

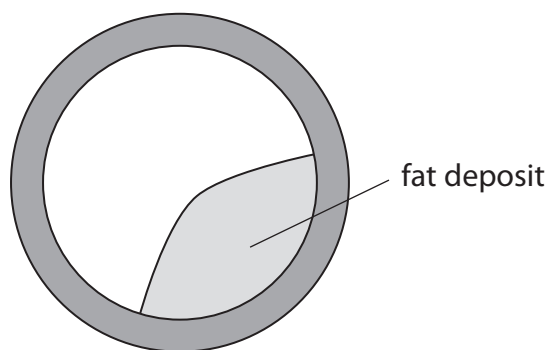
5 Arteries and veins are involved in the circulation of blood.

(a) How do arteries differ from veins?

(1)

- ☐ A arteries transport blood to the heart
- ☐ B arteries have a wider lumen
- ☐ C arteries contain valves
- ☐ D arteries have thicker walls

(b) The diagram shows a section through a coronary artery from a person who has heart disease.



(i) Using measurements from the diagram, calculate the percentage decrease in the diameter of the lumen where the fat deposit is thickest.

(3)

percentage decrease = %

(ii) Explain how the fat deposit would affect the type of respiration in the heart muscle.

(2)

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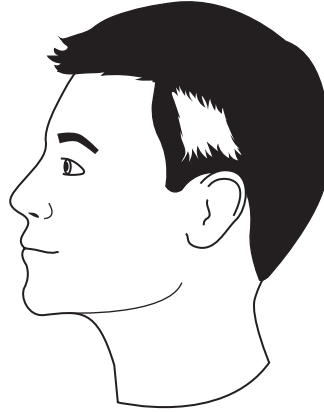
(Total for Question 5 = 12 marks)

P 6 0 1 8 1 R A 0 1 3 3 2

(b) Some genetic characteristics show a different pattern of inheritance to height.

One example of this is piebaldism. In this condition, a person has a white patch of hair.

The diagram shows a person with piebaldism.



Piebaldism is controlled by a single dominant allele.

A man with a white patch of hair and a woman with a white patch of hair have two children.

The first child was born without a white patch of hair.

The second child was born with a white patch of hair.

(i) Use your knowledge of genetics to explain the phenotypes of these children.

Use H to represent the allele for a white patch of hair and h to represent the allele for no white patch of hair.

(4)

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- (ii) Another condition, called vitiligo, produces similar symptoms to piebaldism but is not genetically controlled.

Suggest how a doctor could diagnose whether a new patient has piebaldism or vitiligo.

(2)

(Total for Question 7 = 11 marks)



P 6 0 1 8 1 R A 0 1 9 3 2