5 The endocrine system and the nervous system both coordinate responses in mammals.

(a) Complete Table 5.1 to show the features of three cell-signalling molecules of the endocrine system: antidiuretic hormone (ADH), glucagon and insulin.

Use a tick (✓) if the molecule has the feature and a cross (✗) if the molecule does **not** have the feature.

Put a tick (✓) or a cross (✗) in every box.

Table 5.1

feature	ADH	glucagon	insulin
binds to receptors on cell surface membranes			
results in molecules moving from cells into the blood			
is secreted as a result of detection by osmoreceptors			

[3]

(b) The endocrine system has a slower transmission speed than the nervous system.

Describe **other** ways in which the endocrine system and the nervous system differ.

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..... [4]

(c) The endocrine system and the nervous system can affect muscle function.

Fig. 5.1 shows a transmission electron micrograph of a longitudinal section of striated muscle tissue that is in a relaxed state.

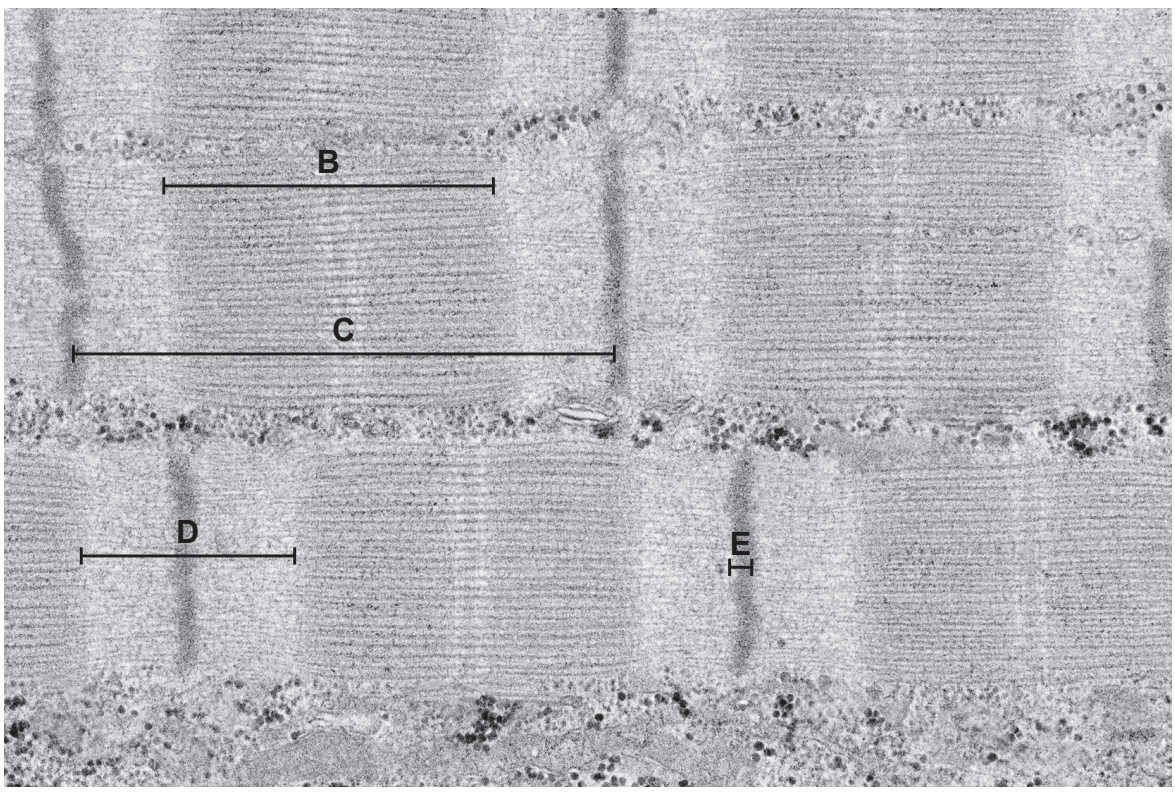

Fig. 5.1

(i) State the letter on Fig. 5.1 that indicates the length of a sarcomere.

..... [1]

(ii) State the letter on Fig. 5.1 that indicates a region where actin and myosin overlap.

..... [1]

(iii) Describe **and** explain how the region labelled **D** on Fig. 5.1 changes during muscle contraction.

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..... [4]

[Total: 13]