Cell signalling

Question Paper

Level	Pre U
Subject	Biology
Exam Board	Cambridge International Examinations
Topic	Animal physiology
Sub Topic	Cell signalling
Booklet	Question Paper

Time Allowed: 14 minutes

Score: /11

Percentage: /100

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Part - A

1 The rate of contraction of the mammalian heart is influenced by impulses from neurones that terminate in the heart. The impulses originate from the cardiac (cardiovascular) centre in the brain as shown in Fig. 6.1.

Stimulation by neurone ${\bf X}$ decreases the heart rate; stimulation by neurone ${\bf Y}$ increases the heart rate.

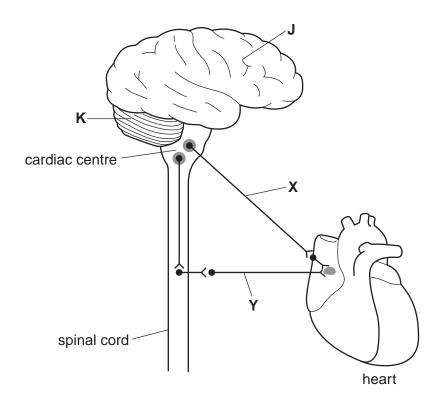


Fig. 6.1

(a)	(1)	Nam	ne the part of the brain in which the cardiac centre is located.	[1]	
	(ii)	Nam	Name the parts of the brain labelled J and K on Fig. 6.1.		
		J			
		K	[2]	
(b)	With	n refe	erence to Fig. 6.1, explain how the cardiac centre controls the heart rate.		

.....[4]

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(c) Fig. 6.2 shows endings of neurones X and Y in the heart.

Stimulation of \mathbf{Y} leads to an increase in the concentration of the second messenger, cyclic AMP (cAMP), in the cytoplasm of the heart cell and the stimulation of \mathbf{X} leads to a decrease.

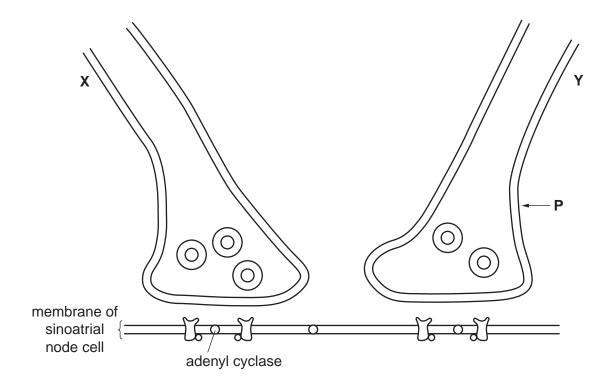


Fig. 6.2

Describe the events that follow the arrival of an impulse at ${\bf P}$ on neurone ${\bf Y}$ that leads to an increase in cAMP.
[4]

[Total: 11]