



QUESTION WORKBOOK

The kidney: filter everything, then take almost all of it back

Hormonal communication, plant responses and homeostasis · Unit B15

AQA 3.6.4.3 · OCR A 5.1.2 · CAIE 14.1

6 questions · 23 marks

NAVY SCREEN EDITION

SECTION A · Short, 1 to 2 marks

- A1** State which of the three layers between the blood and the capsule space acts as the filter during ultrafiltration, and state one component of the blood that it holds back. [2]

SECTION B · Standard, 3 to 5 marks

- B1** Describe how glucose in the filtrate is reabsorbed at the proximal convoluted tubule, and describe two features of the tubule cells that suit them to the job. [5]

- B2** Explain how the loop of Henle produces a concentration gradient in the tissue of the medulla, and explain why it is wrong to say that the loop reabsorbs the water. [5]

B3 Explain how ultrafiltration produces a filtrate in the renal capsule that contains glucose and urea but no plasma protein. [4]

B4 A person sweats heavily during a long run. Describe the sequence of events that raises the concentration of their urine, naming the receptors, the hormone and the part of the nephron involved. [4]

B5 A desert rodent produces urine four times as concentrated as human urine, and the medulla of its kidney is unusually thick. Suggest how the structure of its nephrons accounts for this. [3]
