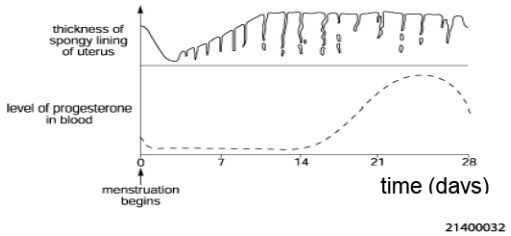
Mark scheme – The Endocrine System (H)

Question			Answer/Indicative content	Marks	Guidance
1			C	1 (AO 1.1)	
			Total	**1**	
2			B	1 (AO 2.1)	**Examiner's Comments** Many candidates chose distractors C or D as their answers.
			Total	**1**	
3			D ✓	**1 (AO 2.1)**	
			Total	**1**	
4			A ✓	**1 (AO 1.1)**	
			Total	**1**	
5			B ✓	**1 (AO 1.2)**	
			Total	**1**	
6	a	i	**Any two from:** contains (plant) hormones ✓ causes excessive/rapid cell elongation/growth ✓ only affects broadleaved plants ✓	2 (AO2 x 1.1)	**ALLOW** auxins **IGNORE** just plants grow faster **ALLOW** effects some plants/weeds and not others/the crop
		ii	**B** because B causes highest percentage death of horsenettle ✓ A/C do not kill other broadleaved plants/weeds / A/C not suitable as field contains other weeds / A/C only kills horsenettle ✓ D does not kill roots / much less effective at killing horsenettle ✓	4 (AO3.1b)	**No mark for B on its own.** **NEED a choice of B or D to score any marks** **Mark first choice** Need reference to both buds and flowering **ALLOW D** for three marks if B is not chosen first:

			Spring treatment because buds just growing and flowering yet to happen ✓		because D kills more species of weeds ✓ D much cheaper than B ✓ spring treatment because buds just growing and flowering yet to happen ✓
	b	i	breaks seed dormancy / elongation of shoots ✓	1 (AO1.1)	**ALLOW** (stimulates) flowering/ fruit development / fruit growth / seed formation / germination / growth of shoots / seedless fruits **DO NOT ALLOW** fruit ripening / seed growth
		ii	Idea that the ripeness colour scale can be used for comparison ✓ idea that a numerical estimate/quantitative measure for level of ripeness is better / idea that it gives multiple measures and not just two/ripe or unripe / removes objectivity / allows reproducibility ✓	2 (AO2 x 3.3a)	**ALLOW** can be used to choose from a selection of ripeness levels
			Total	**9**	
7			B ✓	1 (AO2.1)	
			Total	**1**	
8	a	i	progesterone ✓	1 (AO 2.1)	
		ii	any two from oestrogen / FSH / LH ✓	1 (AO 1.1)	
	b		**Any four from:** treatment contains oestrogen / progesterone / both oestrogen and progesterone ✓ inhibits LH ✓ prevents ovulation ✓ inhibits FSH ✓ prevents egg maturing ✓ thickens mucus ✓	4 (AO 1.1)	**ALLOW** inhibits LH which controls ovulation = 2 marks **ALLOW** inhibits FSH which matures eggs = 2 marks **ALLOW** produces mucus **Examiner's Comments** A small number of candidates confused fertility treatment with contraception and so referred to the use of FSH or LH. However, the majority could correctly explain why oestrogen and/or progesterone were used.
	c		gibberellins breaks seed dormancy / elongation of shoots ✓	2 (AO 1.1)	**ALLOW** stimulates flowering / fruit development / fruit growth / seed formation / germination / growth of shoots

			ethene stimulates fruit ripening ✓		**DO NOT ALLOW** fruit ripening **ALLOW** dropping of leaves/fruit / stimulates fruit maturation **Examiner's Comments** Many answers correctly referred to the action of gibberellins in breaking seed dormancy and the action of ethene in controlling fruit ripening. A number of marks were lost through inaccurate answers such as the 'control of plant ripening'.
			Total	**8**	
9	a		adrenaline reduces blood flow to the skin ✓ less blood lost (during time to clot/receive medical treatment) ✓	**3 (AO 1.1) (AO 2.1)**	**ALLOW** causes vasoconstriction **in skin** **IGNORE** stops bleeding **Examiner's Comments** Very few candidates appreciated that adrenaline would reduce the blood flow to the skin. Many assumed that it would simply increase heart rate and that this would somehow make the blood more likely to clot at the wound.
	b	i	corpus luteum / (empty) follicle / yellow body ✓	**1 (AO 1.1)**	**Examiner's Comments** There were a number of correct references to corpus luteum, yellow body or empty follicle.
		ii	smooth curve drawn rising and falling ✓ fall must start on day 21 or after ✓	**2 (AO 2 × 1.1)**	 if no fall in progesterone then award 0 marks **Examiner's Comments** Most candidates correctly appreciated that the line should increase, plateau and then fall.
	c	i	**First check answer on answer line** **If answer = 19.98 (mm) award 3 marks** 20 - 0.025✓ but 19.975 (mm)✓ 19.98 (mm)✓	**3 (AO 2 × 2.2) (AO 1.2)**	**Examiner's Comments** The manipulation of standard form was often correct in this question.
		ii	lining is not repaired correctly✓	**1 (AO 1.1)**	**ALLOW** lining will not thicken / not build up **IGNORE** lining will not be maintained / will become

					thinner **Examiner's Comments** There was some confusion in the answers between the roles of progesterone and oestrogen. Common incorrect answers referred to the breaking down of the uterus lining.
		iii	**Any three from:** gonadotrophins used✓ FSH and LH used✓ FSH lead to ripening of follicle✓ and LH causes ovulation✓ human chorionic gonadotrophin✓ causes egg/ovum to mature inside follicle✓	**3** **(AO 3 × 1.1)**	**ALLOW** stimulate egg production/development **Examiner's Comments** Candidates often gave the hormones that might be given to women to treat infertility, i.e. LH and FSH but did not specifically link them to their function. This is illustrated in exemplar 7, which would only gain one mark for naming the two hormones. **Exemplar 7** (iii) Explain how hormones can be used to treat infertility in women. Drugs with menstrual hormones in - eg: FSH and LH complete negative feedback to produce more oestrogen and increase the number of eggs matured & developed. [3]
		iv	order of bases is changed (in gene)✓ order of amino acids changed in protein / change in shape of the enzyme✓	**2** **(AO 1.1)** **(AO 2.1)**	**ALLOW** nucleotides **ALLOW** mutation in base sequence **ALLOW** different amino acids in protein **IGNORE** codes for wrong amino acid to be made **Examiner's Comments** Many candidates correctly linked changes in the DNA base sequence to alterations in the amino acids in the protein or the shape of the protein molecule.
			Total	**14**	