

Exam and Model answer of Invertebrate Physiology Exam

Duration: 1h30 – Total: 20 points

Section A - Circulation

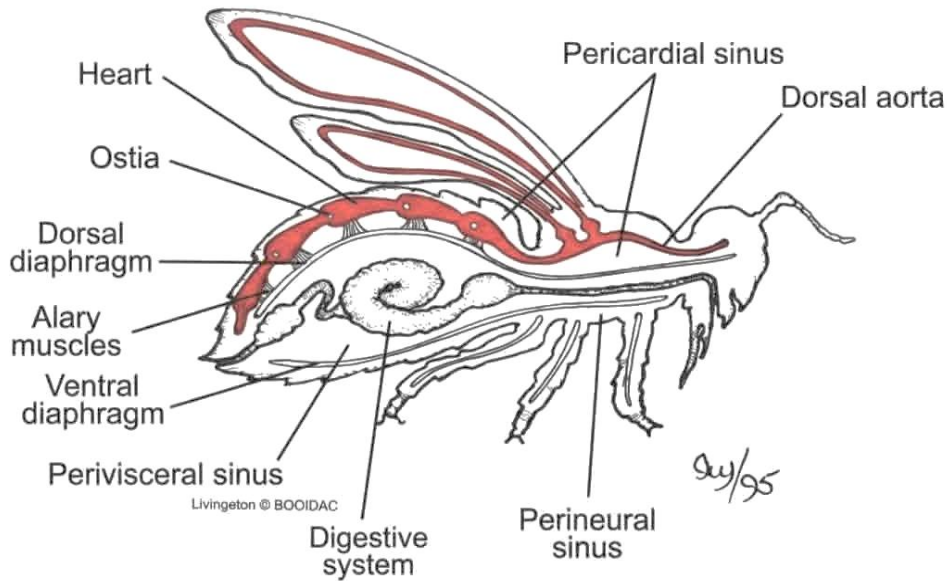


Figure 2: Open circulatory system in insects

Section B – Digestion (2 points)

Q1. Explain the three main groups of digestive enzymes and specify the nutrients they act upon. → **Answer:** Amylases act on carbohydrates; Proteases act on proteins; Lipases act on lipids.

Q2. Give examples of invertebrates that have open circulation and those that have closed circulation. → **Answer:** Open circulation → arthropods, most mollusks; Closed circulation → annelids, cephalopods. → **2 points**

Section C – Excretion (6 points)

Q1. Give one example of an invertebrate that excretes mainly ammonia, one that excretes uric acid, and one that excretes urea. → **Answer:** Ammonia → aquatic invertebrates (e.g., crustaceans); Uric acid → insects; Urea → some terrestrial annelids. → Guanine → Arachnids → **3 points**

Section D – Respiration (6 points)

Q1. List three main respiratory structures found in invertebrates and give one example for each. → **Answer:**

- Gills → crustaceans, bivalves.
- Tracheal system → insects.
- Book lungs → arachnids (e.g., spiders). → **3 points**

Q2. Explain the difference between cutaneous respiration and tracheal respiration. → **Answer:**

- Cutaneous respiration → gas exchange occurs directly across the skin or body surface (e.g., annelids).

Tracheal respiration → air enters through spiracles into a network of tubes delivering oxygen directly to tissues (e.g., insects). → **2 points**