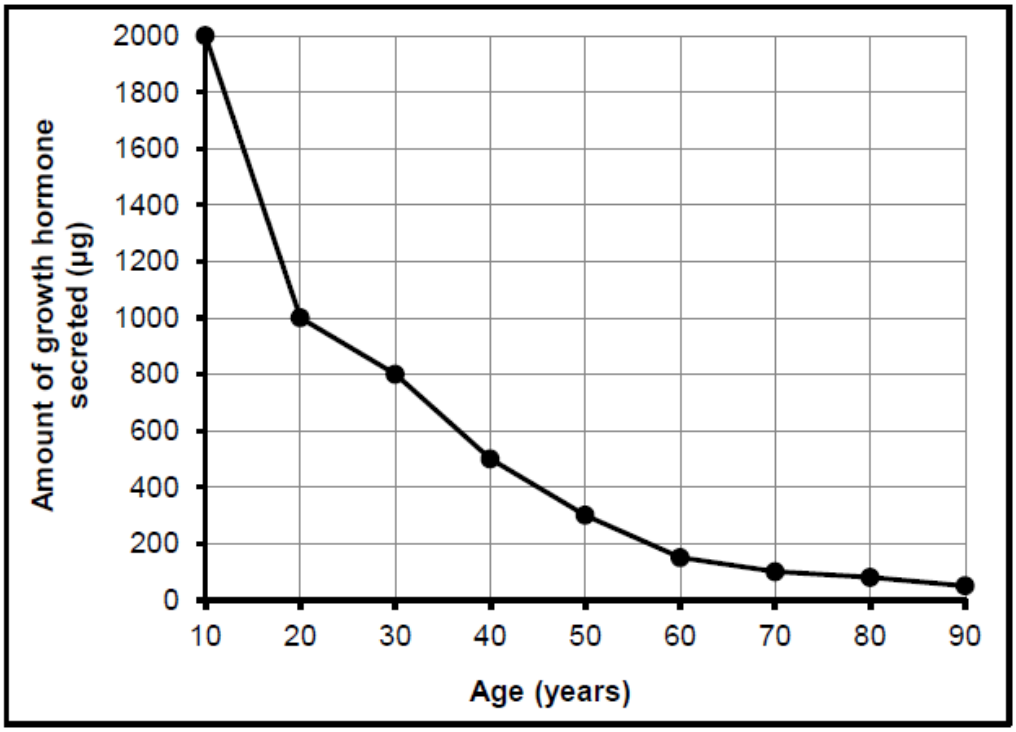
HOMEOSTASIS – EXAM PREPARATION

NOVEMBER 2016 – P1

1.1.10 The graph below shows the relationship between the production of growth hormone and age.



A general conclusion that can be drawn from the results is that …

A growth hormone is not secreted after the age of 50 years.
B the amount of growth hormone secreted decreases with age.
C the amount of growth hormone secreted increases with age.
D the amount of growth hormone secreted remains stable over time. (10 x 2)

NOVEMBER 2017 – P1

1.2.3 A hormone which regulates the salt balance in the human body

1.2.4 The maintenance of a constant internal environment in the human body within certain limits

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1.1.8 After exercising in a gymnasium people often go into a steam room to relax their muscles. The average temperature in a steam room is 41 °C and the humidity is between 80% and 100%.

Which ONE of the following explains why people are advised NOT to stay in a steam room for longer than 15 minutes?

A Increased sweating will cause overcooling.
B Sweat will not evaporate causing overheating.
C Vasoconstriction will lower sweat production.
D Heat receptors in the skin will be damaged.

1.1.9 A tumour in the hypothalamus of the brain of a patient caused a condition called diabetes insipidus. Below are some of the patient's symptoms:

- Dehydration
- Production of large quantities of dilute urine

Which ONE of the following is the most likely effect of the tumour?

A Increased secretion of TSH
B Decreased secretion of ADH
C Increased reabsorption of water in the kidneys
D Increased permeability of the collecting ducts in the kidney to water

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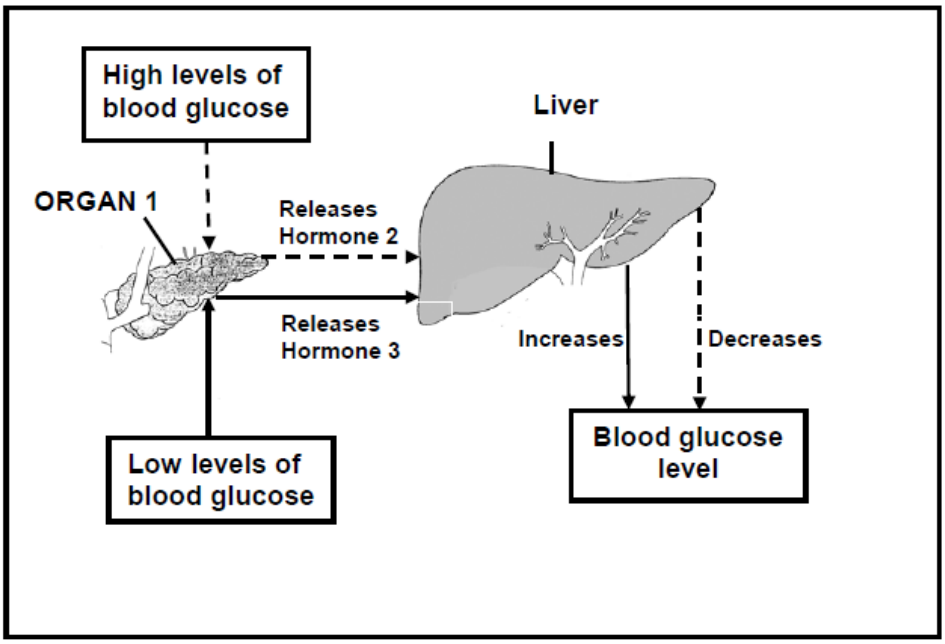
1.5 Study the flow diagram below.



Identify:

1.5.1	Organ **1**	(1)
1.5.2	Hormone **2**	(1)
1.5.3	Hormone **3**	(1)
1.5.4	The disorder caused when organ **1** fails to release sufficient amounts of hormone **2**	(1)
1.5.5	The mechanism that controls the levels of glucose in the body	(1) **(5)**

NOVEMBER 2018 – P1

1.1.8 A scientist designed an investigation to test the following:

Eating more salt will decrease urine production and increase water consumption.

The table below shows the results of the investigation.

AMOUNT OF SALT CONSUMED (g)	VOLUME OF URINE PRODUCED (mℓ)	AMOUNT OF WATER CONSUMED (mℓ)
3	1 803	2 800
6	1 800	2 700
9	1 805	2 600
12	1 802	2 500
15	1 801	2 400

A possible conclusion from the results above is that eating more salt …

A decreases urine production and increases the amount of water consumed.
B increases urine production and decreases the amount of water consumed.
C has little effect on urine production and decreases the amount of water consumed.
D has little effect on urine production and increases the amount of water consumed.

1.2.6 The part of the brain that controls body temperature

1.2.7 The gas in the blood which, when increased, causes an increase in the breathing rate

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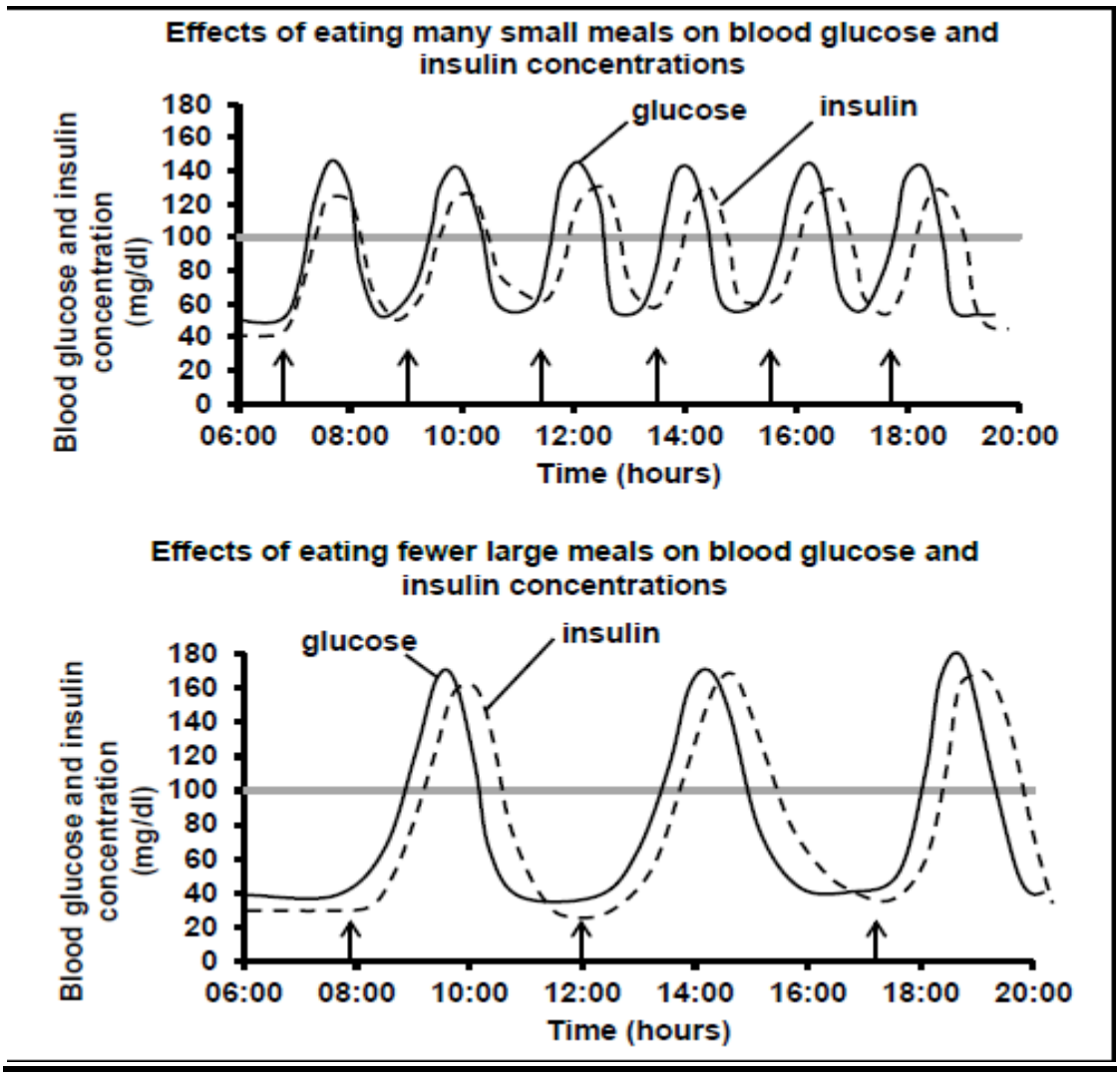
3.3 The graphs below show the effects of eating many small meals and eating fewer large meals on blood glucose and insulin concentrations in a normal person.

The arrows on the graphs below indicate when meals were eaten. The normal blood glucose concentration is 100 mg/dl.



3.3.1 State what happens to the blood glucose concentration immediately after a meal is eaten. (1)

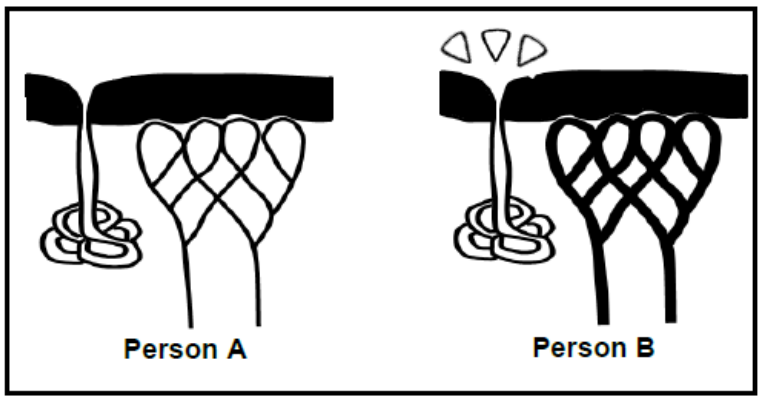
3.3.2 Use the information in the graphs.

Tabulate TWO ways in which eating fewer large meals and eating many small meals affect the blood insulin levels differently. (5)

3.3.3 Explain why eating many small meals per day is better for a diabetic person than eating fewer large meals a day. (4)
(10)

3.3.3

3.4 The diagrams below represent structures in the skin of two people. Both people were in the same room at the same time, but one person was exercising while the other person was sitting still. The skin surface temperature of both people was measured after 10 minutes.



3.4.1 Which person, **A** or **B**, was exercising? (1)

3.4.2 Give TWO visible reasons for you answer to QUESTION 3.4.1. (2)

3.4.3 Name ONE hormone that would have the same effect on the blood vessels that is observable in person **A**. (1)

3.4.4 After 10 minutes the surface skin temperature of each person was measured. The results were as follows:

- Person **A**: 37,2 °C
- Person **B**: 36,6 °C

Explain why the skin temperature of person **A** was higher after 10 minutes. (3)
(7)

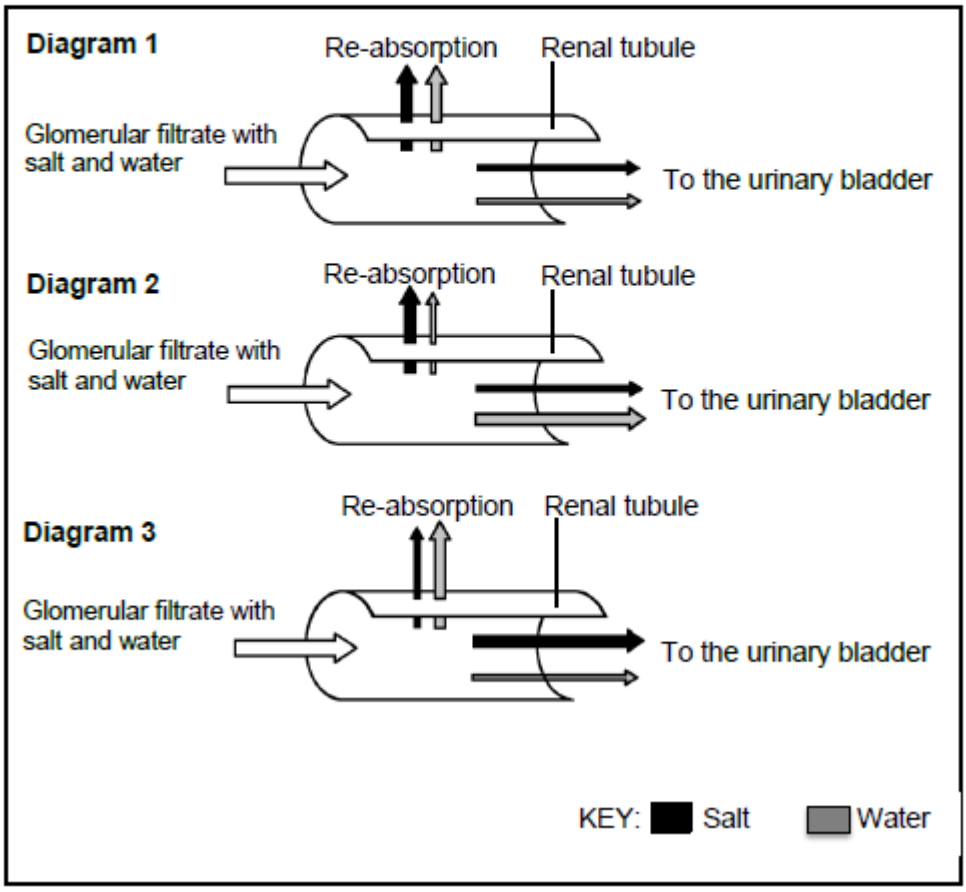
NOVEMBER 2019 – P1

1.1.2 Which ONE of the following will occur in the human body on a cold day?

A Vasodilation in the skin
B Increase in the activity of sweat glands
C Decrease in evaporation of sweat from the surface of the skin
D Increase in blood flow to the surface of the skin

QUESTION 3

3.1 The diagrams below show the re-absorption of salt and water through the tubules of a nephron in the kidney under three different conditions. The width of the arrows represents the amounts of salt and water.



3.1.1 Name the hormone in a human body that is responsible for controlling the:

(a) Water content (1)

(b) Salt content (1)

3.1.2 Name the gland that secretes the hormone in QUESTION 3.1.1(b). (1)

3.1.3 Which diagram (**1**, **2** or **3**) would represent a person who had eaten salty chips on a hot day without any intake of water? (1)

3.1.4 Explain your answer to QUESTION 3.1.3. (5)
(9)

QUESTION 3

3.1	3.1.1	(a)	ADH✓	(1)
		(b)	Aldosterone✓	(1)
	3.1.2		Adrenal✓gland	(1)
	3.1.3		3✓	(1)
	3.1.4		- The blood will have a high salt content✓ - and therefore less/no aldosterone will be secreted✓ - resulting in less salt reabsorbed into the blood✓/more salt excreted in the urine - The blood will have less water than normal✓ - and therefore more ADH will be secreted✓ - making the kidney tubules more permeable✓ - resulting in more water reabsorbed into the blood✓/less water will leave the body with the urine Any	(5) **(9)**