AQA GCSE BIOLOGY (HIGHER) · 8461

BIOLOGY



EXAM QUESTION PACK

4.5.3 HORMONAL COORDINATION IN HUMANS (PACK 5)

SCORE	PERCENTAGE
/81	%

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Q1.

The table compares the percentages of various substances in a person's blood and their urine.

Substance	Blood	Urine
Water	92.00%	95.00%
Glucose	0.10%	0
Salt	0.37%	0.60%
Urea	0.03%	2.10%

(a) How does the level of urea in urine compare with the level of urea in the blood?

_____

(2)

(b) The kidney produces urine by filtering the liquid part of blood and then re-absorbing some of the filtered substances.

Use this information to explain the difference in the level of urea in urine compared to the level of urea in blood.

_____

_____

_____

_____

(2)

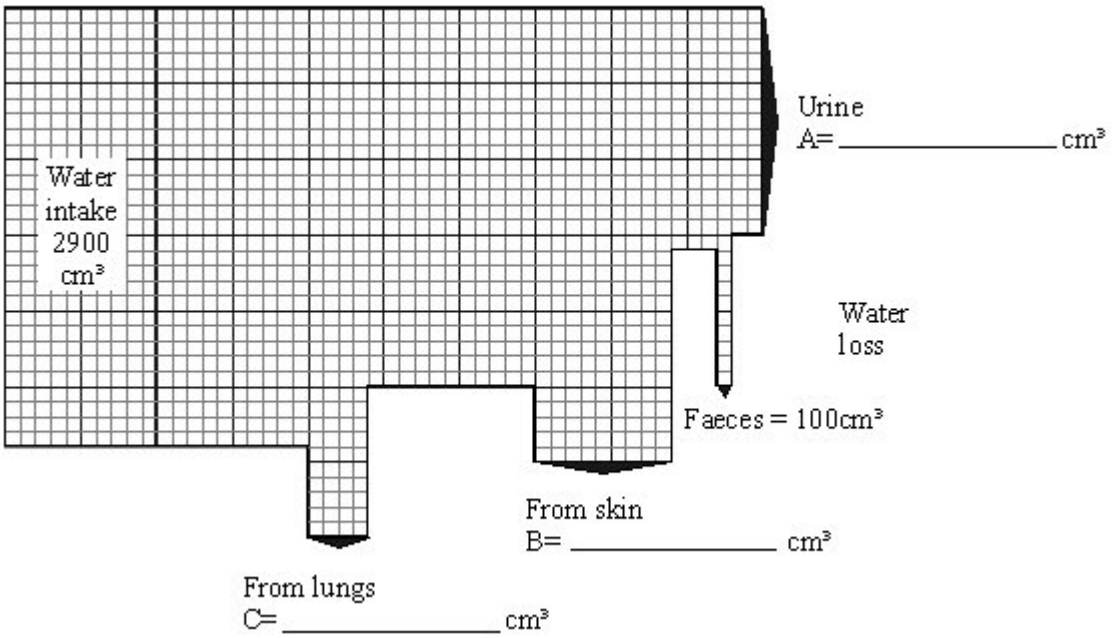
(Total 4 marks)

Q2.

The diagram shows the amount of water lost by an adult in one day.

The width of the arrows shows how much water is lost in each way.

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(a) Work out from the diagram the water loss for urine, skin and lungs and write the correct figures in the spaces on the diagram.

(4)

(b) When it is hot, much more water is lost from the skin. Which other method of water loss would also change significantly?

Explain your answer.

_____

_____

_____

_____

_____

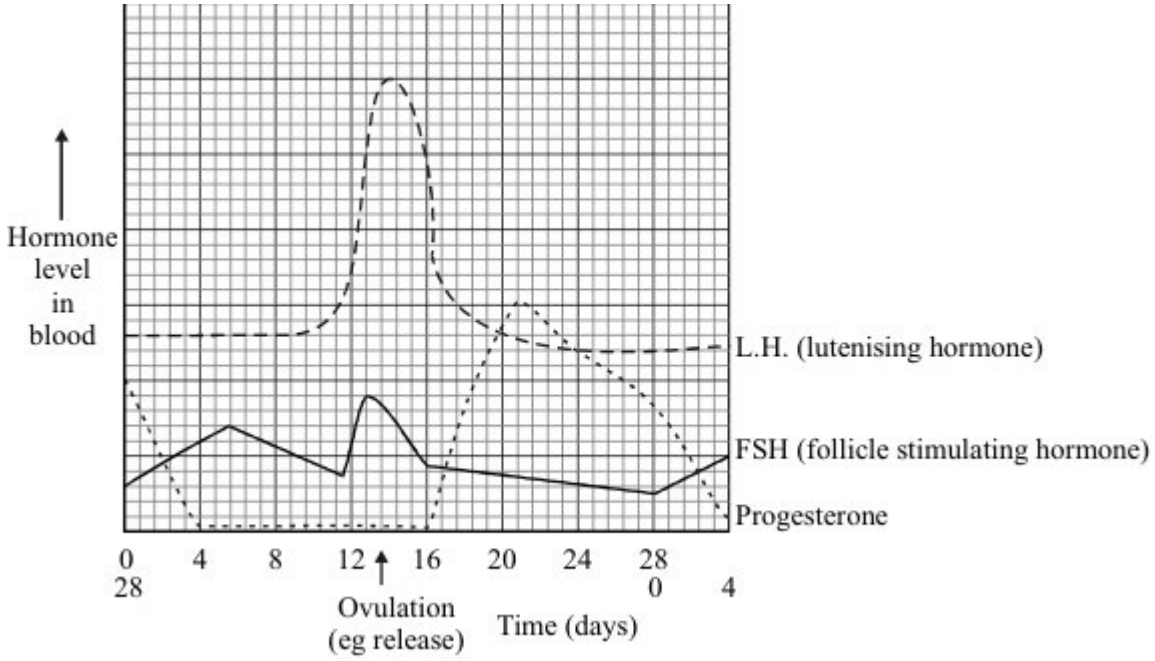
(3)

(Total 7 marks)

Q3.

The graph shows changes in the levels of three hormones in a menstrual cycle.

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(a) What does the graph suggest the stimuli might be which cause the egg to be released?

_____

_____

_____

_____

(3)

(b) One type of contraceptive pill keeps the level of progesterone high for most of the cycle.

Suggest how this might work.

_____

_____

_____

(2)

(c) Outline **two** arguments for and **two** against using hormones as contraceptives.

For: 1 _____

_____

For: 2 _____

_____

Against: 1 _____

_____

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Against: 2 _____

_____

(4)

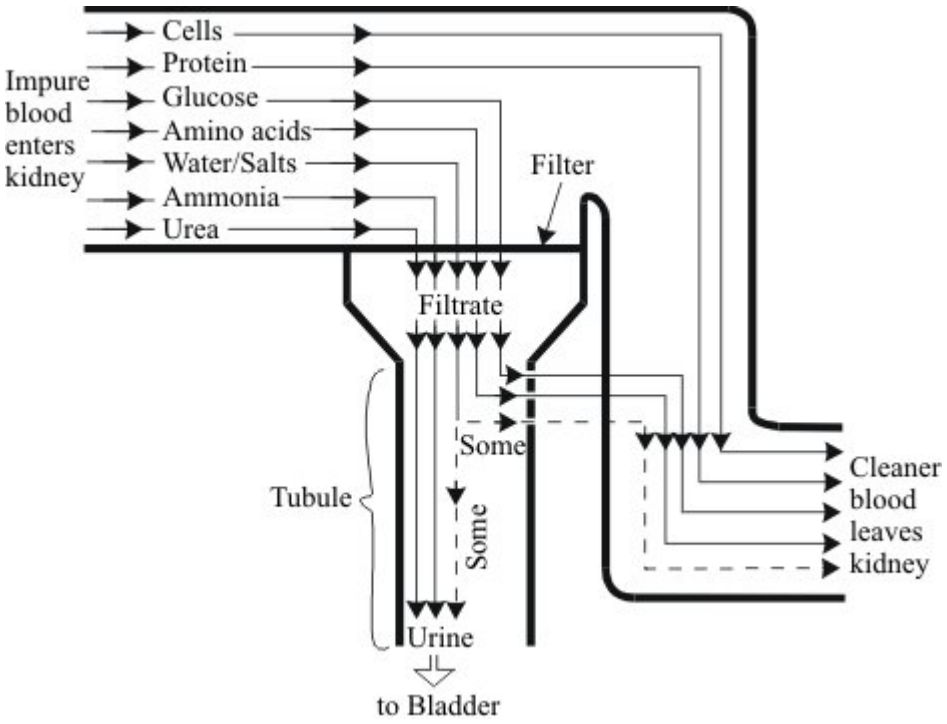
(Total 9 marks)

Q4.

The job of our kidneys is to remove unwanted substances from our blood.

Substances which are needed in the blood must not be lost.

The flow-diagram below shows how the kidneys do this job.



(a) Describe what happens to the glucose and amino acids in the kidney.

_____

_____

_____

_____

(4)

(b) A man has 5 litres of blood in his body.

In one day:
- the kidneys filter out 170 litres of liquid from the blood.
- he produces 1.5 litres of urine.

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(i) What % of the filtered liquid is reabsorbed?

_____

_____

(2)

(ii) The man became ill because his kidneys would not absorb as much of the filtered liquid.

Write down **two** ways the man would be affected by this.

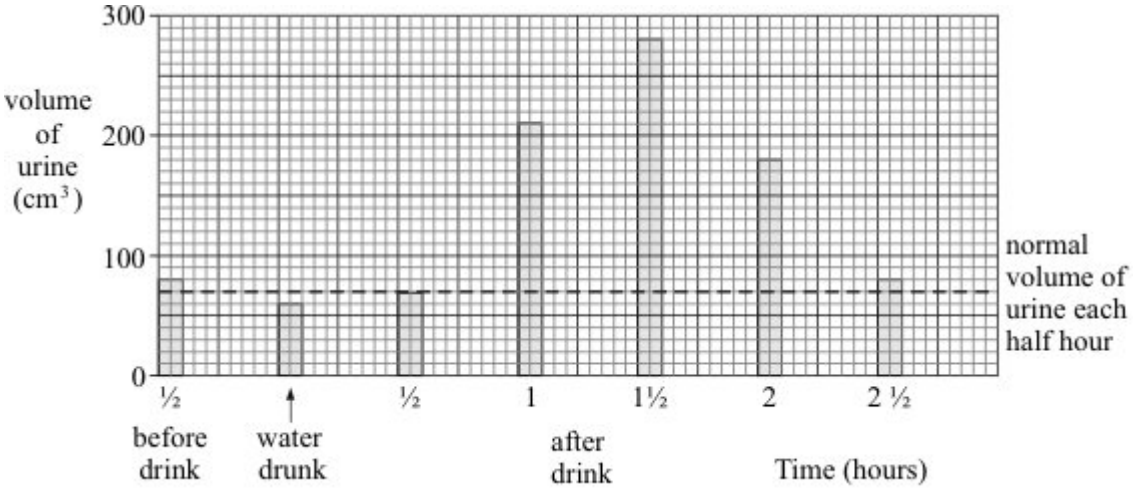
_____

_____

(2)

(c) In an experiment the man drank 800cm³ of water.

The diagram shows the effect this had on the volume of urine the man produced each 30 minutes.



Describe, in as much detail as you can, how drinking the water affected the volume of urine produced afterwards.

_____

_____

_____

_____

_____

_____

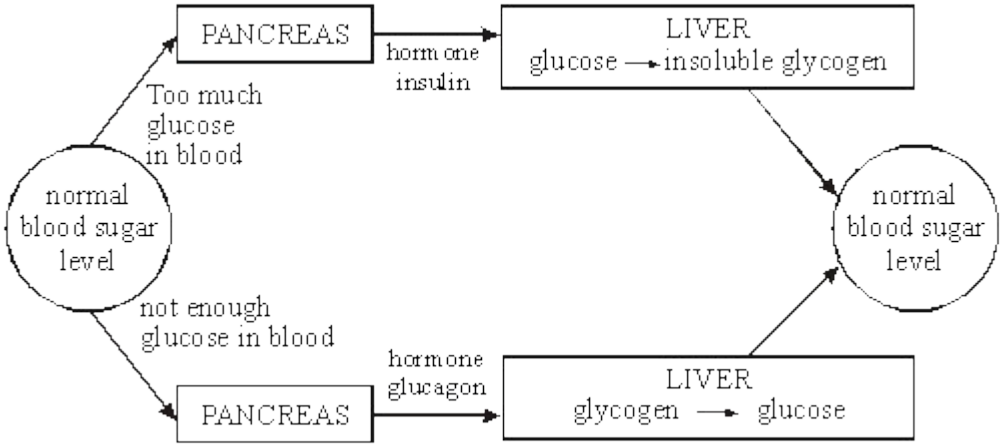
_____

(5)

(Total 13 marks)

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Q5.



The diagram shows how the blood sugar level is controlled in the body.

Explain fully what would happen if somebody ate some glucose tablets.

_____

_____

_____

_____

_____

_____

(Total 4 marks)

Q6.

Kidneys are important as they remove waste from blood and balance our water needs.

Kidney failure can be treated by transplant or dialysis using a kidney "machine".

The money for expensive treatment for a few people could be used to provide more patients with less expensive treatment for other complaints.

Dialysis – kidney "machines"
Most expensive
Need own machine or share machine in hospital
Restricted life – special diet, must return to machine
Can be used while patient waits for transplant

Kidney transplant
Very expensive but cheaper than dialysis
Need kidney from relative or from "newly" dead person
Independent
Transplant may be rejected

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Discuss the advantages and disadvantages of using dialysis or kidney transplants to keep people alive.

_____

_____

_____

_____

_____

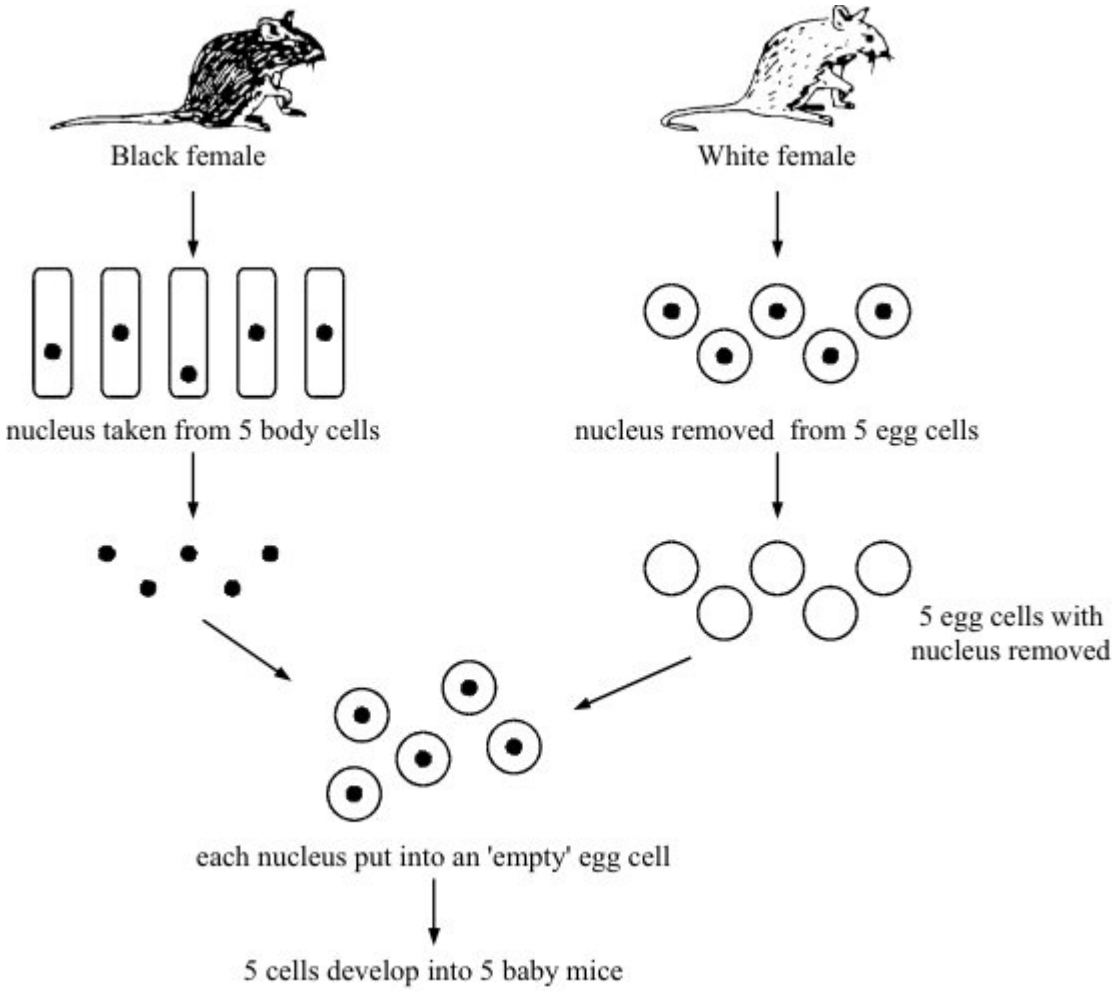
_____

_____

(Total 5 marks)

Q7.

The diagram shows how you can breed mice without using male sex cells.



(a) (i) What type of reproduction is shown above?

_____

(1)

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(ii) Which part of the nucleus carries the information to make a mouse black or white?

_____

(1)

(iii) Carefully describe how the baby mice

(A) compare with each other, _____

_____

(B) compare with the parent mice _____

_____

(3)

(b) Mice normally reproduce in a similar way to humans.

(i) Which organs in the white mouse released the five egg cells?

_____

(1)

(ii) What treatment could you give the white mouse to make her release more eggs?

_____

_____

(1)

(Total 7 marks)

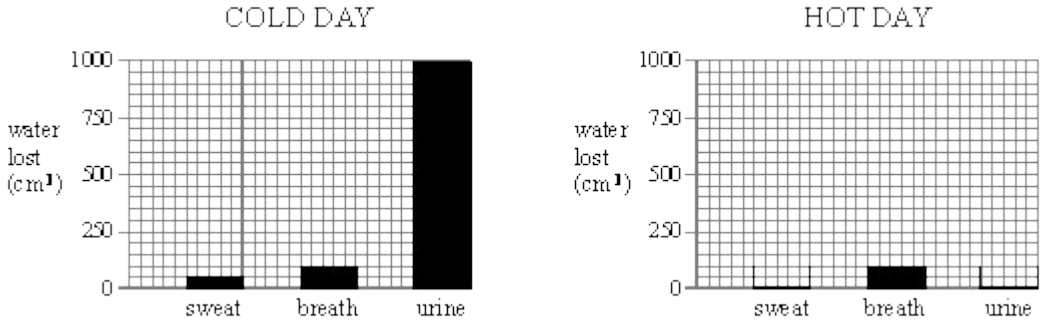
Q8.

The table shows how much water is lost from a boy's body on a cold day and on a hot day.

WATER LOST (cm^3)	COLD DAY	HOT DAY
in sweat	50	300
in breath	100	100
in urine	1000	750

(a) Use the figures in the table to complete the bar-chart for a hot day.

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(2)

(b) How do the figures for the hot day compare with those for the cold day?
Answer in as much detail as you can.

_____

_____

_____

_____

(4)

(c) The boy does the same things for the same amount of time on both days.
Explain why the amounts of water lost in sweat and urine change.

Sweat _____

_____

Urine _____

_____

(2)

(Total 8 marks)

Q9.

The table shows how much water is lost from a boy's body on a cold day and on a hot day.

WATER LOST (cm^3)	COLD DAY	HOT DAY
in sweat	50	300
in breath	100	100
in urine	1000	750

(a) How do the figures for the hot day compare with those for the cold day?
Answer in as much detail as you can.

_____

_____

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_____

_____

_____

(2)

(b) The boy does the same things for the same amount of time on both days.

Explain why the amounts of water lost in sweat and urine change.

Sweat _____

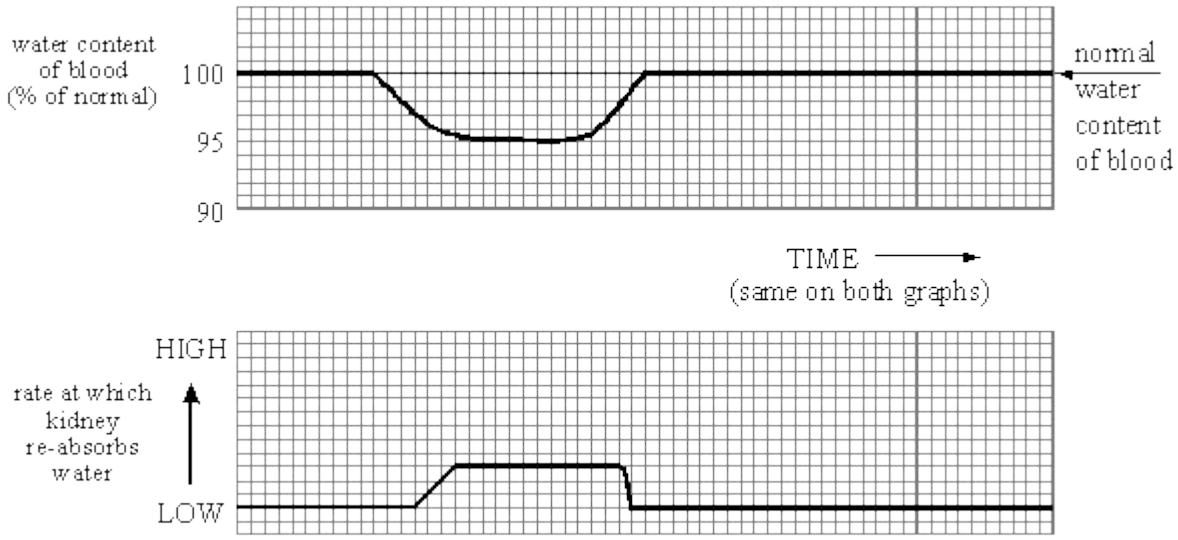
_____

Urine _____

_____

(2)

(c) The rate at which the kidney re-absorbs water depends on the percentage of water in the blood.



Describe, as fully as you can, what the graphs tell you.

_____

_____

_____

_____

(4)

(d) How does your body control the rate at which your kidney re-absorbs water?

_____

_____

(2)

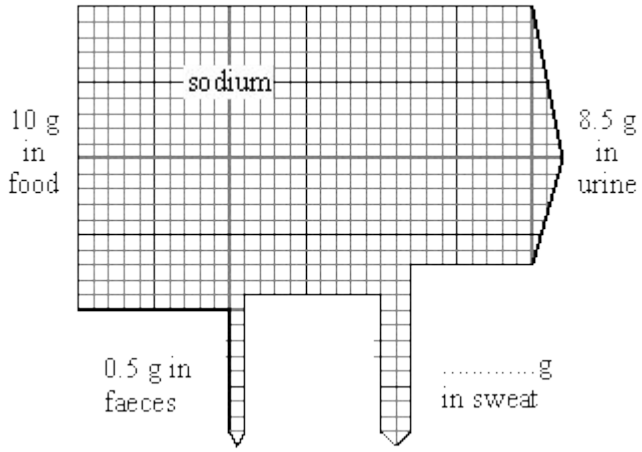
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(Total 10 marks)

Q10.

To stay healthy, the amount of sodium in your body must not change very much.

On average, a girl takes in 10 grams of sodium a day in the food she eats.
The diagram shows what happens to this sodium.



(a) Add the missing figure to the diagram.

(1)

(b) Choose words from this list to complete the sentences below.

bladder **kidneys** **lungs** **skin**

Sweat is produced by the girl's _____

Urine is produced by the girl's _____

(2)

(c) The girl goes on holiday to a very hot place.
Her diet stays the same but she now loses 12 g of sodium each day in sweat.

(i) How will this affect the amount of sodium she loses each day in her urine?

_____

(1)

(ii) What should the girl do to make sure that her body still contains enough sodium?

_____

(1)

(Total 5 marks)

Q11.

A woman wants to have a baby. She has been told that her body is not making and releasing eggs. However she has thousands of cells which could develop into them. A possible treatment is to give her a hormone called FSH. This hormone will start the development of these cells.

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Once the eggs have developed, explain what causes their release.

_____

_____

_____

_____

_____

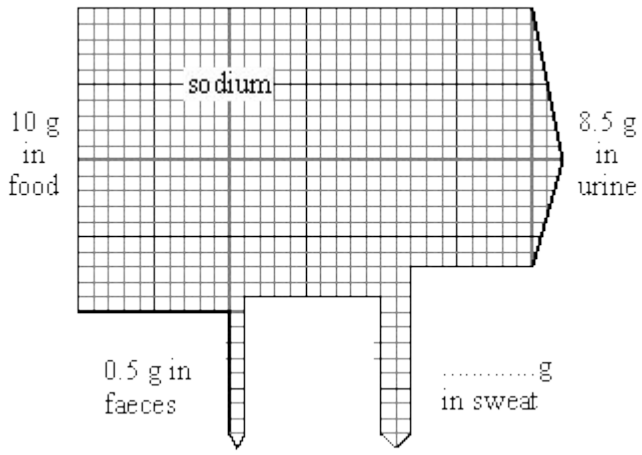
_____

(Total 4 marks)

Q12.

To stay healthy, the amount of sodium in your body must not change very much.

On average, a girl takes in 10 grams of sodium a day in the food she eats.
The diagram shows what happens to this sodium.



(a) Add the missing figure to the diagram.

(1)

(b) The girl goes on holiday to a very hot place.
Her diet stays the same but she now loses 12g of sodium each day in sweat.

(i) How will this affect the amount of sodium she loses each day in her urine?

_____

(1)

(ii) What should the girl do to make sure that her body still contains enough sodium?

_____

(1)

(c) Usually, there is no glucose in urine. All of the glucose is re-absorbed from your kidney tubules back into your blood. Complete the following sentences to describe how this happens.

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The glucose is re-absorbed by a process called _____

This process is needed because some of the glucose is re-absorbed against

_____

(2)

(Total 5 marks)

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