

Self-test questions

Topic 11

- 1 Which of the following show the correct sequence of events in response to an infection by bacteria?
 - i antigen presented by macrophages
 - ii B cells activated
 - iii T cells activated

A ii, iii, i
B iii, ii, i
C i, ii, iii
D i, iii, ii
- 2 Which of the following is **not** true in relation to immunity?

A Immunity depends on the persistence of memory cells.
B Immunity is triggered by vaccines containing antigen.
C Immunity to smallpox is now universal.
D Immunity is caused by a secondary response to a pathogen.
- 3 Movement of the body requires muscles to work in antagonistic pairs because:

A two sets of muscles are needed to move large joints
B two sets of muscles provide twice as much effort
C muscles can only contract when they are in pairs
D muscles only do work when they contract
- 4 The role of calcium ions (Ca^{2+}) in the control of muscle contraction is:

A to change the conformation of myosin heads so that microfilaments can slide past each other
B to cause depolarisation of the muscle
C to change the conformation of the troponin and expose myosin binding sites
D to block ATP binding sites on the myosin heads, enabling muscle to relax
- 5 For mammals of similar size, which of the following would provide the greatest ability to produce hypertonic urine?

A increased filtration rate in glomeruli
B increased number of nephrons
C more permeable collecting ducts
D longer loops of Henle
- 6 Which of the following might be detected in a urinary test?
 - i glucose
 - ii proteins
 - iii drugs
 - iv blood cells

A i only
B i, ii and iii only
C i, ii, iii and iv
D ii, iii and iv only

7 Which of the following can be changed so that the human kidney can carry out its role in osmoregulation?

- A blood flow to the kidney
- B volume of fluid filtered from the blood by glomeruli
- C amount of solutes selectively reabsorbed in the proximal convoluted tubule
- D amount of water reabsorbed by collecting ducts

8 What are the outcomes for the processes of oogenesis and spermatogenesis?

| | Oogenesis | Spermatogenesis |
|-----|------------------------------|------------------------------|
| i | 4 gametes | 1 gamete and 3 polar bodies |
| ii | 2 gametes and 2 polar bodies | 2 gametes and 2 polar bodies |
| iii | 1 gamete and 3 polar bodies | 4 gametes |
| iv | 1 gamete and 2 polar bodies | 4 gametes |

- A i
- B ii
- C iii
- D iv

9 Which of the following is part of the process that blocks polyspermy?

- A release of cortical vesicles
- B release of the polar body
- C arrival of many sperm cells at the oocyte membrane
- D release of human chorionic gonadotropin (HCG)

10 The most important advantage of internal fertilisation is that:

- A it allows fertilisation of many gametes
- B it provides more protection for developing organisms during early phases of development
- C it results in the formation of a pair-bond between mates
- D it ensures reproductive success of the species