1. Which of the following is a behavioral property of muscle tissue?
A. ability to develop tension
B. extensibility
C. irritability
D. all of the choices are correct

2. Which of the following is a unique behavioral property of muscle tissue?
A. ability to develop tension
B. extensibility
C. irritability
D. all of the choices are correct

3. Where is the series elastic component (SEC) of a muscle found?
A. tendons
B. ligaments
C. muscle membrane
D. all of the choices are correct

4. The elasticity of human skeletal muscle tissue is believed to be due primarily to which of the following?
A. the parallel elastic component
B. the series elastic component
C. the continuous elastic component
D. the active elastic component

5. Which of the following most accurately describes a motor unit?
A. a single muscle fiber and a single motor neuron
B. a single motor neuron and all muscle fibers it innervates
C. a single muscle fiber and several motor neurons
D. none of the choices are correct

6. Which of the following statements is/are true?
A. Pennate muscles are capable of producing more tension per unit of cross-sectional area than parallel muscles.
B. Parallel muscles are capable of producing more range of motion than pennate muscles.
C. Both of the statements are true.
D. Neither of the statements is true.

7. Which of the following does not characterize a pennate muscle?
A. relatively strong
B. fibers parallel to long axis of muscle
C. relatively low range of motion
D. all of the choices are true
8. Which of the following statements is true?
A. When movement is slow, slow twitch fibers are recruited first.
B. When movement is fast, fast twitch fibers are recruited first.
C. Both of the statements are true.
D. None of the statements are true.

9. What type of muscle contraction is employed by the elbow flexors when slowly lowering your backpack to your desk?
A. concentric
B. eccentric
C. isometric
D. isokinetic

10. During the kicking and follow-through phases of a punt, the quads are experiencing what type of contraction?
A. concentric
B. eccentric
C. isometric
D. isokinetic

11. A contraction in which there is not a change in length is called what?
A. dynamic
B. isometric
C. concentric
D. isokinetic

12. A muscle directly involved in causing a segment to move is called what?
A. agonist
B. antagonist
C. neutralizer
D. stabilizer

13. During the down phase of a knee extension exercise, what role does the hamstring group play?
A. agonist
B. antagonist
C. stabilizer
D. neutralizer
14. When flexing the elbow, the biceps brachii, brachioradialis, and brachialis are the three major agonists recruited to perform this movement because all cause flexion at the elbow. However, the biceps also cause supination, an undesired movement. Therefore another muscle acting as a ________, causing ________ must be recruited to prevent the undesired motion.
A. stabilizer, extension
B. neutralizer, extension
C. stabilizer, pronation
D. neutralizer, pronation

15. Which of the following types of muscle tension is commonly used as a braking mechanism to slow limb movement?
A. eccentric
B. isotonic
C. concentric
D. isometric

16. In which of the following activities do the biceps brachii function as antagonists?
A. straightening the elbow during a push-up
B. straightening the elbow during a pull-up
C. curling a barbell from the floor to waist height
D. both straightening the elbow during a push-up and a pull-up

17. Which type of muscle could serve as an antagonist of a flexor?
A. abductor
B. adductor
C. extensor
D. rotator

18. Which of the following types of strength training is particularly associated with subsequent muscular soreness?
A. concentric
B. eccentric
C. isometric
D. all of the choices are correct

19. Which of the following time periods is termed electromechanical delay?
A. the time required for conduction of the nerve impulse to the neuromuscular junction
B. the time required for the nerve impulse to cross the neuromuscular junction
C. the time required for the muscle to initiate the development of tension after receipt of the nerve impulse
D. the time required for a muscle to reach peak tension after the development of tension is initiated
20. Which of the following statements represents the force-velocity relationship for muscle tissue?
A. contraction is faster when the load is heavier
B. contraction is slower when the load is heavier
C. contraction is slower when the load is lighter
D. the speed of contraction is not affected by the nature of the load

21. Which of the following terms best describes the rate of torque production at a joint?
A. mechanical work
B. muscular power
C. muscular energy output
D. muscular strength

22. During the execution of a pull-up when the chin is over the bar, which force exerted by the biceps brachii is greatest at the elbow?
A. the rotary force
B. the stabilizing force
C. the dislocating force
D. the "pinching" force

23. The component force which is parallel to the moving bone and acts to pull the bones together at the joint is called what?
A. curvilinear force
B. stabilizing force
C. rotary force
D. dislocating force

24. Which of the following is true regarding the parallel elastic component (PEC) of muscular elasticity?
A. This component is provided by the muscle membranes.
B. This component provides resistance when a muscle is passively stretched.
C. This is the component primarily responsible for the elasticity of muscle.
D. This component is both provided by the muscle membranes and provides resistance when a muscle is passively stretched.
E. all of the choices are correct

25. Which behavioral property of muscle tissue is defined as “the ability to respond to a stimulus”?
A. elasticity
B. irritability
C. extensibility
D. contractility
26. A single muscle cell is called what?
   A. fiber
   B. neuron
   C. unit
   D. none of the choices is correct

27. Muscle hypertrophy in humans is primarily due to what?
   A. increase in number of muscle fibers
   B. increase in size of muscle fibers
   C. both an increase in number of muscle fibers and an increase in size of muscle fibers
   D. none of the choices are correct

28. Which of the following is/are characteristic of fast-twitch oxidative glycolytic fibers?
   A. Contraction speed is intermediate (faster than type I but slower than type IIB).
   B. Fatigue rate is intermediate (faster than type I but slower than type IIB).
   C. both contraction speed and fatigue rate are intermediate
   D. none of the choices are correct

29. When an opposing torque at a joint is greater than the torque created by a muscle, what type of contraction occurs in that muscle?
   A. isometric
   B. isotonic
   C. concentric
   D. eccentric

30. Which of the following is a potential disadvantage of multi-joint muscles?
   A. active insufficiency
   B. passive insufficiency
   C. both active and passive insufficiency
   D. none of the choices are correct

31. When the wrist is flexed, the finger flexors cannot produce as tight a fist as when the wrist is in a neutral position. This is an example of what?
   A. active insufficiency
   B. passive insufficiency
   C. both active and passive insufficiency
   D. none of the choices are correct

32. The force-velocity relationship implies which of the following?
   A. It is impossible to move a heavy resistance at a fast speed.
   B. It is impossible to move a light load at a slow speed.
   C. It is impossible to move both a heavy resistance at a fast speed and a light load at a slow speed.
   D. none of the choices are correct
33. In human skeletal muscle, force generation capability is highest in which of the following conditions?
   A. muscle is at resting length
   B. muscle is slightly shortened
   C. muscle is slightly lengthened
   D. muscle length is irrelevant to force production

34. Which of the following likely contributes to the stretch-shortening cycle?
   A. the series elastic component
   B. muscle spindle activity
   C. both the series elastic component and the muscle spindle activity
   D. none of the choices are correct

35. Which of the following is true regarding the stretch-shortening cycle?
   A. When a muscle is stretched just prior to contraction, the resulting contraction is more forceful.
   B. An eccentric contraction is followed by a concentric contraction.
   C. The SSC promotes storage of elastic energy.
   D. both when a muscle is stretched just prior to contraction, the resulting contraction is more forceful and an eccentric contraction is followed by a concentric contraction
   E. all of the choices are correct

36. The amount of torque a muscle group can generate at a joint is used to measure what?
   A. muscular power
   B. muscular endurance
   C. muscular strength
   D. muscular flexibility

37. The torque of a muscle (rotary component) is greatest in what position?
   A. when the moment arm is longest
   B. when the muscle insertion is 90° to the bone
   C. both when the moment arm is longest and when the muscle insertion is 90° to the bone.
   D. position does not effect torque

38. During the first 12 weeks of resistance training, strength gains are due primarily to what?
   A. improved innervation of the muscle
   B. increase in cross-sectional area
   C. both improved innervation of the muscle and increase in cross-sectional area.
   D. none of the choices are correct
39. The opposite of muscular endurance is what?
   A. muscular strength
   B. muscular fatiguability
   C. muscular power
   D. muscular flexibility

40. Which of the following is/are characteristic of muscle fatigue?
   A. reduction in muscle force
   B. reduction in shortening velocity
   C. prolonged relaxation of motor units between recruitment
   D. both reduction in muscle force and reduction in shortening velocity
   E. all of the choices are correct