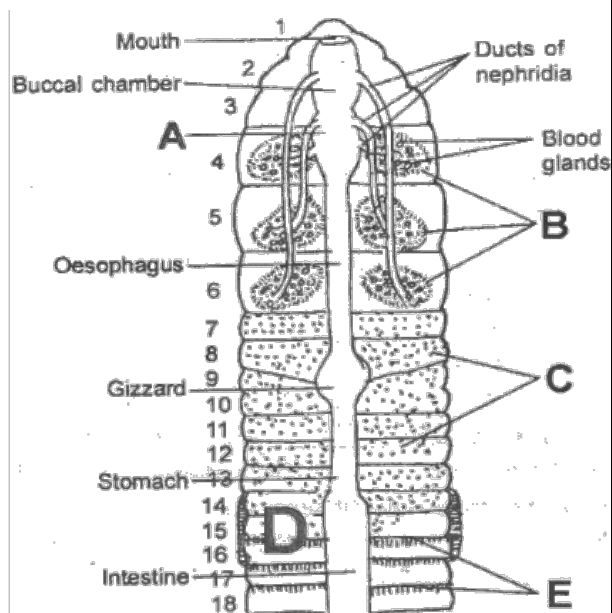
96. Go through the blood vascular system of earthworm given in the following diagram - [Pg-109,E]



|   | A)                        | B)                        | C)             | D)             |
|---|---------------------------|---------------------------|----------------|----------------|
| A | Dorsal vessel             | Ventral vessel            | Dorsal vessel  | Ventral vessel |
| B | Lateral hearts            | Lateral hearts            | Lateral hearts | Lateral hearts |
| C | Lateral-oesophageal heart | Lateral-oesophageal heart | Anterior loop  | Anterior loop  |

| D | Ventral vessel | Dorsal vessel | Ventral vessel               | Dorsal vessel                |
|---|----------------|---------------|------------------------------|------------------------------|
| E | Anterior loop  | Anterior loop | Lateral-oesopharyngeal heart | Lateral-oesopharyngeal heart |

97.

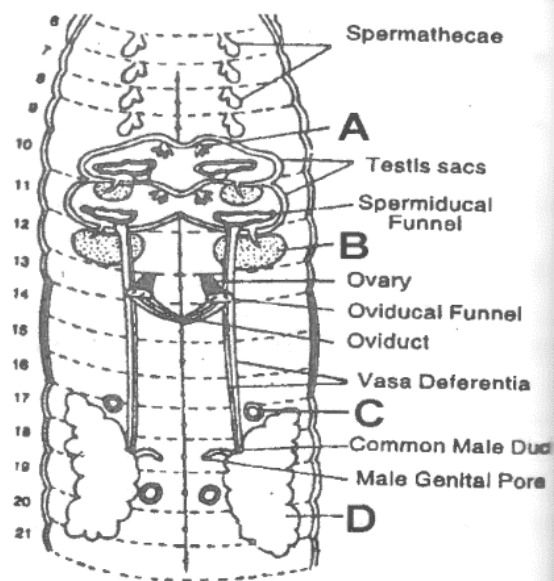


- I. Septal nephridia
- II. Pharynx
- III. Forest of integumentary nephridia
- IV. Integumentary nephridia
- V. Tufts of pharyngeal nephridia

Identify the structures labeled A to E in the diagram given above from the list I to V -

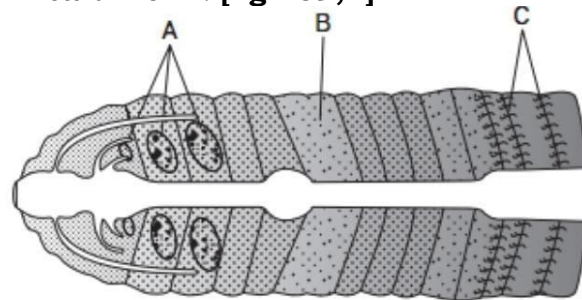
|    | A  | B   | C   | D   | E   |
|----|----|-----|-----|-----|-----|
| A) | II | I   | III | IV  | V   |
| B) | II | V   | IV  | III | I   |
| C) | II | IV  | V   | I   | III |
| D) | II | III | IV  | I   | V   |

98. Identify A to D in the figure - [Pg-110,E]



|    | A               | B               | C               | D               |
|----|-----------------|-----------------|-----------------|-----------------|
| A) | Testis          | Seminal vesicle | Accessory gland | Prostate gland  |
| B) | Seminal vesicle | Testis          | Accessory gland | Prostate gland  |
| C) | Testis          | Seminal vesicle | Prostate gland  | Accessory gland |
| D) | Seminal vesicle | Testis          | Prostate gland  | Accessory gland |

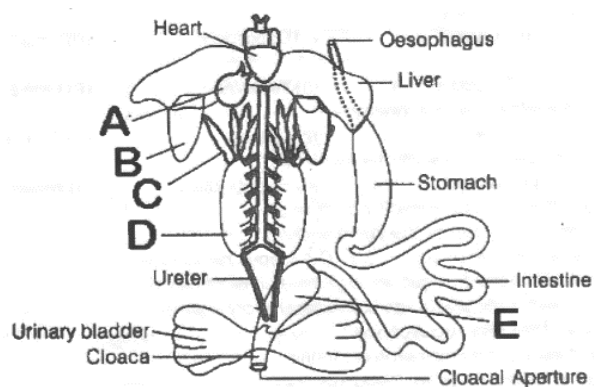
99. Refer to the diagram of nephridial system in earthworm. [Pg-109,E]



Select the option representing correct characteristic of the labelled structure:

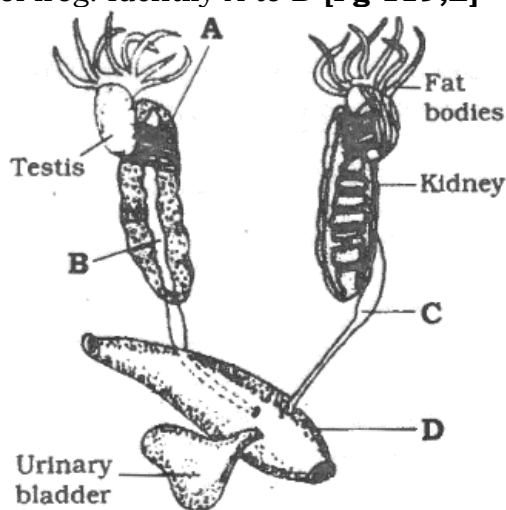
- A) C - Septal nephridia - Open into intestine
- B) A - Pharyngeal nephridia - Open to outside
- C) B - Integumentary nephridia - Densely found on first two segments
- D) All of these

100. The above figure is associated with diagrammatic representation of internal organs of frog. Identify A to E. [Pg-117,E]



|   | A)           | B)           | C)           | D)           |
|---|--------------|--------------|--------------|--------------|
| A | Gall bladder | Gall bladder | Gall bladder | Gall bladder |
| B | Lung         | Lung         | Lung         | Lung         |
| C | Ovary        | Fat bodies   | Testis       | Fat bodies   |
| D | Testis       | Testis       | Kidney       | Kidney       |
| E | Rectum       | Rectum       | Rectum       | Rectum       |

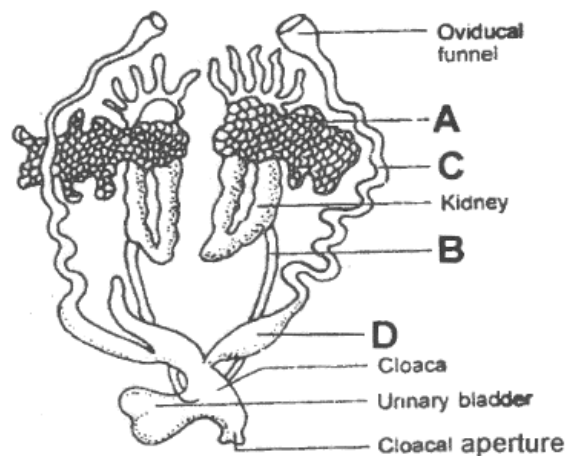
101. Go through the following figure indicating the male reproductive system of frog. Identify A to D [Pg-119,E]



|    | A               | B             | C                 | D      |
|----|-----------------|---------------|-------------------|--------|
| A. | Bidder's canal  | Adrenal gland | Urinogenital duct | Rectum |
| B. | Bidder's canal  | Adrenal gland | Urinogenital duct | Cloaca |
| C. | Vasa efferentia | Adrenal gland | Urinogenital duct | Cloaca |

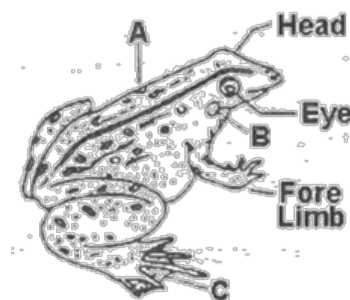
| D. | Vasa efferentia | Thyroid gland | Urinogenital duct | Cloaca |
|----|-----------------|---------------|-------------------|--------|
|----|-----------------|---------------|-------------------|--------|

102. The above figure is related with female reproductive system of frog. Identify A to D. [Pg-119,E]



|    | A     | B                | C              | D       |
|----|-------|------------------|----------------|---------|
| A) | Ovary | Ureter           | Oviduct        | Ovisac  |
| B) | Ovary | Urinogenital duc | Bidder's canal | Ovisac  |
| C) | Ovary | Urinogenital duc | Ovisac         | Oviduct |
| D) | Ovary | Urinogenital duc | Bidder's canal | Oviduct |

103. Identify A, B and C respectively – [Pg-116,E]



- A) Trunk, Tympanum, Web
- B) Neck, Brown eye spot, Web
- C) Trunk, Tympanum, Hind limb
- D) Neck, Tympanum, Hind limb

## Answer Key

### STRUCTURAL ORGANISATION IN ANIMALS

| Q   | 1        | 2        | 3        | 4        | 5        | 6        | 7        | 8        | 9        | 10       |
|-----|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Ans | <b>B</b> | <b>B</b> | <b>A</b> | <b>C</b> | <b>B</b> | <b>C</b> | <b>A</b> | <b>C</b> | <b>D</b> | <b>C</b> |
| Q   | 11       | 12       | 13       | 14       | 15       | 16       | 17       | 18       | 19       | 20       |
| Ans | <b>A</b> | <b>C</b> | <b>C</b> | <b>A</b> | <b>D</b> | <b>C</b> | <b>C</b> | <b>B</b> | <b>D</b> | <b>A</b> |
| Q   | 21       | 22       | 23       | 24       | 25       | 26       | 27       | 28       | 29       | 30       |
| Ans | <b>B</b> | <b>A</b> | <b>D</b> | <b>D</b> | <b>C</b> | <b>B</b> | <b>A</b> | <b>C</b> | <b>A</b> | <b>C</b> |
| Q   | 31       | 32       | 33       | 34       | 35       | 36       | 37       | 38       | 39       | 40       |
| Ans | <b>B</b> | <b>D</b> | <b>B</b> | <b>A</b> | <b>C</b> | <b>D</b> | <b>D</b> | <b>D</b> | <b>B</b> | <b>C</b> |
| Q   | 41       | 42       | 43       | 44       | 45       | 46       | 47       | 48       | 49       | 50       |
| Ans | <b>A</b> | <b>B</b> | <b>D</b> | <b>B</b> | <b>C</b> | <b>B</b> | <b>D</b> | <b>D</b> | <b>C</b> | <b>A</b> |
| Q   | 51       | 52       | 53       | 54       | 55       | 56       | 57       | 58       | 59       | 60       |
| Ans | <b>B</b> | <b>A</b> | <b>D</b> | <b>A</b> | <b>A</b> | <b>C</b> | <b>A</b> | <b>D</b> | <b>A</b> | <b>B</b> |
| Q   | 61       | 62       | 63       | 64       | 65       | 66       | 67       | 68       | 69       | 70       |
| Ans | <b>B</b> | <b>D</b> | <b>D</b> | <b>D</b> | <b>B</b> | <b>B</b> | <b>B</b> | <b>D</b> | <b>C</b> | <b>B</b> |
| Q   | 71       | 72       | 73       | 74       | 75       | 76       | 77       | 78       | 79       | 80       |
| Ans | <b>C</b> | <b>D</b> | <b>C</b> | <b>D</b> | <b>C</b> | <b>A</b> | <b>A</b> | <b>A</b> | <b>B</b> | <b>D</b> |
| Q   | 81       | 82       | 83       | 84       | 85       | 86       | 87       | 88       | 89       | 90       |
| Ans | <b>B</b> | <b>A</b> | <b>D</b> | <b>D</b> | <b>A</b> | <b>B</b> | <b>A</b> | <b>C</b> | <b>B</b> | <b>C</b> |
| Q   | 91       | 92       | 93       | 94       | 95       | 96       | 97       | 98       | 99       | 100      |
| Ans | <b>C</b> | <b>A</b> | <b>B</b> | <b>C</b> | <b>C</b> | <b>A</b> | <b>B</b> | <b>A</b> | <b>D</b> | <b>D</b> |
| Q   | 101      | 102      | 103      |          |          |          |          |          |          |          |
| Ans | <b>A</b> | <b>C</b> | <b>A</b> |          |          |          |          |          |          |          |