

AQA, OCR, Edexcel

A Level

A Level Biology

Control of Heart Rate Questions

Name:

M M E

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Total Marks: /17

Control of Heart Rate

The role of the heart is to pump blood to the respiring tissues around the body.

1. The heart is a muscle, it pumps blood around the body through contraction and relaxation. This causes pressure changes in the atria and ventricles which forces blood out of the heart and around the body.

a) The heart muscle is myogenic.

i) What is meant by this term? (1 mark)

b) The heart is affected by the sympathetic and parasympathetic nerves.

i) What is the difference between sympathetic and parasympathetic nerves in the context of heart rate? (2 marks)

ii) Which part of the brain controls the autonomic activity of the heart? (1 mark)

2. Control of the cardiac cycle is a self-regulating mechanism.

a) Baroreceptors play an important role in the cardiac cycle

i) What are baroreceptors and what is their function in the cardiac cycle? (3 marks)

b) The process of contraction in the heart begins in the sino-atrial node (SAN).

i) Discuss how the SAN sets the rhythm of the heartbeat? (6 marks)

ii) Which neurotransmitters are used along the vagus nerve to control the heart rate and how do they do this? (4 marks)