1 Infertility can be treated by increasing the chance of ovulation occurring.

Ovulation is controlled by hormones.

(a) (i) Complete the sentence by putting a cross (☒) in the box next to your answer.

The hormone that stimulates the maturation of follicles in the ovary is

(1)

- ☐ **A** FSH
- ☐ **B** LH
- ☐ **C** oestrogen
- ☐ **D** progesterone

(ii) Infertility treatments, including the use of hormones, can stimulate ovulation.

Explain **one** disadvantage of treating infertility by using hormones to stimulate ovulation.

(2)

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(iii) Complete the sentence by putting a cross (☒) in the box next to your answer.

Ovulation during pregnancy is prevented by high levels of

(1)

- ☐ **A** FSH
- ☐ **B** LH
- ☐ **C** insulin
- ☐ **D** progesterone

(b) Monoclonal antibody technology is used in pregnancy tests and in the treatment of cancer.

(i) Explain how monoclonal antibodies are used to test for pregnancy.

(3)

(ii) The use of monoclonal antibodies to treat cancer has advantages over the use of traditional chemotherapy and radiotherapy.

Explain the benefits of using monoclonal antibodies to treat cancer.

(2)

(iii) Name the type of cell that produces the monoclonal antibodies used to treat cancer.

(1)

(Total for Question 1 = 10 marks)

2 Blood tests can be used to check a person's blood glucose and hormone levels.

Figure 4 shows the results of two blood tests carried out on three people to check their blood glucose levels. Person 1 is healthy.

	blood glucose level (mmols/l)	
	after fasting for 12 hours	**two hours after drinking 75 g glucose**
person 1	5.4	6.4
person 2	5.6	9.0
person 3	7.8	12.1

Figure 4

(a) (i) Compare the glucose levels of person 1 with the glucose levels of person 2 after fasting for 12 hours.

(1)

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.....

(ii) Compare the glucose levels of person 3 with the glucose levels of person 1, two hours after drinking 75 g glucose.

(1)

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.....

Person 3 cannot produce the hormone that controls blood glucose levels.

(iii) State the hormone that person 3 cannot produce.

(1)

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.....

(b) Figure 5 shows the level of progesterone for a female during five different stages of the menstrual cycle.

days in the menstrual cycle	progesterone level (nmol/l)
1–9	1.85
10–14	1.48
15–17	14.28
18–23	35.27
24–28	17.11

Figure 5

(i) Describe the changes in progesterone levels during the 28-day cycle.

(2)

(ii) Explain why progesterone levels changed following day 14.

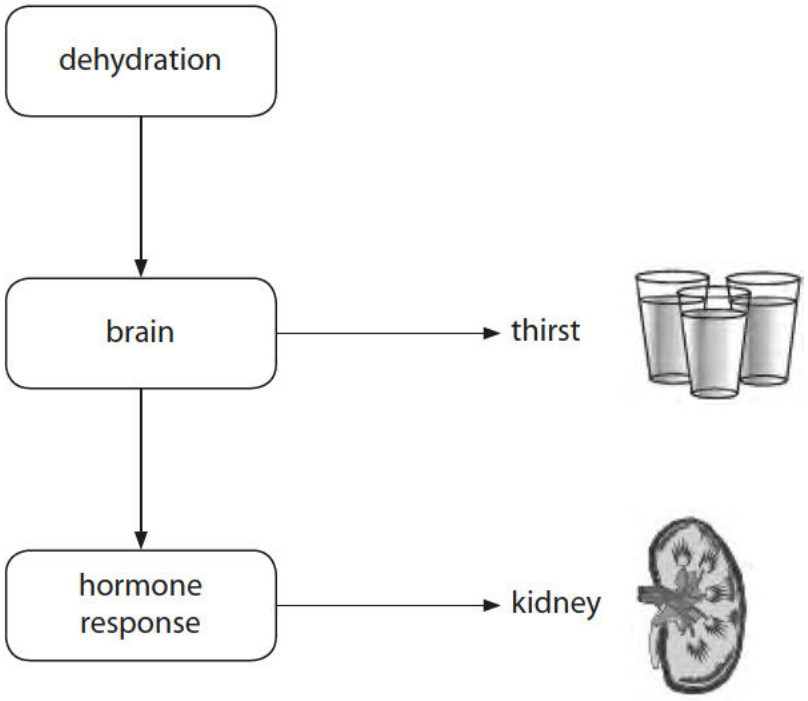
(2)

(iii) Use Figure 5 to explain if the female is pregnant.

(2)

(Total for Question 2 = 9 marks)

3 The diagram shows the body's response to dehydration.



(a) Use the diagram to help explain the body's hormonal response to dehydration.

(4)

(b) The menstrual cycle is also controlled by hormones including progesterone.

(i) Complete the sentence by putting a cross (☒) in the box next to your answer.

Progesterone is produced by the

(1)

- ☐ **A** corpus luteum
- ☐ **B** glomerulus
- ☐ **C** hypothalamus
- ☐ **D** pituitary gland

(ii) Describe the effect of high levels of progesterone on the uterus lining during pregnancy.

(1)

.....

.....

*(b) (iii) Explain how the menstrual cycle is controlled by hormones and negative feedback.

(6)

(Total for Question 3 = 12 marks)