14. Coordination and response

14.4 Homeostasis

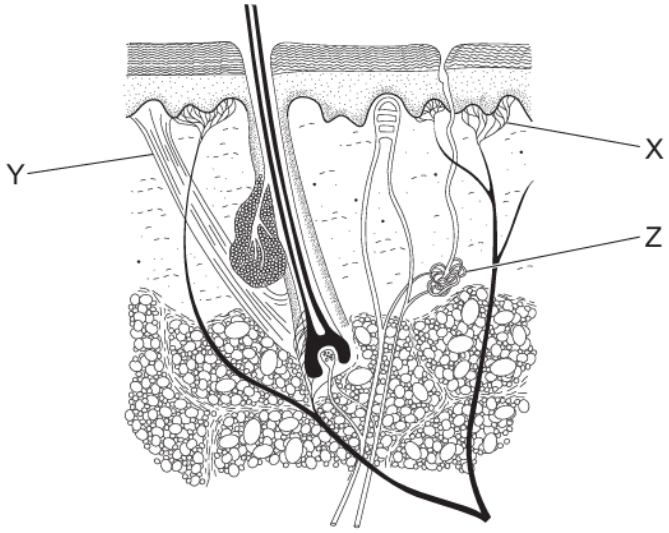
Paper 1 and 2

Question Paper

Paper 1

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

1 The diagram shows a section through human skin.



What are the structures labelled X, Y and Z? **(extended only)**

	X	Y	Z
A	receptor	sweat gland	hair erector muscle
B	receptor	hair erector muscle	sweat gland
C	sweat gland	receptor	hair erector muscle
D	sweat gland	hair erector muscle	receptor

2 Which organ detects and coordinates the response to changes in internal body temperature?

A brain

B heart

C liver

D skin

3 Where in the body are the blood temperature receptors?

A brain

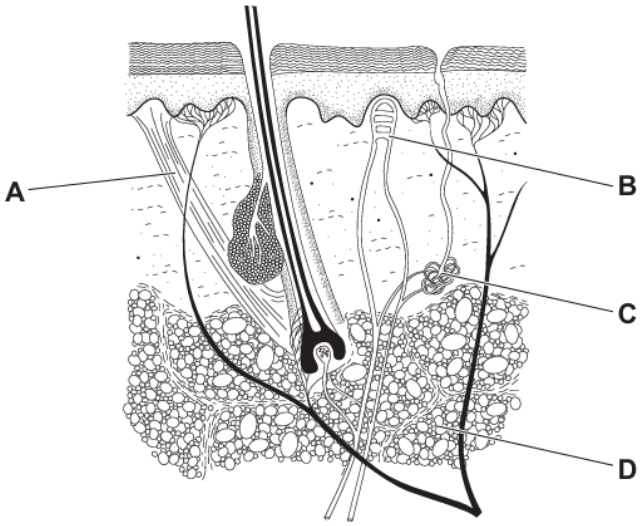
B liver

C muscles

D skin

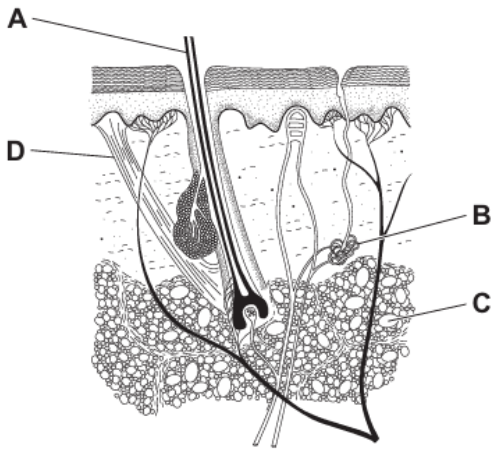
4 The diagram shows a section through the skin.

Which labelled part is a hair erector muscle? **(extended only)**



5 The diagram shows a cross-section of the skin.

Which part produces a substance which cools the skin when it evaporates? **(extended only)**



6 In which situation would insulin secretion usually increase?

A after eating a meal

B hearing a loud bang immediately behind you

C listening to music

D reading a book

7 When we get hot and the temperature of our blood rises, one of the ways we can cool down is by sweating.

What detects the rise in temperature of the blood? **(extended only)**

A skin

B sweat glands

C hair erector muscles

D brain

Paper 2

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

8 What describes how the body maintains a constant internal temperature on a hot day? **(extended only)**

A Vasoconstriction increases blood flow to the skin surface capillaries.

B Vasoconstriction decreases blood flow to the skin surface capillaries.

C Vasodilation increases blood flow to the skin surface capillaries.

D Vasodilation decreases blood flow to the skin surface capillaries.

9 What would lead to a **decrease** in blood glucose concentration?

A increased release of adrenaline

B increased release of amylase

C increased release of glucagon

D increased release of insulin

10 When the blood glucose concentration is low, which hormone is released and which organ releases it? **(extended only)**

	hormone	organ
A	glucagon	liver
B	glucagon	pancreas
C	insulin	liver
D	insulin	pancreas

11 How does the body increase blood glucose concentration? **(extended only)**

A Insulin released by the liver triggers the pancreas to release glucose.

B Glucagon released by the pancreas triggers the liver to release glucose.

C Insulin released by the pancreas triggers the liver to release glucose.

D Glucagon released by the liver triggers the pancreas to release glucose.

12 A person's skin looks more red in a warm environment than it does in a cool environment.

Which explanation is correct? **(extended only)**

A The arterioles supplying capillaries in the skin vasodilate and less blood flows to the skin surface.

B The arterioles supplying capillaries in the skin vasodilate and more blood flows to the skin surface.

C The arterioles supplying capillaries in the skin vasoconstrict and more blood flows to the skin surface.

D The arterioles supplying capillaries in the skin vasoconstrict and less blood flows to the skin surface.

13 When the environment is hot, how do the arterioles in the skin and hair erector muscles react? **(extended only)**

	arterioles	hair erector muscles
A	dilate	relax
B	dilate	contract
C	constrict	relax
D	constrict	contract

14 How does the skin react when the body becomes cold? **(extended only)**

	arterioles supplying the skin surface	sweat production
A	constrict	decreases
B	dilate	increases
C	move towards skin surface	decreases
D	move away from skin surface	increases

15 The liver and the pancreas work together to control the concentration of glucose in the blood.

Which statement is correct? **(extended only)**

A The liver converts the small molecule glucose to the large molecule glucagon.

B The liver releases the hormone insulin when blood glucose levels are too high.

C The pancreas does not respond to an increase in blood glucose levels.

D The pancreas responds to a fall in blood glucose by increasing the release of the hormone glucagon.

16 What are the effects of insulin and adrenaline on the concentration of blood glucose? **(extended only)**

	effect of insulin on blood glucose concentration	effect of adrenaline on blood glucose concentration
A	decreases	decreases
B	decreases	increases
C	increases	decreases
D	increases	increases