TRUE/FALSE. Write 'T' if the statement is true and 'F' if the statement is false. Please mark "A" for True and "B" for false on your scantrons. Please remember to JUSTIFY your Falses.

1) A motor neuron and all the muscle cells that it stimulates are referred to as a motor end plate. 1) ____
2) A contraction in which the muscle does not shorten but its tension increases is called isometric contraction. 2) ____
3) One of the functions of skeletal muscle contraction is production of heat. 3) ____
4) The calcaneal tendon (Achilles tendon) is the largest tendon in the body. 4) ____
5) Muscles connecting to the hyoid bone are important for swallowing and speech. 5) ____
6) The muscles of facial expression insert into skin or other muscles, not bones. 6) ____
6a) Muscle fiber contraction is "all or none". ____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

7) Which of the following movements is performed by obicularis oculi muscles? 7) ____
   A) kissing  B) laughing  C) shaking your head  D) winking

8) Smiling requires the use of which of the following muscles? 8) ____
   A) trapezius  B) zygomaticus  C) masseter  D) latissimus dorsi

9) This type of muscle is found in the heart. 9) ____
   A) skeletal muscle  B) smooth muscle  C) cardiac muscle

10) A muscle group that works with and assists the action of a prime mover is a(n): 10) ____
    A) antagonist and synergist  B) fixator only  C) antagonist only  D) synergist only

11) While doing "jumping jacks" during an exercise class, your arms and legs move laterally away from the midline of your body. This motion is called: 11) ____
    A) abduction  B) flexion  C) circumduction  D) adduction

12) Smooth muscle cells are: 12) ____
    A) striated  B) involuntary  C) cylindrical  D) branched

13) The plasma membrane of a skeletal muscle cell is called the: 13) ____
    A) sarcoplasmic reticulum  B) sarcomere  C) sarcoplasm  D) sarcolemma
14) The name given to the specialized endoplasmic reticulum of the skeletal muscle cell is 

- A) sarcolemma  B) sarcoplasmic reticulum  
- C) intermediate filament network  D) myofibrillar network

15) Which one of the following is the action of the orbicularis oris:

- A) draws the eyebrows together  
- B) closes, purses, and protrudes the lips  
- C) pulls the lower lip down and back  
- D) allows blinking, squinting, and various other protective mechanisms for the eye

16) Acetylcholine is:

- A) a neurotransmitter that stimulates skeletal muscle  
- B) an oxygen-binding protein  
- C) an ion pump on the postsynaptic membrane  
- D) a component of thick myofilaments

17) The ____________ attaches a muscle to bone.

- A) fasicle  B) cartilage  C) ligament  D) tendon

18) When the biceps flex the elbow, the triceps oppose the movement. The triceps is an example of a _______ in this situation.

- A) antagonist  B) prime mover  C) protagonist  D) synergist

19) Where in the cell is ATP produced?

- A) nucleus  B) mitochondria  C) ribosomes  D) ER

20) Which of the following define pronation?

- A) The type of movement in which the forearm rotates so that the palms face posteriorly  
- B) The type of movement that increases the angle between two bones  
- C) The type of movement in which the forearm rotates so that the palms face anteriorly  
- D) The type of movement that decreases the angle between two bones

21) The condition of skeletal muscle fatigue can be best explained by:

- A) insufficient quantities of ATP  
- B) the all-or-none law  
- C) the build up of carbon dioxide  
- D) inadequate numbers of mitochondria

22) Which of the following define supination?

- A) The type of movement in which the forearm rotates so that the palms face anteriorly  
- B) The type of movement that increases the angle between two bones  
- C) The type of movement that decreases the angle between two bones  
- D) The type of movement in which the forearm rotates so that the palms face posteriorly

23) Which of the following movements is performed by the frontalis muscle?

- A) smiling  B) frowning  
- C) chewing  D) raising your eyebrows

24) Which of the following is NOT a function of the muscular system:

- A) maintenance of posture  B) hematopoiesis  
- C) stabilization of joints  D) generation of heat
25) The biceps and the deltoid muscle are of this type.
   A) skeletal muscle  B) smooth muscle  C) cardiac muscle

26) The movement opposite to abduction is:
   A) rotation  B) adduction  C) circumduction  D) supination

27) Which of these muscles is NOT located in the head:
   A) sartorius  B) temporalis  C) zygomaticus  D) frontalis

28) Which of the following muscles closes the jaw:
   A) zygomaticus  B) frontal  C) sternocleidomastoid
   D) masseter

29) Voluntary muscle tissue is;
   A) dense irregular  B) skeletal muscle  C) cardiac muscle
   D) smooth muscle

30) This type of muscle makes up the walls of hollow organs, such as the intestines.
   A) skeletal muscle  B) smooth muscle  C) cardiac muscle

31) Anaerobic glycolysis occurs without:
   A) glucose  B) carbon dioxide  C) oxygen  D) ATP
Use the diagram above to answer the following questions.

32) Identify the letter that indicates the Orbicularis oris.
   A) A   B) B   C) C   D) D   E) E

33) Identify the letter that indicates the Masseter.
   A) A   B) B   C) C   D) D   E) E

34) Identify the letter that indicates the Zygomaticus.
   A) A   B) B   C) C   D) D   E) E

35) Identify the letter that indicates the Temporalis.
   A) A   B) B   C) C   D) D   E) E
Use the diagram above to answer the following questions.

36) Identify the letter that indicates the Deltoid.
   A) A   B) B   C) C   D) D   E) E

37) Identify the letter that indicates the Pectoralis major.
   A) A   B) B   C) C   D) D   E) E

38) Identify the letter that indicates the Sternocleidomastoid.
   A) A   B) B   C) C   D) D   E) E

ESSAY. Write your answer in the space provided.

39) Bodybuilders are known for their "great quads." Describe the quadriceps muscles.

40) A woman mentions to her friend that another person on the beach has "great abs." What is she talking about?

41) How does an antagonist differ from a prime mover (agonist)? How is it the same?

42) A wide receiver for a college football team pulled a hamstring muscle. What muscles could be affected and what would the effect be?

43) Only ________ muscle cells are multinucleated.

44) The end of the muscle that is attached to the part of the body in motion when a muscle contracts is called the ________.

45) Briefly explain the sources of energy for a one-minute sustained muscle contraction.

46) Describe the difference between muscle tension, muscle contraction and a muscle twitch.
47) The nurse encourages the patient to do his own activities of daily living such as bathing, eating, dressing, and toileting activities. How do these activities promote physical conditioning?

48) What is muscle fatigue? What causes this and how is it overcome?

49) Explain how isometric and isotonic contractions differ and give an examples of each.

50) Describe the two processes used to make ATP. (gives the names for each, when they are used, how much ATP they provide, and the benefit of each.)

51) What do the words origin and insertion mean, when talking about muscles?

52) Give an example of:
  a) a muscle, b) its function, c) its origin, d) its insertion.

53) Describe all 6 types of body movement & types of special movement = 13! Give examples of each.

54) Define all 4 types of muscles. Give examples of each.

55) Explain the difference between resistance and endurance training.

56) How many seconds worth of ATP is stored by the muscle cell?

57) Define muscle tone.

58) What is the name (and nickname) of the neurotransmitter that causes skeletal muscle to contract?

59) Define a motor unit.

60) Define neuromuscular junction.

61) How forcefully a muscle contracts depends on ____________________________

62) Define the 4 special properties that enable muscle cells to perform their duties.

63) How are the 3 different kind of muscle cells alike? How are they different?

64) List 3 prefixes which mean "muscle" and "flesh". Give examples of words that we learned in this chapter that use those prefixes.

65) What are 4 characteristics of skeletal muscle cells?

66) Differentiate tendons and aponeuroses.

67) What are 5 characteristics of smooth muscle cells?

68) What are 5 characteristics of cardiac muscle cells?

69) List and describe the functions of the unique organelles in a muscle cell.

70) Define I-band and A-band in the muscles.
1) FALSE
2) TRUE
3) TRUE
4) TRUE
5) TRUE
6) TRUE
7) D
8) B
9) C
10) D
11) A
12) B
13) D
14) B
15) B
16) A
17) D
18) A
19) B
20) A
21) A
22) A
23) D
24) B
25) A
26) B
27) A
28) D
29) B
30) B
31) C
32) D
33) E
34) D
35) B
36) B
37) C
38) A
39) These are the muscles of the front and sides of the thigh, and include the rectus femoris and the lateral, medial, and intermediate vastus muscles.
40) The woman is referring to well-developed rectus abdominis muscles. This is a term coined by bodybuilders and refers to the bulging muscles between the tendinous intersections.
41) A prime mover is the muscle that causes the desired movement to occur. An antagonist is a muscle that opposes the action of the prime mover in a given movement. If, however, the direction of movement reverses, the former antagonist is now the prime mover and the former prime mover is now the antagonist.
42) The muscles include the biceps femoris, semitendinosus, and semimembranosus. They are important flexors of the leg and extensors of the thigh. Injuries here could make it impossible to run properly or to extend the thigh.
43) skeletal
44) insertion
45) 1. The first 4-6 seconds of energy come from stored ATP in the muscle cell.
   2. 6-15 seconds of energy come from the transfer of creatine phosphate and ADP (which come from the first few
   seconds of burn) to form additional ATP.
   3. 15-60 seconds of energy come from glycolysis, which by now has begun full production of ATP from glucose.
46) A muscle twitch is the response of a motor unit to a single action potential from a motor neuron. A twitch consists of
    three phases, latent period, contraction and relaxation. Contraction is simply the activation of the myosin cross bridge
    cycle and tension is the force that is excreted by this contractions.
47) These activities are isotonic exercises in which muscle tension is constant and then shortens to produce muscle
    contraction and movement. Because the muscles contract, the shape, size, and strength of the muscles are maintained
    as well as joint mobility.
48)
49) 1. Isometric contractions are contractions in which the muscles do not shorten. An example of an isometric contraction
    is pushing against a wall with bent elbows. The muscles cannot shorten since the wall doesn't move.
   2. Isotonic contractions occur when muscles shorten and movement occurs due to the sliding of the myofilaments.
    Flexion and extension of the arm are just two examples of isotonic contractions.
50)