### B3.2 The endocrine system

#### B3.2.7 Summary questions

1. **a** A – (contraceptive) pill; B – condom
   **b** It prevents sperm coming into contact with the egg.
   **c** It provides protection against sexually transmitted infections as well as pregnancy.

2. | **speed of communication** | **faster** | **slower** |
   | **method of transport or transmission** | **electrical impulse** | **in blood** |
   | **duration of response** | **shorter acting** | **longer acting** |
   | **area targeted** | **very precise** | **larger area** |

3. Testosterone – triggers sperm production and male characteristics
   Thyroxine – regulates body metabolism
   Adrenaline – prepares the body for immediate action
   Insulin – controls blood glucose levels

4. **a** rooting powder / auxin
   **b** (positive) gravitropism
   **c** More auxin gathers on the lower side of the horizontal root. The root grows more on the side with the least auxin, causing a bending of the root (grows towards the source of gravitation). When the root is pointing downwards the auxin becomes evenly spread throughout the root. The root then continues to grow downwards.

5. **a** The lining of the uterus is shed.
   **b** Day 14
   **c** A – LH (lutenising hormone); B – FSH (follicle stimulating hormone)
   **d** To stimulate one of the eggs in the ovary to mature / oestrogen to be produced.
   **e** Progesterone line must stay at the same level from its peak (about day 20) or increase. This is because the lining needs to remain so that the embryo can implant and pregnancy can occur.

6. **a** (endocrine) glands
   **b** plasma
   **c** Hormones diffuse out of the blood and bind to specific receptors for that hormone, found on the membranes or in the cytoplasm of target cells. Once bound to their receptors the hormones stimulate the target cells to produce a response.
   **d** The hypothalamus causes the pituitary gland to release thyroid-stimulating hormone (TSH). TSH stimulates the thyroid gland to release thyroxine. This increases the metabolic rate, allowing cells to transfer additional energy. When cells are being supplied with the required amount of energy, the hypothalamus inhibits the production of TSH. The thyroid gland therefore stops releasing thyroxine (negative feedback).