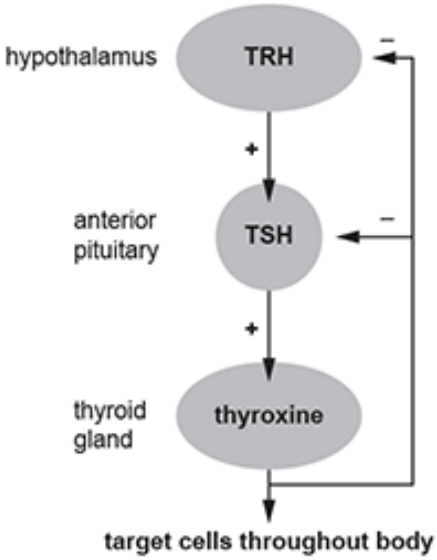
The Endocrine System (H)

1. Why are plant hormones used to cause parthenocarpic fruit development?

A To delay dormancy
B To selectively kill weeds
C To produce seedless fruit
D To shed leaves

Your answer ☐ **[1]**

2. Thyroxine is a hormone controlled by negative feedback.



There is an **increase** in the metabolic rate of the body until the cells of the body have the required amount of energy.

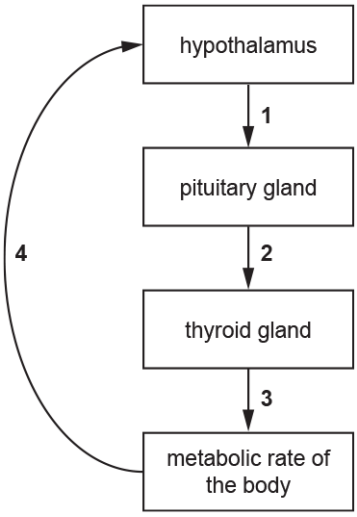
Once the cells of the body have the required amount of energy what will happen to the levels of the three hormones in the blood?

A all three will increase
B all three will decrease
C TRH and TSH will increase and thyroxine will decrease
D TRH and TSH will decrease and thyroxine will increase

Your answer ☐ **[1]**

3. The level of thyroxine in the body is controlled by negative feedback.

The diagram shows how this takes place.



Which numbers on the diagram represent the hormones TSH and thyroxine?

A	**2** = thyroxine	**3** = TSH
B	**1** = TSH	**3** = thyroxine
C	**3** = TSH	**3** = thyroxine
D	**2** = TSH	**3** = thyroxine

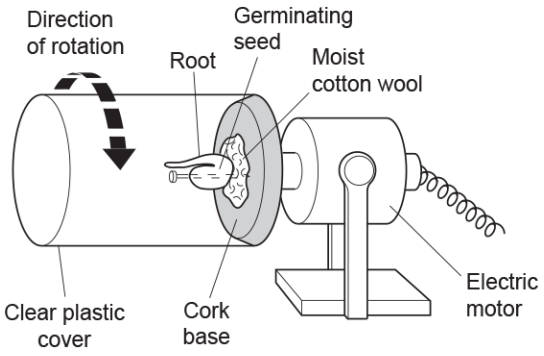
Your answer ☐ **[1]**

4. Which hormone is important in the fruit ripening process in plants?

A Ethene
B Gibberellin
C Progesterone
D Thyroxine

Your answer ☐ **[1]**

5. The diagram shows apparatus used in experiments on tropisms.



When the apparatus rotates, the root grows horizontally.

Which tropism is **not** showing its usual effect on the root?

A Negative gravitropism
B Positive gravitropism
C Negative phototropism
D Positive phototropism

Your answer ☐ **[1]**

6 (a). Carolina horsenettle is a weed that grows in crop fields in the USA.

New horsenettle shoots develop from buds on roots in spring. The shoots die in the autumn but the roots remain alive under the ground.

Effective weed control involves stopping seed production and killing the root system.

Selective herbicides are used to control Carolina horsenettle.

The best time to apply selective herbicide is when the horsenettle is actively growing between the bud and flower stage.

i. Describe how a selective herbicide works.

---

[2]

ii. **Fig. 20.1** and **Table 20.1** show information about four different herbicides **A, B, C** and **D**.

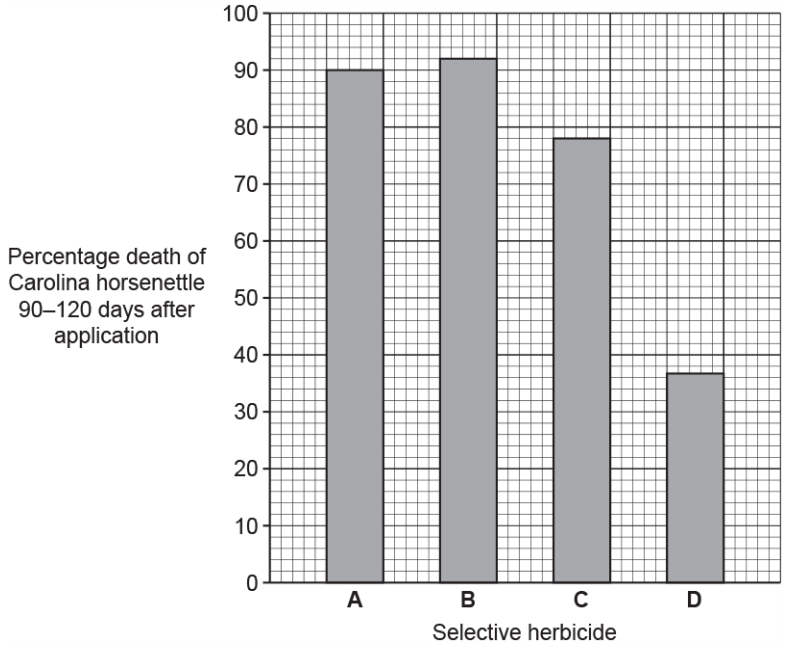


Fig. 20.1

Selective herbicide	**A**	**B**	**C**	**D**
Effect on Carolina horsenettle	prevents seeds and roots of plants growing	prevents seeds and roots of plants growing	prevents seeds and roots of plants growing	prevents shoot growth and fruiting but minimal damage to roots
What plants herbicide works on	Carolina horsenettle	Carolina horsenettle and several other broad-leaved plant species	Carolina horsenettle	Carolina horsenettle and most other broad-leaved plant species
Cost of herbicide	medium	high	medium	low

Table 20.1

Carolina horsenettle is growing in a field with a crop and other broad-leaved weeds.
Evaluate the information on selective herbicides **A, B, C** and **D**.

Which selective herbicide would be best to use and when it should be applied?
Explain your decision.

---

[4]

(b).

i. Describe **one** effect that gibberellin hormones have on plants.

---

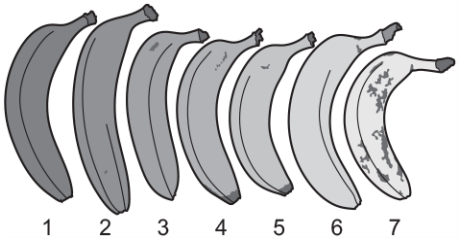
[1]

ii. A student investigates ripening in bananas.

The student keeps bananas in different conditions. After 1 week he decides if each banana was **ripe** or **not ripe**.

The results were difficult to interpret so he planned to develop the experiment.

He found a picture that he thought he could use.



Explain how this could help develop his experiment.

---

[2]

7. A side effect of some antibiotics is to inhibit the release of thyroxine into the blood.

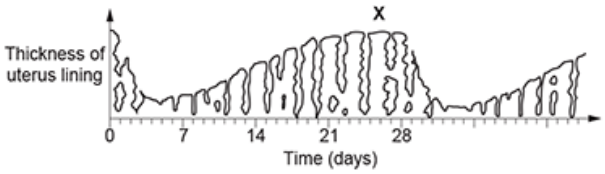
What will these antibiotics do to levels of TSH and TRH?

A Both decrease
B Both increase
C Both stay the same
D TSH increases and TRH decreases

Your answer ☐

[1]

8 (a). Look at the diagram. It shows changes to the uterus lining during the menstrual cycle.



i. Which hormone would peak at point **X**?

---

[1]

ii. Name **two** hormones that peak immediately before ovulation.

1 ---

2 --- **[1]**

(b). Explain how hormones can be used by women for contraception.

---

[4]

(c). Plant development is controlled by hormones.

Describe **one** effect of gibberellins and **one** effect of ethene on plant development.

gibberellins

---

ethene

---

[2]

9 (a).

Adrenaline is an important hormone in the body. It helps to prepare the body for a 'fight or flight' response.

Sports injuries which involve cuts and bleeding are often treated with a dilute solution of adrenaline.

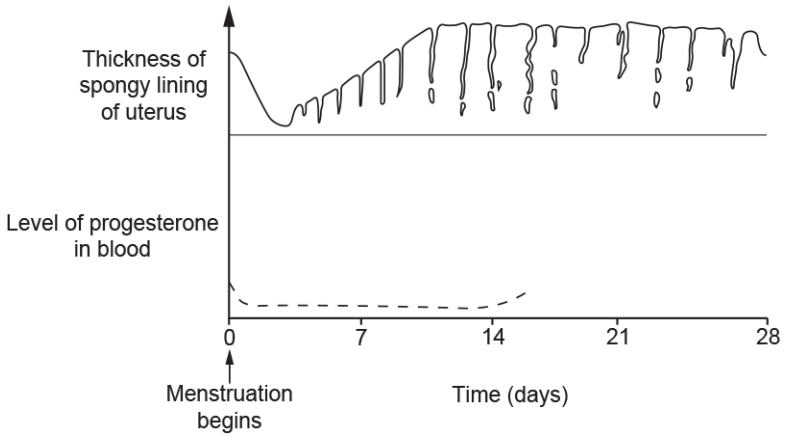
Explain why.

_____

_____

_____ **[2]**

(b). The graph shows how the lining of the uterus changes during the menstrual cycle and also shows the level of progesterone in the blood.



i. Where in the ovary is progesterone produced?

_____ **[1]**

ii. Draw a line to continue the graph to show the levels of progesterone until day 28 (assume that an egg has not been fertilised).

[2]

(c).

i. An egg develops in a follicle before ovulation. The follicle has a diameter of 25×10^{-3} mm at the start. This follicle grows to 20 mm in diameter just before the egg is released.

Calculate the increase in size of the diameter of the follicle.

Give your answer to **2** decimal places.

Answer = _____ mm **[3]**

ii. The failure of a follicle to increase in size can result in less production of oestrogen.

Explain what effect this may have on the uterus.

_____ **[1]**

iii. Explain how hormones can be used to treat infertility in women.

_____

_____

_____

_____ **[3]**

iv. Infertility can also be caused by problems in the male.

Plasmin is a protease enzyme important in sperm movement.

Explain how changes to the structure of DNA could result in the plasmin enzyme being faulty.

_____

_____

_____ **[2]**

END OF QUESTION PAPER