NSEB 11th 2026

DPP-09

Structural Organization in Animals

1. **Assertion (A):** Cockroaches are considered serious pests.
Reason (R): They are known to transmit several plant diseases.
(A) Both A and R true, R explains A
(B) Both A and R true, R does not explain A
(C) A true, R false
(D) A false, R true

2. Which of the following are true about cockroaches?
1. Found in class Insecta of Arthropoda.
2. Range in size from 0.6 cm to 7.6 cm.
3. Found only in tropical forests.
4. Nocturnal omnivores.
(A) 1, 2, 4 (B) 2, 3, 4
(C) 1, 3, 4 (D) All are correct

3. The species *Periplaneta americana* is commonly studied in cockroach biology and measures about ____ mm in length.
(A) 20-40 (B) 25-60
(C) 34-53 (D) 40-70

4. Which of the following correctly matches the part with function?
(A) Pronotum - sensory structure
(B) Anal cerci - reproductive function
(C) Filiform antennae - sensory perception
(D) Mesothoracic leg-located in head region

5. Match the Following

Column A		Column B	
A.	Head	1.	Hard, chitinous brown covering
B.	Thorax	2.	Contains compound eyes, antennae
C.	Abdomen	3.	Posterior body segment
D.	Exoskeleton	4.	Prothorax, mesothorax, metathorax

(A) A-3, B-2, C-1, D-4
(B) A-2, B-1, C-3, D-4
(C) A-1, B-3, C-2, D-4
(D) A-2, B-4, C-3, D-1

6. **Assertion (A):** Cockroach's exoskeleton has hardened plates called sclerites.
Reason (R): These sclerites are joined by a rigid, immobile membrane.
(A) Both A and R true, R explains A
(B) Both A and R true, but R does not explain A
(C) A true, R false
(D) A false, R true

7. Arrange the following exoskeletal segments from anterior to posterior based on external cockroach anatomy:
1. Mesothorax 2. Pronotum
3. Head capsule 4. Abdomen
5. Metathorax
(A) 3→2→1→5→4 (B) 2→1→3→4→5
(C) 1→3→2→5→4 (D) 1→2→4→3→5

8. Which of the following are true about cockroach antennae?
1. Arise from membranous sockets
2. Located behind compound eyes
3. Thread-like, sensory in function
4. Involved in food grinding
(A) 1, 2, 3 (B) 1, 3
(C) Only 3 (D) All

9. In cockroach head, which structure acts as lower lip?
(A) Maxilla
(B) Labium
(C) Hypopharynx
(D) Labrum

10. Which statements are true for the thorax of cockroach?

1. Consists of prothorax, mesothorax, metathorax
2. First pair of wings arises from prothorax
3. Each thoracic segment bears walking legs
4. Tegmina arise from mesothorax

(A) 1, 3, 4 (B) 1, 2, 3
(C) 2, 3, 4 (D) All

11. Which are correct regarding cockroach abdomen?

1. 10 segments in both sexes
2. 7^{th} sternum in females is boat-shaped
3. 10^{th} segment bears anal cerci in both sexes
4. Anal styles found in both sexes

(A) 1, 2, 3 (B) 2, 3, 4
(C) 1, 3 (D) All

12. **A:** Anal styles are found only in male cockroaches.
R: Both sexes have anal cerci but only males possess paired anal styles.

(A) Both A and R true; R explains A
(B) Both A and R true; R does not explain A
(C) A true, R false
(D) A false, R true

13. In females, the genital pouch is formed by the _____ sterna.

(A) 6^{th} and 7^{th} (B) 7^{th}, 8^{th} and 9^{th}
(C) 8^{th} and 10^{th} (D) 9^{th} and 10^{th}

14. Which of the following are reproductive openings in female cockroach?

1. Gonopore
2. Spermathecal pores
3. Collateral glands
4. Anal cerci

(A) 1, 2, 3 (B) 2, 3, 4
(C) 1, 3, 4 (D) All

15. Match the Following

Column A		Column B	
A.	Prothorax	1.	Bears neck, walking legs
B.	Mesothorax	2.	Bears tegmina
C.	Metathorax	3.	Bears hindwings

(A) A-1, B-2, C-3 (B) A-2, B-1, C-3
(C) A-1, B-3, C-2 (D) A-3, B-2, C-1

Answer Key

1. (C)
2. (A)
3. (C)
4. (C)
5. (D)
6. (C)
7. (A)
8. (B)
9. (B)
10. (A)
11. (A)
12. (A)
13. (B)
14. (A)
15. (A)