**APPLECROSS SENIOR HIGH SCHOOL**

**Human Biology Unit 3**

**TEST 3: ENDOCRINE SYSTEM**

**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Marks: MC /20 Written: /30**

**PART B: Short answer (write your answers in the spaces provided) TOTAL /50**

1. Parts (a), (b) and (c) refer to the diagram below.

a) Identify the gland that secretes aldosterone.

F (1 mark)

b) (i) Gland B is the pituitary gland. Describe the process leading to the secretion of hormones from the anterior lobe into the blood stream

Hypothalamus detects stimulus and produces hormones (1)

Releasing hormones pass down blood capillaries to the pituitary (1)

Pituitary produce and releases hormones into blood stream (1) **All 3 points for 3 marks**

(ii) Explain why the posterior lobe is **not** considered to be an endocrine gland.

It does not produce its own hormones (1)

Releases hormones produced in the hypothalamus (1)

**All 2 points for 2 marks**

c) Adrenal glands (F) have two distinct parts, the medulla and the cortex. Describe two differences between these glands.

|  |  |
| --- | --- |
| Adrenal Medulla | Adrenal Cortex |
| Inner layer of the gland  Secretes adrenaline and noradrenaline  Neural stimulus  sympathetic nerves | Outer layer of gland  Secretes cortisol and aldosterone    Humoral stimulus  ACTH hormonal |

**Any 2 points for 2 marks**

d) (i) Glands D and C produce hormones which are antagonistic. Explain what this means using these hormones as an example.

Antagonistic means their actions are opposite (1)

C produces calcitonin which decreases Ca 2+ concentration of blood (0.5)

D produces parathormone which increases Ca 2+ concentration of the blood (0.5)

(ii) The hormones from gland C and D have the same effectors. List the effectors and for each describe the effect produced by the hormone from gland C.

Bone – causes absorption of Ca 2+ into the bone (1)

Intestines – decreases absorption of Ca 2+ from food (1)

Kidney – decreases reabsorption of Ca 2+ from the urine into blood (1)

**All 3 points for 3 marks**

(iii) Name one other gland shown in the diagram which secretes antagonistic hormones. Name the hormones secreted and describe their functions.

Pancreas (1)

Insulin – decreases blood glucose levels (1)

Glucagon – increases blood glucose levels (1)

**All 3 points for 3 marks**

2. Question 2 refers to the following diagram.



a) A and B are types of hormone

(ii) Identify each type and give one example.

A: Protein/amine (1) – any except steroids (1)

B: Steroid (1) – testosterone, progesterone, oestrogen, aldosterone or cortisol (1)

(iii) Describe two differences between the actions of the hormones.

|  |  |
| --- | --- |
| Steroid | Protein/amine |
| • Lipid soluble  • Can pass through the membrane  •No secondary messenger  • Affects gene expression | • Water soluble  • Cannot pass through the membrane  • Needs secondary messenger  • Affects cell metabolism |

**Any 2 difference for 2 marks**

**PART C: Extended answer.**

The ovarian cycle is an example of an endocrine feedback loop. Describe this statement using the sequence of events and the hormonal changes that occur during the ovarian cycle in a non-pregnant woman. (8 marks)

Define feedback (Response causes a change in the stimulus) (1)

Anterior (must have)pituitary gland produces Follicle stimulating hormone (must give full name first time it is mentioned (½)

FSH stimulates the growth of a follicle in the ovary (½)

Follicle produces estrogen (½)

Estrogen feeds back to the hypothalamus/pituitary (1)

To inhibit production of FSH (½)

And stimulate production of Luteinising hormone (½)

LH causes ovulation (½)

Corpus luteum produces progesterone (½)

Progesterone feeds back to hypothalamus/pituitary (1)

And inhibits production of FSH (½)

Corpus luteum degenerates and production of progesterone falls (½)

Feedback of progesterone ceases (1)

And so does FSH production to begin the cycle again (½)