Section C. Essays

Answer **TWO** of the following essay questions, with a maximum of **one** from questions C3A and C3B and a maximum of **one** from questions C4A and C4B.

C1. How do different multicellular organisms coordinate whole-body responses to locally received environmental stimuli?

C2. Compare and contrast how nutrients are appropriately transported around the bodies of plants and animals.

C3A. What is countercurrent exchange? Giving specific examples, explain why it is important to animal physiology.

OR

C3B. In patients with pathologies that cause hypoventilation we commonly see hypercapnia (high CO2 in blood) and hypoxemia (low O2 in blood). In patients with pathologies that impair diffusion across the alveoli we commonly see hypoxemia with normocapnia (normal blood CO2). How could these different clinical conditions arise, and what accounts for the differences in blood gases?

C4A. “Auxin is the most important plant growth regulator.” Discuss.

OR

C4B. Compare the strategies used by fungi and bacteria to acquire carbon and other nutrients.

(End of paper)