

A-Level Biology A
H420/01 Biological Processes

Question Set 21

21 (a) (i) Fig. 21.1 shows a transverse section of a human adrenal gland.

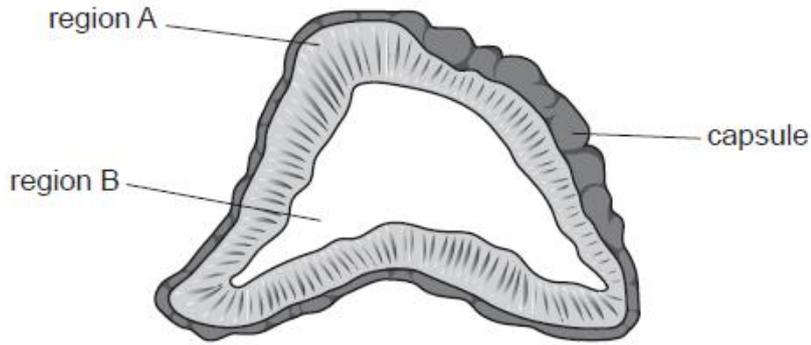


Fig. 21.1

The table below describes the functions of some hormones produced by different regions of the adrenal gland.

Complete the table using Fig. 21.1 and your own knowledge.

Hormone produced	Functions of hormone
adrenaline	Increases heart rate
	Increases breathing rate
	Raises blood glucose concentration levels.
Noradrenaline	increases heart rate increases blood pressure widens pupils
androgens	regulation of sexual characteristics and cell growth
Glucocorticoids	regulation of metabolism

[2]

21 (a) (ii) Using Fig. 21.1, identify the letter and name of the region of the adrenal gland that secretes adrenaline.

[1]

Region B, adrenal medulla

- 20 (b) (i) Phaeochromocytoma is a rare tumour of adrenal gland tissue. It causes increased hormone release from the adrenal glands.

Fig 21.2 shows three ECG traces showing the heart rhythms of three different patients.

- Patient X has a normal heart rhythm.
- Patient Y has phaeochromocytoma.
- Patient Z has bradycardia.

Identify patients X, Y and Z by labelling the traces in Fig. 21.2.

[2]

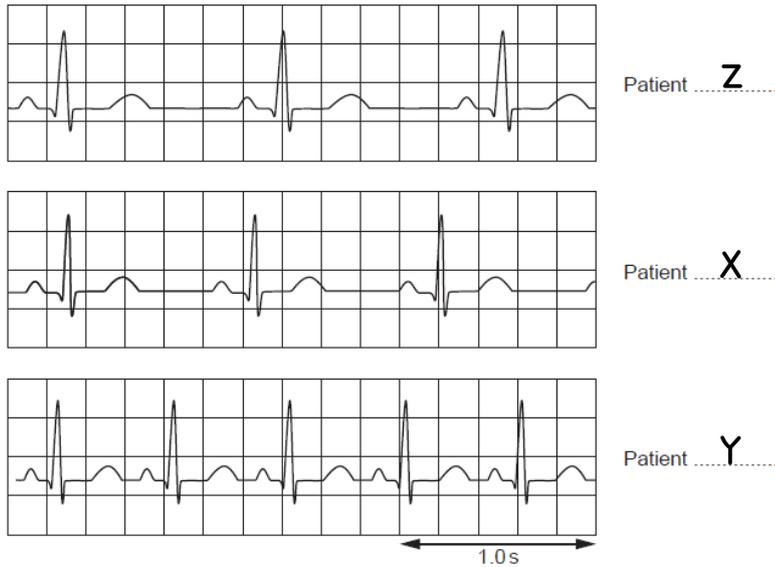
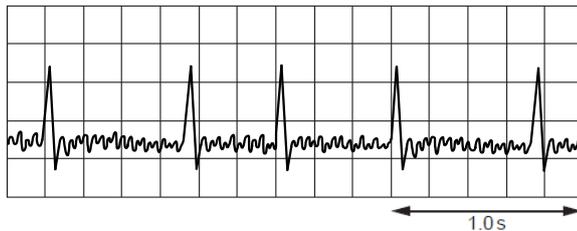


Fig. 21.2

- 21 (b) (ii) Sketch an ECG trace for a patient who has entered atrial fibrillation

[2]



- 20 (b) (iii) Suggest why reduced heart rate is sometimes seen in people who are very aerobically fit.

[2]

In aerobically fit individuals, heart rate may be lower because the heart muscles are stronger and more efficient (cardiac hypertrophy). Stroke volume increases so the same cardiac output can be achieved with a lower heart rate.

Total Marks for Question Set 21: 9

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