16. Reproduction

16.5 Sexual hormones in humans

Paper 3 and 4

Question Paper

Paper 3

Questions are applicable for both core and extended candidates

1 **(c)** When a person approaches sexual maturity, secondary sexual characteristics start to develop.

(i) State the name of the hormone that causes the development of secondary sexual characteristics in boys.

..... [1]

(ii) Place ticks (✓) in the correct boxes to identify **three** secondary sexual characteristics that develop in boys.

breasts develop	
deepening of the voice	
growth of facial and pubic hair	
menstruation begins	
muscular development	
pelvis widens	

[3]

2 **(b)** Fig. 4.2 is a graph showing the changes in the thickness of the uterus lining during a menstrual cycle.

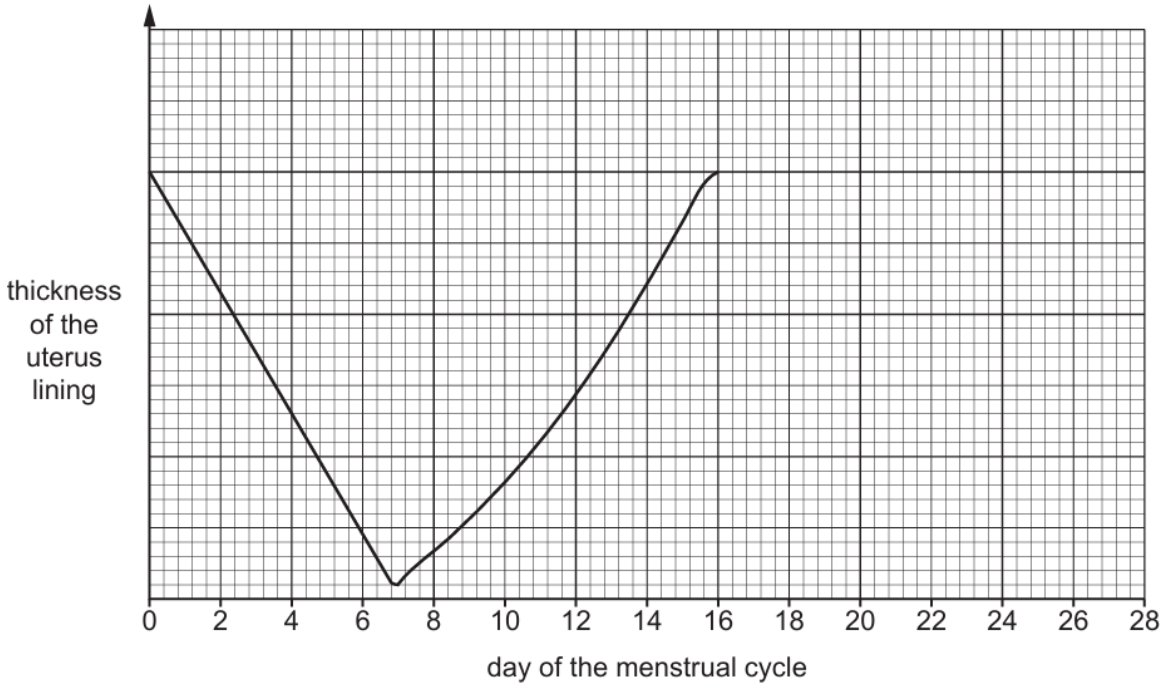

Fig. 4.2

(i) Use the information in Fig. 4.2 to state the number of days during which the uterus lining is shed.

..... [1]

(ii) Draw a line to complete the graph in Fig. 4.2 to show the thickness of the uterus lining between day 16 and 28. [1]

(iii) State the day of the menstrual cycle when eggs are released.

..... [1]

(c) The menstrual cycle is one of the changes that happens to girls during puberty.

Describe the changes that occur in boys during puberty.

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..... [3]

3 **(a)** Fig. 6.1 shows the changes that happen to the thickness of the uterus lining during the menstrual cycle.

The loss of the lining of the uterus is called menstruation.

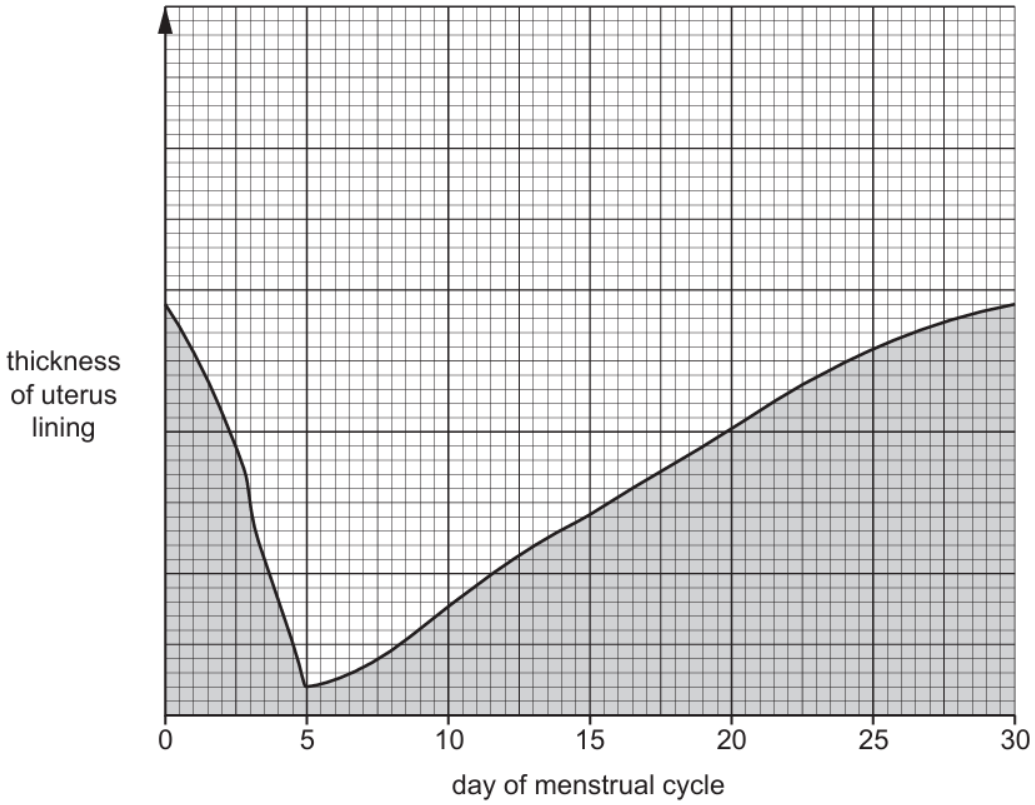

Fig. 6.1

Use Fig. 6.1 and the numbers from the list to answer these questions.

Each number can be used once, more than once or not at all.

0 5 8 15 28 30

State the number of days of this menstrual cycle. .....

State the number of days that menstruation lasts. .....

State the day on which ovulation is most likely to occur. .....

State **one** day when the uterus lining is at its thickest. .....

[4]

(b) Table 6.1 shows some of the changes that happen to boys and girls during puberty.

Place ticks (✓) in Table 6.1 to show which changes happen in boys and which changes happen in girls.

Table 6.1

	boys	girls
breasts grow		
growth of pubic hair		
widening of hips		

[3]

(c) State the name of the hormone that causes the development of secondary sexual characteristics in girls.

..... [1]

(d) State where the hormone that causes the development of secondary sexual characteristics in boys is produced.

..... [1]

[Total: 9]

4 **(b)** The box on the left shows the beginning of a sentence.

The boxes on the right show some endings of sentences.

Draw **three** lines from the word oestrogen to make complete three correct sentences.

Oestrogen	is a hormone.
	is produced in the ovaries.
	makes breasts grow.
	makes hair grow on the chest.
	travels down the oviduct.
	widens the pupils.

[3]

(c) The average menstrual cycle is 28 days.

(i) State the day in an average menstrual cycle when:

ovulation occurs .....

the uterus lining starts to shed .....

the uterus lining is at its thinnest .....

[3]

(ii) Describe **one** change, other than ovulation, that occurs in the ovary during the menstrual cycle.

.....

.....

..... [1]

5 **(a)** Fig. 4.1 is a graph showing the changes to the thickness of the lining of the uterus during the menstrual cycle.

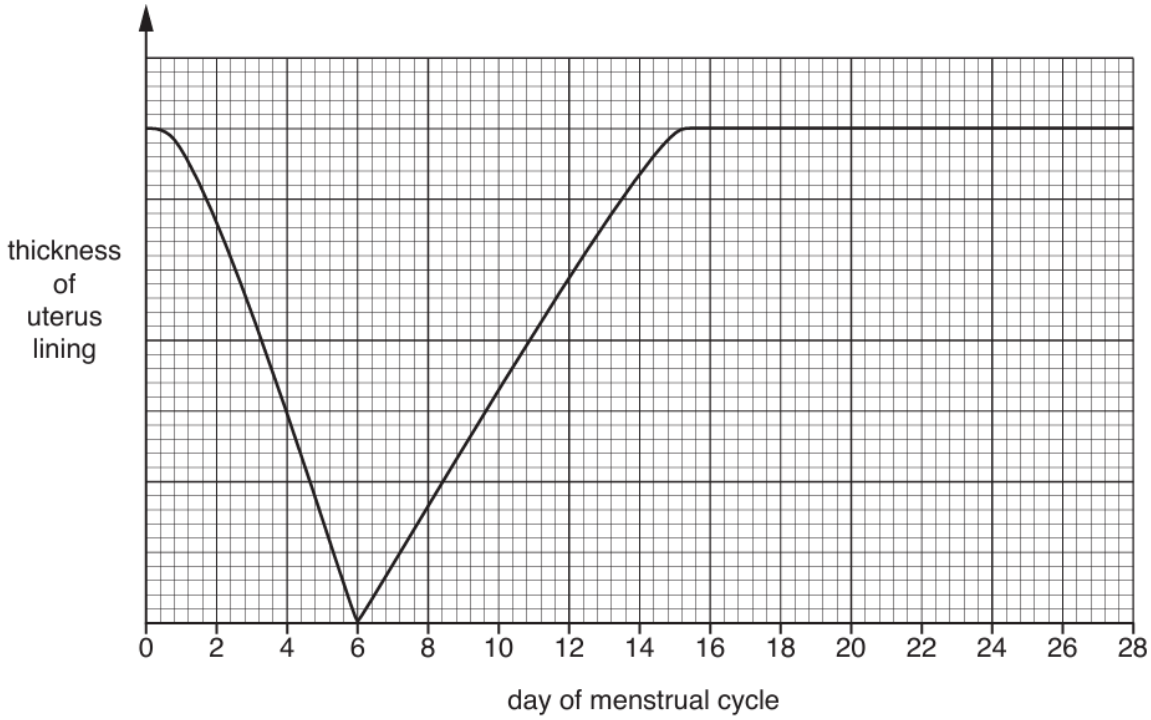

Fig. 4.1

(i) Describe the changes to the thickness of the lining of the uterus during the menstrual cycle as shown in Fig. 4.1.

.....

.....

.....

.....

.....

.....

..... [3]

(ii) State the days, shown on Fig. 4.1, on which the lining of the uterus is broken down and lost.

..... [1]

(iii) Draw an **X** on Fig. 4.1 to show when ovulation occurs. [1]

Paper 4

Questions are applicable for both core and extended candidates unless indicated in the question

6 **(b)** Chlamydia can damage the reproductive system.

(extended only) **(i)** State the name of the part of the female reproductive system that produces oestrogen.

..... [1]

(ii) Describe the role of oestrogen at puberty.

.....

.....

.....

.....

.....

.....

..... [3]

7 **(a)** Fig. 1.1 shows the changes in the concentration of two hormones involved in the menstrual cycle. **(extended only)**

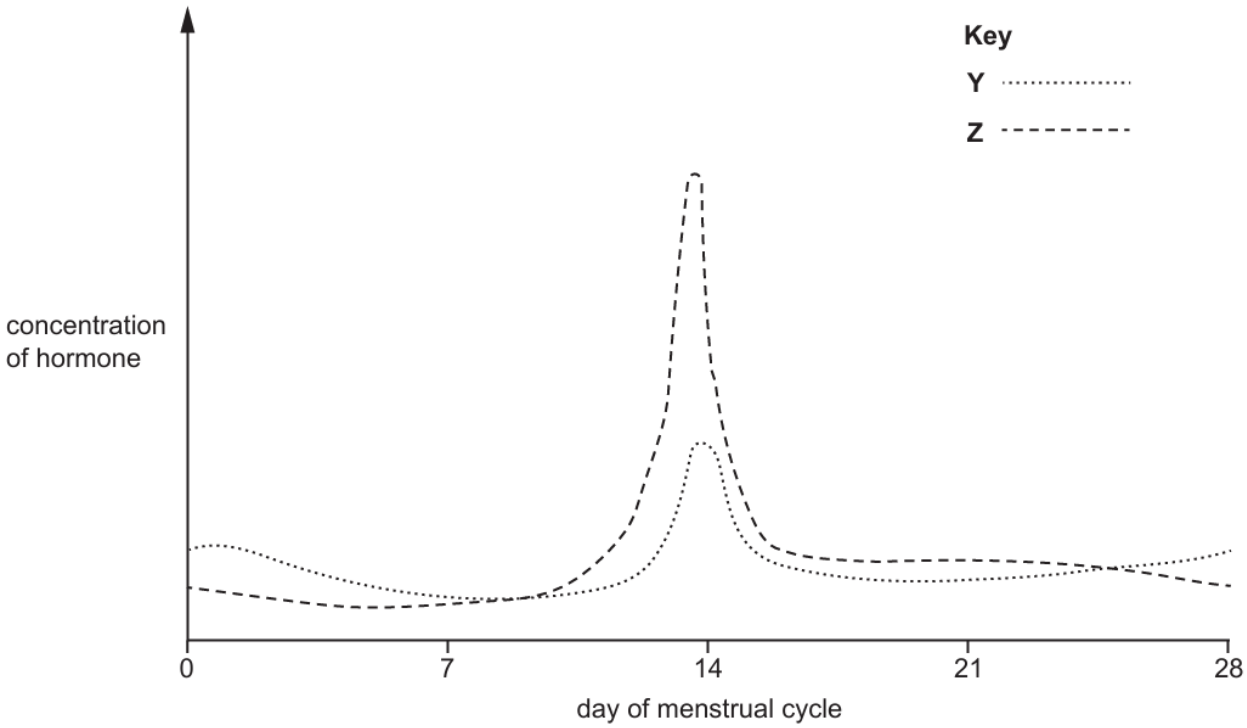

Fig. 1.1

(i) State the names of the hormones **Y** and **Z** in Fig. 1.1. **(extended only)**

Y .....

Z .....
[2]

(ii) **On Fig. 1.1**, sketch a line to show the levels of progesterone through the 28-day menstrual cycle. **(extended only)** [2]

(iii) State the day in the 28-day menstrual cycle when the egg is most likely to be released from a follicle.

..... [1]

(iv) State the main site of progesterone production during pregnancy. **(extended only)**

..... [1]

8 **(a)** State the names of **two** hormones released by the ovaries. **(extended only)**

1 .....

2 .....

[2]

9 **(b)** The pancreas secretes hormones into the blood and enzymes into the pancreatic duct. The enzymes are released into the alimentary canal.

Complete Table 3.1 by stating the hormones and enzymes that are secreted by the pancreas.

Table 3.1

hormones secreted by the pancreas	enzymes secreted by the pancreas
.....	.....
.....	.....
	.....

[5]

10 **(a)** Fig. 3.1 shows some of the events that occur in the menstrual cycle.

A	follicle is fully developed
B	gamete is released into the oviduct
C	lining of the uterus is removed from the body
D	lining of the uterus reaches a maximum thickness
E	lining of the uterus gets thicker

Fig. 3.1

(i) Put the events shown in Fig. 3.1 into the correct sequence.

One has been done for you.

		B		

[1]

(ii) State the name of the hormone that stimulates event **A** to occur. **(extended only)**

..... [1]

11 Fig. 3.1 shows the changes in the concentrations of the hormones FSH and LH during a menstrual cycle. **(extended only)**

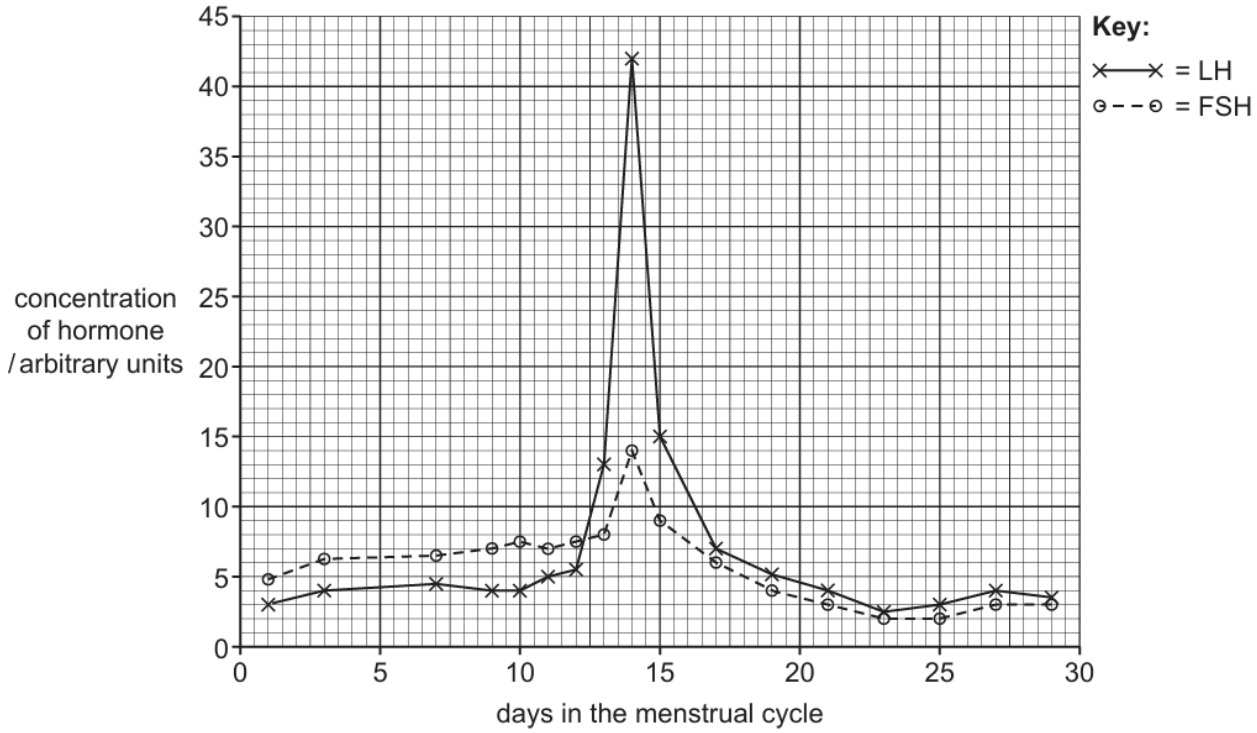

Fig. 3.1

(a) (i) Suggest the target organ for FSH. **(extended only)**

..... [1]

(ii) State how FSH reaches its target organ. **(extended only)**

..... [1]

(iii) Describe the relationship shown by the two hormones in Fig. 3.1. **(extended only)**

.....

.....

.....

.....

..... [2]

(b) Describe the roles of FSH and LH in the menstrual cycle. **(extended only)**

.....

.....

.....

.....

.....

.....

.....

.....

..... [4]

(c) Describe the changes that occur in the lining of the uterus during one menstrual cycle.

.....

.....

.....

.....

.....

.....

..... [3]

(d) Oral contraceptives are a method of birth control taken by women.

Outline how the hormones in contraceptives act as a method of birth control. **(extended only)**

.....

.....

.....

.....

.....

.....

..... [3]

12 **(a)** The activities of the ovaries and the uterus are regulated by the hormones FSH, LH, oestrogen and progesterone during the menstrual cycle.

Complete Table 5.1 to show the sites of production and the roles of these four hormones.

(extended only)

Table 5.1

hormone	site of production	target organ	role
FSH	pituitary gland	ovary	
LH	pituitary gland	ovary	
oestrogen		uterus	stimulates growth of the lining of the uterus
progesterone		uterus	

[5]

(b) Fig. 5.1 shows the changes in the lining of the uterus of a human female.

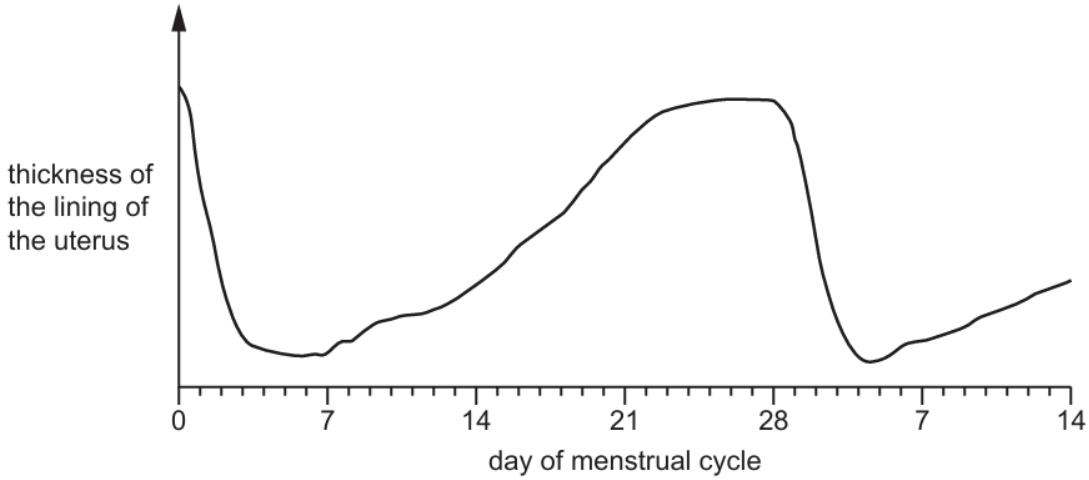

Fig. 5.1

Describe the changes in the lining of the uterus between days 0 and 28 of the menstrual cycle.

between days 0 and 7 .....

.....

.....

.....

between days 7 and 28 .....

.....

.....

.....

.....

[3]

13 **(b)** **(i)** State **two** hormones that are used in contraceptive pills. **(extended only)**

1 .....

2 .....
[2]

(ii) Suggest why contraceptive pills do **not** contain FSH. **(extended only)**

.....

.....

.....

.....

..... [3]