

AQA, OCR, Edexcel

A Level

A Level Biology

Muscles Answers

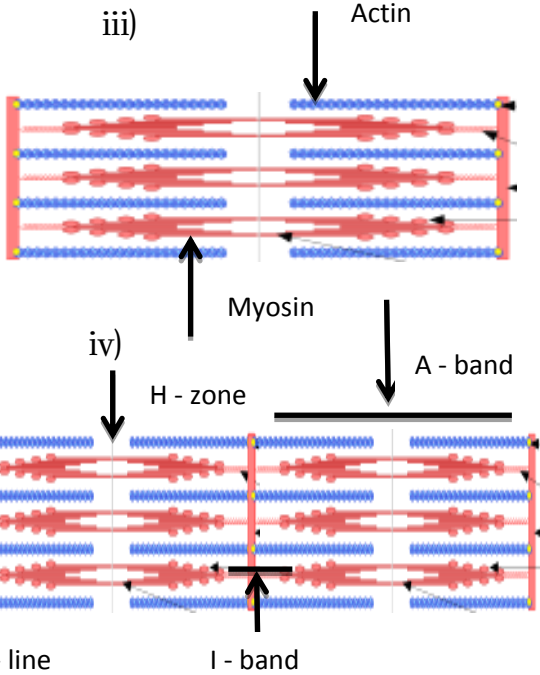
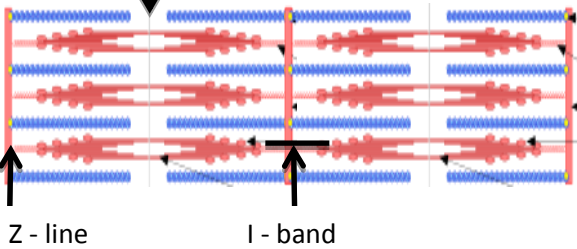
Name:

M M E

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Total Marks: /32

Muscle Contraction

Answer	Marks
<p>1.</p> <p>a)</p> <p>i) A - T-tubules B - Sarcolemma C - Myofibril</p> <p>ii) Mitochondria produce ATP which is required for muscle contraction</p> <p>iii)</p>  <p>iv)</p>  <p>v) I band - gets shorter A-band - stays the same H-zone - gets shorter Z-line - gets closer together</p>	<p>3 marks</p> <p>2 mark</p> <p>2 marks</p> <p>4 marks</p> <p>4 marks</p>
<p>2.</p> <p>a)</p> <p>i) Myosin - globular heads/binding sites for actin and ATP Actin - binding sites for myosin heads</p>	<p>2 marks</p>

<p>ii) – tropomyosin blocks the actin-myosin binding sites</p> <ul style="list-style-type: none">- prevents muscle contraction during rest period- Displaced in presence of calcium ions.	<p>3 marks</p>
<p>iii) – The action potential depolarises the sarcolemma</p> <ul style="list-style-type: none">- depolarisation spreads down the T-tubules to the sarcoplasmic reticulum- Calcium ions are released- Calcium ions cause tropomyosin to move out of the actin-myosin binding site- Myosin head binds to actin filament to form an actin-myosin cross bridge- ATPase activated by Ca^{2+}	<p>6 marks</p>
<p>3. a)</p> <ul style="list-style-type: none">- no ATP is produced- ATP is required to break down the actin-myosin bridges	<p>2 marks</p>
<p>b)</p> <ul style="list-style-type: none">- ATP binds to myosin- Causes head to detach from actin- ATP hydrolysed to ATP + Pi- Energy released is used to reposition the myosin head- Cross bridge cycle can then be repeated.	<p>4 marks</p>