

Muscles

- 1) What are the differences between tendons and ligaments? (2)
- 2) Why do skeletal muscles work in antagonistic pairs to move a bone? (2)
- 3) Draw the ultrastructure of a skeletal muscle showing the muscle fibres, myofibrils, myofilaments, sarcolemma, sarcoplasm, transverse (T) tubules, mitochondria, sarcoplasmic reticulum and the multinucleated pattern? Give the functions of each labelled part. (10)
- 4) What is a sarcomere? (1)
- 5) Draw a fully labelled sarcomere? (6)
- 6) Explain how the contracted and relaxed sarcomeres are different? Use a diagram to help explain your answer as well. (6)
- 7) Describe the sliding filament theory for how muscles contract? (6)
- 8) Where and why is ATP needed in muscle contraction? (4)
- 9) What is rigor mortis and why does it take place? (3)
- 10) What are the roles of calcium ions, troponin and tropomyosin during muscle cell contraction? (4)
- 11) Amlodipine is a drug that blocks calcium ion channels. What effect will this drug have on muscle contraction and why? (3)
- 12) What are the differences between fast and slow twitch muscle fibres? (6)
- 13) Using your knowledge of muscles, explain how muscle relaxants such as anaesthetics can work? (4)
- 14) Draw, describe and explain how the neuromuscular junction works? (4)
- 15) Why are the myosin heads referred to as 'globular'? (2)
- 16) What is the ratchet/sweeping mechanism? (2)
- 17) What are the 3 broad groups of muscles and what are some of their differences? (4)
- 18) Why are proteins important for muscle function? (4)

Total: /73