

**AQA, OCR, Edexcel**

**A Level**

# **A Level Biology**

## **Control of Heart Rate Answers**

Name:

**M**

**M**

**E**

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Total Marks: /17

## The Nervous System

Answer	Marks
<p>1.</p> <p>a) i) – does not need nervous stimulation for contraction/ contraction stimulated from within.</p> <p>b) i) – Sympathetic nerves, neurotransmitter released increases the rate of heart contraction - Parasympathetic nerves neurotransmitter released relaxes muscle to slow down heart rate</p> <p>ii) Medulla oblongata</p>	<p>1 mark</p> <p>2 marks</p> <p>1 mark</p>
<p>2.</p> <p>a) i) – Stretch receptors - Stimulated when blood flow stretches the aorta - this sends action potentials to the medulla in the brain</p>	<p>3 marks</p>

<p>b)</p> <p>i)- SAN transmits regular waves of electrical activity</p> <ul style="list-style-type: none"><li>- This causes the atria to contract</li><li>- Collagen/ non-conductive tissue, prevents the contraction from passing to the ventricles</li><li>- waves of electrical activity are transferred to the AVN</li><li>- This passes waves of electrical activity to the bundle of His</li><li>- Which then conducts the electrical activity to the Purkyne fibres/purkinje fibres</li><li>- This causes the ventricles to contract from the bottom up.</li></ul> <p>ii) - acetylcholine - acts on the parasympathetic nervous system and slows the heart rate</p> <ul style="list-style-type: none"><li>- noradrenaline - act on the sympathetic nervous system to increase the heart rate</li></ul>	<p>6 marks</p> <p>4 marks</p>
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