Mark scheme

Question			Answer/Indicative content	Marks	Guidance
1			C	1 (AO 2.1)	**Examiner's Comments** Most candidates appreciated that drinking alcohol leads to a higher volume of urine but a significant number thought that the urine would also be more concentrated, and so incorrectly chose option A.
			Total	**1**	
2			A	1 (AO 1.1)	**Examiner's Comments** Shivering was usually associated with cold temperatures but incorrect responses usually confused the terms vasodilation and vasoconstriction.
			Total	**1**	
3			C	1 (AO 2.1)	**Examiner's Comments** This question was correctly answered by the majority of candidates, but the most common incorrect response was A.
			Total	**1**	
4	a		Adrenaline ✓ Digestive ✓ Glucagon ✓ Glycogen ✓	4 (4 xAO 1.1)	**ALLOW** adrenaline Spelling of glucagon/glycogen must be correct **Examiner's Comments** Adrenaline was identified by most candidates but fewer could correctly identify the system in the second gap. As is often the case, there was some confusion between glycogen, glucose

					and glucagon but very few hybrid spellings were seen.
	b		**Maximum two from:** More people with a poor diet ✓ More people with a diet high in sugar ✓ More people who are overweight/obese ✓ More people with a sedentary lifestyle ✓ **Maximum two from:** Percentage is plateauing/decreasing because of increased education/awareness of the dangers of poor diet ✓ Percentage is plateauing/decreasing because of an increase in physical exercise ✓	3 (3 xAO 3.1a)	**ALLOW** fast/junk food / unhealthy eating **ALLOW** less exercise **Examiner's Comments** This question discriminated between students at different grades quite well. Most candidates could suggest reasons for the increase in the number of people with type 2 diabetes. However, only the highest scoring papers contained reasons for the levelling off of the numbers.
			Total	**7**	
5	a		Hypothalamus ✓ Pituitary (gland) ✓ ADH ✓	3 (3 xAO 1.1)	**Examiner's Comments** This question was also well answered with many candidates scoring 3 marks. If a mistake was made, it was often locating the receptors in the medulla rather than in the hypothalamus.
	b		Idea of increased salt intake / sweating / exercise / higher temperatures ✓	1 (AO 1.1)	**ALLOW** descriptions of how salt intake could be increased, e.g., eating salty foods **IGNORE** reference to urea / ADH production **Examiner's Comments** Sweating and high salt intake were common correct responses. Some candidates incorrectly referred to the intake of alcohol.
	c		Use biuret solution/test ✓ If the sample turns purple, protein is	2 (2 xAO 1.2)	**ALLOW** sodium hydroxide and copper sulphate solutions

			present/patient has nephritis / if the sample remains blue, no protein is present/patient does not have nephritis ✓		**Examiner's Comments** **Misconception** Testing for biological molecules is the focus of PAG 2. Some candidates show confusion between Benedict's, biuret and iodine tests, including how they are carried out and what they test for. **OCR support** Testing for biological molecules has been tested on a number of previous examination papers. ExamBuilder can be used to find and use those questions with candidates as practice material.
			Total	**6**	
6			Sugar/glucose (level)✓ Insulin and glucagon ✓ Metabolic ✓ Thyroxine ✓	4 (AO 4 × 1.1)	**ALLOW** either order **DO NOT ALLOW** glycagon/glycogen **IGNORE** TSH **Examiner's Comments** This question discriminated well as only higher ability candidates scored full marks. The most common correct answer was sugar for the first marking point and thyroxine for the fourth marking point. Insulin was often given but the second hormone was not correct for marking point 2, with answers such as glycogen, thyroxine, and adrenaline. Some candidates missed the link to the thyroid gland in the question and thought that the third marking point was referring to heart rate and so put adrenaline as the hormone that was lacking.

					Assessment for learning Candidates should be encouraged to read and highlight or underline key parts of the question which provide relevant information. This would highlight the pancreas and thyroid as the two glands that were being affected and would help the candidate to make the link to the symptoms and hormones that would be lacking.
			Total	**4**	
7			**Any three from:** Affects enzymes ✓ Stops/decreases the rate of reactions ✓ Metabolism/respiration/digestion slows down/stops ✓ Reduced blood flow to the extremities / frostbite ✓	3 (3 × AO1.1)	**DO NOT ALLOW** denatures enzymes Enzyme controlled reactions are too slow = 2 marks **Examiner's Comments** There were many answers correctly referring to the effect of a decrease in enzyme activity linked to reduction in the rate of reactions such as respiration. However, a number of candidates lost marks by stating that enzymes would be denatured by the fall in temperature.
			Total	**3**	