**11.2 – Muscles and Movement**

Text Reference: Raven – Chapter 47: 47.3 – Joints and skeletal movement/ 47.4 – Muscle Contraction

1. Explain why muscles occur in antagonistic pairs.
2. Distinguish between a tendon and a ligament?
3. Outline the functions of cartilage and synovial fluid in the elbow joint.
4. Compare the movement of a hinge joint and a ball-and-socket joint.
5. Explain how actin and myosin filaments produce the striped appearance of skeletal muscle.
6. Explain the contraction of skeletal muscle. What is the role of actin and myosin? Include the roles of the proteins involved, Ca2+, and ATP.
7. Label the structures of the sarcomere:



a.

b.

c.

d.

e.

1. Identify the number of complete number of sarcomeres in this EM image:



Sarcomeres =

1. Compare these two electron micrographs of a skeletal muscle sarcomere.

|  |  |  |
| --- | --- | --- |
| Contracted or relaxed? |  |  |
| Sarcomere length |  | Shorter |
| Z-bands |  | Closer |
| H-bands | No change |
| Light bands |  |  |
| Dark bands | No change |

1. Deduce the relative roles of actin and myosin fibres from this image:
2. Myosin fibres move, actin fibres remain in position.
3. Actin fibres move, myosin fibres remain in position.
4. Both actin and myosin fibres move.
5. Neither actin nor myosin fibres move.