Name:__________________________________________________________________________

Laboratory Time:________________________________________________________________

Instructions:

1. Write your ID Number on the answer sheet.

2. Block out the correct letter on the answer sheet after carefully reading the question. Use #2 or soft pencil to mark your answer sheet. When erasing, make sure the erasure is complete and clean, otherwise, the computer will mark you answer wrong.

3. Write your name on the test and the answer sheet.

4. Do your own work!

5. Only one letter answer is correct

6. There are a total of 25 questions, worth 2 points each, for a total of 50 points.
1. When the sarcomere of a skeletal muscle is at an optimal length, what will happen if the muscle is stimulated to contract?
   a. There will be no muscular contraction
   b. Muscular contraction or tension will be at its maximum
   c. Irregular muscular contraction and tension will be seen
   d. There will be weak muscular contraction and little tension produced

2. In ___________ muscle (s), calcium comes directly from sarcoplasmic reticulum while in ___________ muscle (s), calcium comes from sarcoplasmic reticulum and from extracellular fluid:
   a. Smooth muscle, skeletal muscle
   b. Skeletal muscle, cardiac muscle
   c. Smooth muscle, cardiac muscle
   d. Contracted muscles, relaxed muscles

3. A toxin or a poison that blocks acetylcholine (Ach) release from the synaptic vesicles will cause:
   a. Strong muscular contractions
   b. Muscular atrophy
   c. Muscle paralysis
   d. Tetanic contractions
   e. None of the above

4. An acetylcholinesterase inhibitor will produce the following conditions in the skeletal muscles:
   a. Muscular hypertrophy
   b. Strong muscle tone
   c. Strong muscular contractions or tetanus
   d. Inhibition of muscular contractions
   e. None of the above

5. In the skeletal muscle, what binds oxygen?
   a. Creatine phosphate
   b. Calmodulin
   c. Calsequestrin
   d. Myoglobin
   e. Sarcoplasm

6. The type of contraction that gradually stabilizes your joints when you stand is called ___________. This type of contraction produces ___________ without ___________.
   a. Isometric, tension, movement
   b. Tonic, movement, fatigue
   c. Treppe, increased tension, fatigue
   d. Isotonic, movement, tension
   e. Isometric, movement, tension
7. Oxygen debt will occur during:
   a. Anaerobic exercises
   b. Aerobic exercises
   c. ATP formation
   d. Creatine phosphate production

8. A muscle that shows atrophy could have been exposed to the following:
   a. Inactivity
   b. Electrical stimulation
   c. Denervation
   d. A&C
   e. All of the above

9. Which statement describes muscle tone correctly?
   a. Increased tension in the muscle with increased movement
   b. Increased movement of muscles with increased tension
   c. Random activation of different muscle fibers without producing movement
   d. The condition of athletes' muscles after intensive training

10. Individual skeletal muscle fibers are directly innervated by nerve fibers. Cardiac muscles show autorhythmicity and can function fully without nerve innervation.
    a. Both sentences are true
    b. The first sentence is false but the second sentence is correct
    c. Both sentences are false
    d. The first sentence is true but the second sentence is false.

For questions 11 through 18, match the most correct answers. Each answer can be used once or more than once.

   a. Smooth muscle fibers
   b. Cardiac muscle fibers and smooth muscle fibers
   c. All muscle fibers (skeletal, cardiac, smooth)
   d. Skeletal muscle fibers
   e. Cardiac muscle fibers

11. These muscle fibers contain gap junctions
12. These muscle fibers need extracellular calcium for contraction
13. The muscle fibers exhibit long refractory period
14. These muscle fibers contain actin and myosin filaments
15. These muscle fibers show slow contraction and slow relaxation
16. These muscle fibers are innervated individually by nerve fibers
17. These muscle fibers show autorhythmicity
18. These muscle fibers use calmodulin to bind calcium
19. Sufficient amounts of a stimulatory neurotransmitter will cause:
   a. Depolarization of the axon or neuron
   b. Increase the negativity in the neuron or axon
   c. Decrease the rate of conduction of action potential
   d. A & B

20. The speed of nerve impulse along the nerve fiber will depend primarily on the:
   a. Strength of the stimulation
   b. Length of the axon
   c. Myelination
   d. Stimulus source
   e. Site of termination of the axon

21. The Na/K pump is located in the:
   a. Synaptic cleft
   b. Nerve or axon plasma (cell) membrane
   c. In the neurotransmitter vesicles
   d. In the myelin sheath
   e. In the gap junctions

22. The period after an initial stimulus when a neuron is NOT sensitive to another
    stimulus is called the refractory period. Which statement describes this event
    correctly:
    a. All axons have the same refractory period
    b. The larger the axon, the shorter the refractory period
    c. The shorter the refractory period, the more frequent conduction of
       impulses
    d. All of the above
    e. B and C

23. The reason that the impulses do not pass from the postsynaptic region to the
    presynaptic region is:
    a. The presence of gap junction in the presynaptic membrane
    b. The absence of neurotransmitters in the post synaptic region
    c. The absence of neureceptors in postsynaptic region
    d. The absence of neureceptors in the presynaptic membrane

24. Which statement about the saltatory conduction is correct:
    a. Saltatory conduction occurs in the unmyelinated axons
    b. Saltatory conduction jumps from node of Ranvier to the node of Ranvier
    c. This conduction increases the speed of nerve impulse conduction
    d. All above
    e. B and C
25. A graded or local membrane potential will exhibit the following characteristics:
   a. It will not reach the threshold level and there will be small change from the resting membrane potential
   b. There will be depolarization of the membrane and conduction of an action potential
   c. During graded potential, the inside of the cell can register +30mVolts
   d. B and C
   e. None of the above