Homeostasis in mammals

Question Paper 2

Level	International A Level
Subject	Biology
Exam Board	CIE
Topic	Homeostasis
Sub Topic	Homeostasis in mammals
Booklet	Theory
Paper Type	Question Paper 2

Time Allowed : **64 minutes**

Score : **/ 53**

Percentage : **/100**

Grade Boundaries:

A*	A	B	C	D	E	U
>85%	'77.5%	70%	62.5%	57.5%	45%	<45%

1 **(a)** Describe the structure of a kidney, including its associated blood vessels. [6]

(b) Describe the mechanisms involved in reabsorption in the proximal convoluted tubule **and** describe how the epithelial cells of the proximal convoluted tubule are adapted to carry out this process. [9]

[Total: 15]

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2 **(a)** Outline, with reference to blood glucose concentration, the principles of homeostasis in mammals. [6]

(b) Describe the roles of the endocrine and nervous systems in control and coordination in mammals. [9]

[Total: 15]

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3 **(a)** Describe the part played by the proximal convoluted tubules in the functioning of the kidneys. [8]

(b) Explain how the collecting ducts in the kidneys may reduce the loss of water from the body. [7]

[Total: 15]

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4 Fig. 2.1 is a light micrograph of a small part of the pancreas.

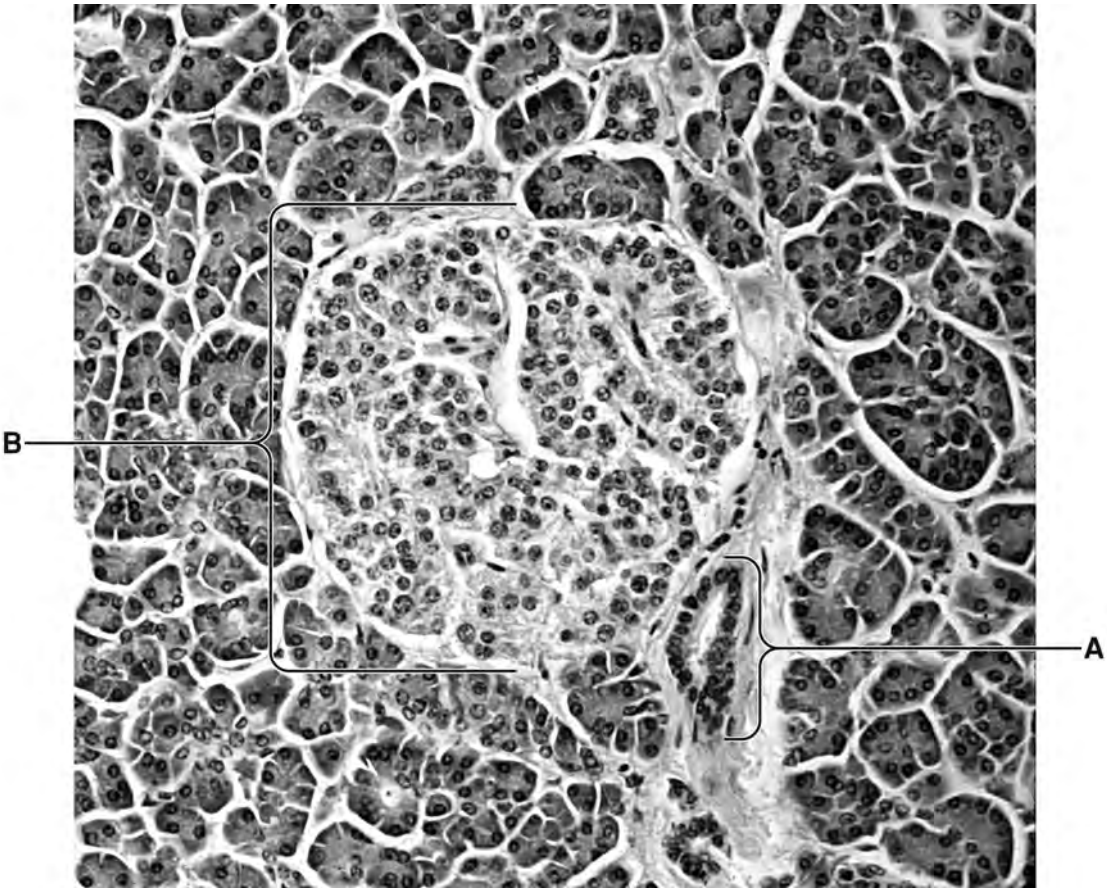

Fig. 2.1

(a) Name structures **A** and **B**.

A .....

B ..... [2]

(b) With reference to Fig. 2.1, explain why the pancreas is an *endocrine gland*.

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..... [2]

(c) Insulin and glucagon are involved in the control of blood glucose concentration. When blood glucose concentration rises, secretion of insulin increases.

Outline two ways in which insulin affects the activity of cells in the liver.

1. .....

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2. .....

..... [2]

(d) Some forms of diabetes are caused by an inability to secrete insulin and can be controlled by regular injections of insulin. Most of this insulin is now produced using genetically modified *Escherichia coli.*

Explain the advantages of using this type of insulin, rather than insulin obtained from animal sources.

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..... [2]

[Total: 8]