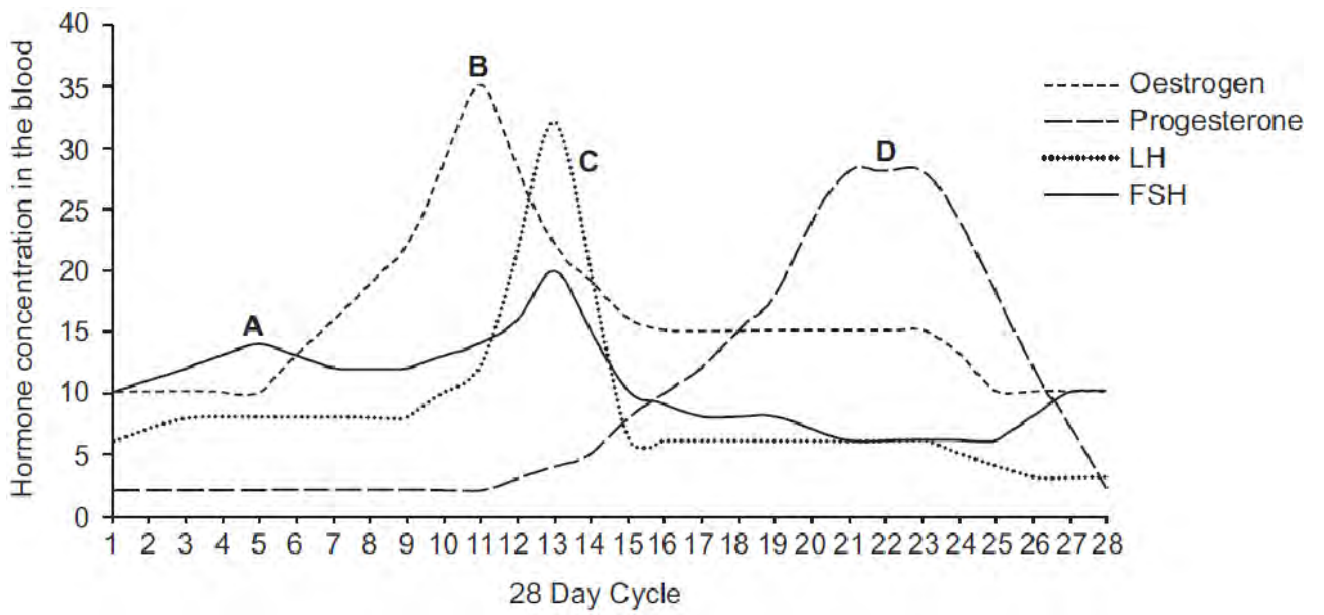


1(a). The human menstrual cycle is controlled by hormones.

The diagram below shows the concentration of the four hormones involved in the menstrual cycle.



Which letter, A, B, C or D, shows when ovulation occurs?

[1]

(b). Some couples are unable to conceive a child naturally. In-vitro fertilisation (IVF) is a technique that can be used to help these couples.

In IVF, a woman's ovaries are stimulated to produce a greater number of eggs than she would during a normal monthly cycle.

Which hormone could be used to achieve this?

Put a tick (✓) in the correct box.

Oestrogen

Progesterone

LH

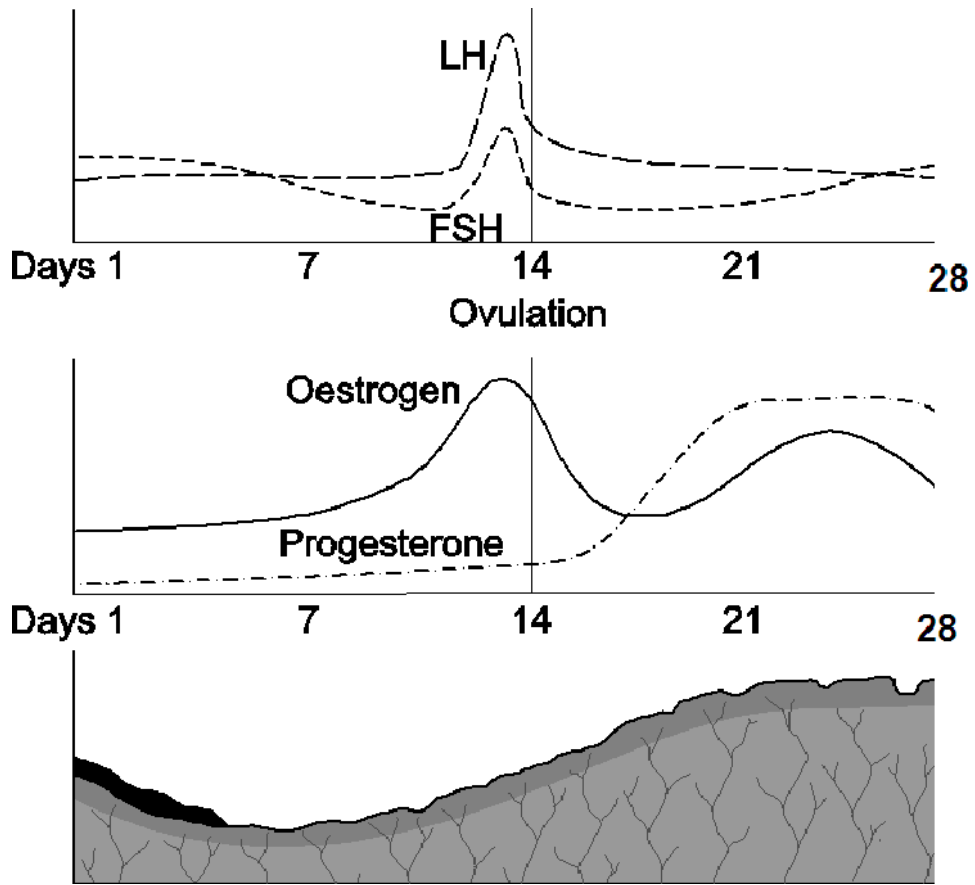
FSH

[1]

2(a). The menstrual cycle is controlled by four hormones.

These hormones have an effect on target organs such as the ovaries and the uterus.

The graphs and diagram below show the hormone levels of the four hormones and the relative thickness of the uterus lining during a typical 28 day menstrual cycle.



\* Use the graphs and diagram above and your own knowledge to explain the changes that occur to prepare a woman's body to receive a fertilised egg and then allow it to grow and develop.

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[6]

(b). Finn and Anna are recently married and wish to delay starting a family.

Consider the data in the table below about the effectiveness of various methods of contraception.

Form of contraception	Percentage of pregnancies that occurred despite using contraception
Birth control pill	7.6
Condom	13.9
Hormone implants	0.2
Hormone injections	3.1
Diaphragm	12.1

Suggest the most appropriate method of contraception for Finn and Anna to use by evaluating the data above.

Give reasons for your answer.

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[4]

END OF QUESTION PAPER

## Mark Scheme

Question		Answer/Indicative content	Marks	Guidance
1	a	C ✓	1	
	b	✓ FSH	1	
		<b>Total</b>	<b>2</b>	
2	a	<p>* Please refer to the marking instructions on page 4 of this mark scheme for guidance on how to mark this question.</p> <p><b>Level 3 (5–6 marks)</b>  <i>Explains fully the physical changes that occur during the menstrual cycle</i>  <b>AND</b>  <i>Links them correctly to evidence from the diagram and graphs</i></p> <p><i>There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated.</i></p> <p><b>Level 2 (3–4 marks)</b>  <i>Explains two physical changes that occur during the menstrual cycle</i>  <b>AND</b>  <i>Links them correctly to evidence from the diagram and graphs</i></p> <p><i>There is a line of reasoning presented with some structure. The information presented is relevant and supported by some evidence.</i></p> <p><b>Level 1 (1–2 marks)</b>  <i>Explains one physical change that occurs during the menstrual cycle</i>  <b>AND</b>  <i>links it correctly to evidence from the diagram and graphs</i></p> <p><i>The information is basic and communicated in an unstructured way. The information is supported by limited evidence and the relationship to the evidence may not be clear.</i></p> <p><b>0 marks</b>  <i>No response or no response worthy of credit.</i></p>	6	<p><b>AO1.1 Physical and hormonal menstrual cycle changes</b>  For example:</p> <ul style="list-style-type: none"> <li>• Uterus becomes thicker because it becomes more vascular</li> <li>• Ovulation is when an egg is released from an ovary</li> <li>• Ovulation occurs when a follicle ruptures / bursts</li> <li>• Has to be an egg present in the oviduct / Fallopian tube for fertilisation could occur</li> <li>• High progesterone and thick uterus lining required for successful implantation.</li> </ul> <p><b>AO3.1a Interpretation of graphs and diagram</b>  For example:</p> <ul style="list-style-type: none"> <li>• Days 7–14 uterus lining thickens / develops</li> <li>• Thickening of uterus occurs under the influence of a rise in oestrogen</li> <li>• Day 14 is when ovulation occurs / an egg is released</li> <li>• Follicle bursts due to a peak of LH</li> <li>• Days 15–28, fertilisation could occur</li> <li>• Uterus lining stays thick from days 21–28.</li> </ul>

### Mark Scheme

Question		Answer/Indicative content	Marks	Guidance
	b	<p><b>Any two from</b>                      Condom is least effective / has highest percentage of pregnancies ✓                      Hormone implants are most effective / have lowest percentage of pregnancies ✓                      Birth control pill still has quite a high percentage of pregnancies ✓  <b>AND</b>  <b>Any one from</b>                      Condom may burst / fall off ✓                      Implant is a long-term method ✓                      People may forget to take the (birth control) pill ✓  <b>AND</b>                      Choice for couple e.g. implant as most effective and will suit them as married and in no hurry to have children ✓</p>	4	<p>Candidates must provide a suggestion of a contraceptive method with a reason to get four marks.</p> <p>One mark is awarded for the choice, two further marks come from the evaluation and one for the reason(s).</p> <p><b>ALLOW</b> any other justified choice</p>
		<b>Total</b>	10	