OCR GCSE 21ST CENTURY BIOLOGY B · J257

BIOLOGY



EXAM QUESTION PACK

B5.4 WHY DO WE NEED TO MAINTAIN A CONSTANT INTERNAL ENVIRONMENT? (FOUNDATION)

SCORE	PERCENTAGE
/27	%

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1(a). Maintaining a constant body temperature is important.
Sweating is one method that our body uses to maintain a constant temperature.

Complete these sentences to show the response of the body if body temperature gets **too high**.

If the body temperature gets **too high** the amount of sweat produced will

_____ .

This causes the body temperature to _____ .

[2]

(b). Sunita runs a marathon.
The weather is very hot.
She does not drink enough water during the race.

What effect could this have on Sunita's body temperature? Explain your answer.

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[2]

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(c). Sunita's body temperature is controlled by receptors, effectors and a processing centre.

Draw straight lines to join each **structure** to its correct **description**.

structure	description
temperature detector in skin	effector
brain	processing centre
sweat gland	receptor

[2]

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2(a). An incubator for a premature baby has three parts to monitor and control temperature.

A a thermometer to detect changes in air temperature
B a computer to receive and coordinate data about temperature changes
C a heater to warm up the incubator if it gets too cold

Which part of the incubator, **A**, **B** or **C**, is …

… a processing centre? _____

_____

… an effector? _____

… a receptor?

[2]

(b). A similar process takes place in the human body for monitoring and maintaining water levels.

(i) Name the process that maintains a constant internal environment in the human body. _____

[1]

(ii) Write down the names of the two coordination systems used in the human body.

_____ and _____ **[2]**

(iii) The organs that control water balance in the human body are the two kidneys.
Ranjit donated one of his kidneys to save the life of his brother.
Suggest how this will affect the activity of Ranjit's one remaining kidney. _____

_____

_____

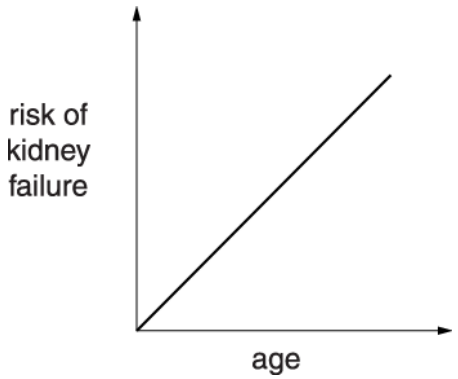
_____

[2]

(c). Look at the graph of the age of a person and the risk of kidney failure.

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(i) Draw **one** straight line to join the two correct statements that, when taken together, describe the correlation between the **factor** and the **outcome**.

factor	**outcome**
As age increases …	… the risk decreases at a faster rate.
At a certain age …	… the risk stays the same.
The younger you are …	… the risk increases.

[1]

(ii) Ranjit's brother was 55 years of age when he had kidney failure.
Explain why this does not provide convincing evidence for or against a correlation.

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[1]

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3. Mammals such as seals maintain a constant body temperature.

Seals live in cold water.

They have a thick layer of body fat and spend several hours each day lying in the sunshine.



Seal

Suggest how seals manage to maintain a constant body temperature even though they live in cold water.

Use ideas about body temperature control, insulation, respiration and bloodflow in your answer.

The quality of written communication will be assessed in your answer.

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[6]

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4. Temperature control is very important in mammals.
Explain how the human body maintains a constant core temperature and suggest why this process may differ from a mammal that lives in cold water.



The quality of written communication will be assessed in your answer.

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[6]

END OF QUESTION PAPER

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