Question number	Answer	Mark
1(a)	C	(1)

Question number	Answer	Mark
1(b)(i)	An explanation that combines identification – understanding (1 mark) and reasoning/justification – understanding (2 marks): • ultrafiltration occurs in the glomerulus where the liquid part of the blood passes into the Bowman's capsule (1) • reabsorption takes place as it travels through the proximal convoluted tubule into the loop of Henle (1) • finally urine production occurs in the collecting duct and excess fluid and sodium ions are removed (1)	(3)

Question number	Answer	Mark
1(b)(ii)	An explanation that combines identification – application of knowledge (1 mark) and reasoning/justification – application of understanding (1 mark): • the kangaroo rat lives in the desert so it needs to retain as much water as possible (1) • as most water is reabsorbed in the loop of Henle, a longer loop gives more surface area for water reabsorption (1)	(2)

Question Number	Indicative content	Mark
***1(b)(iii)**	Answers will be credited according to candidate's deployment of knowledge and understanding of the material in relation to the qualities and skills outlined in the generic mark scheme. The indicative content below is not prescriptive and candidates are not required to include all the material that is indicated as relevant. Additional content included in the response must be scientific and relevant. **AO2 (6 marks)** water content • increased ADH causes more water to be reabsorbed into the bloodstream • prevents dehydration • decreased concentrations of ADH cause less water reabsorption • greater volume of urine produced • at 0.0 mol/dm^{-3} of sodium ions the volume of ADH stored is at its highest • so the lowest amount of ADH is released • water levels in the body are regulated sodium ions • as sodium ion concentration increases the levels of ADH stored decrease • at 0.25 mol/dm^{-3} ADH stored reduced by 5 au • so a small amount of water is reabsorbed • at 0.50 mol/dm^{-3} ADH stored reduced by a further 30 au • a greater amount of water is reabsorbed • the volume of ADH stored remains stable at 8 au • causing the maximum amount of water to be reabsorbed • preventing dehydration when sodium levels are high	**(6)**

Level	Mark	Descriptor
	0	No awardable content
Level 1	1–2	• The explanation attempts to link and apply knowledge and understanding of scientific ideas, flawed or simplistic connections made between elements in the context of the question. • Lines of reasoning are unsupported or unclear. (AO2)
Level 2	3–4	• The explanation is mostly supported through linkage and application of knowledge and understanding of scientific ideas, some logical connections made between elements in the context of the question. • Lines of reasoning mostly supported through the application of relevant evidence. (AO2)
Level 3	5–6	• The explanation is supported throughout by linkage and application of knowledge and understanding of scientific ideas, logical connections made between elements in the

(Total for question 1 = 12 marks)