

**Biology 251**  
**October/November 2011**  
**Answers to PRACTICE Exam Three**

Bold = 2 pt answer *Italics = 1/2 point answer*

1. What structure in skeletal muscle permits action potentials to penetrate deep into the muscle cell?
  - a) endoplasmic reticulum
  - b) sarcoplasmic reticulum
  - c) motor end plate
  - d) sarcomere
  - e) **T-tubules**
  
2. What molecule initiates cross bridge cycling in skeletal muscle by binding to troponin?
  - a) Na<sup>+</sup>
  - b) K<sup>+</sup>
  - c) **Ca<sup>++</sup>**
  - d) Phosphate
  - e) Acetylcholine
  
3. The link between actin and myosin in skeletal muscle is broken when the myosin head binds a molecule of \_\_\_\_\_.
  - a) Na<sup>+</sup>
  - b) K<sup>+</sup>
  - c) Ca<sup>++</sup>
  - d) ADP
  - e) **ATP**
  
4. During skeletal muscle contraction, factor(s) that influence whole muscle tension are
  - a) *Number of motor units recruited*
  - b) *Length of fiber at onset of contraction*
  - c) *Frequency of stimulation*
  - d) **all the above**
  - e) only a and b
  
5. Creatine phosphate is an important source of skeletal muscle ATP because
  - a) it catalyzes important reactions in aerobic metabolism that produce ATP
  - b) it catalyzes important reactions in anaerobic metabolism that produce ATP
  - c) **it is catalyzed in the presence of ADP to produce creatine and ATP**
  - d) both a and b
  - e) both a and c
  
6. Which of the following statements about tetanus in skeletal muscle is true?
  - a) *It is a contraction of maximum strength*
  - b) *All fibers in a muscle are recruited during tetanus*
  - c) *A maximum number of cross bridge sites are uncovered*
  - d) Only a and c are true
  - e) **All the above are true**
  
7. During smooth muscle contraction Ca<sup>++</sup> activates
  - a) sarcomeres
  - b) dense bodies
  - c) **calmodulin**
  - d) troponin
  - e) myosin kinase

8. Single-unit smooth muscle fibers are electrically linked by \_\_\_\_\_.
- a) the somatic nervous system
  - b) the autonomic nervous system
  - c) **gap junctions**
  - d) tight junctions
  - e) slow wave potentials

Question 9 refers to the following:

- 1. Skeletal
- 2. Single Unit Smooth
- 3. Multi Unit smooth
- 4. Cardiac

9. What type of muscle is (are) controlled by the autonomic nervous system?
- a) 1
  - b) 2, 3
  - c) 4
  - d) **2, 3, 4**
  - e) 1, 2, 3, 4
10. Blood in the venae cavae flows into the
- a) **Right atrium**
  - b) Left atrium
  - c) Right ventricle
  - d) Left ventricle
  - e) Aorta
11. A rapid repolarization of the membrane caused by  $K^+$  leaving the cell occurs in
- a) *neurons*
  - b) *autorhythmic cardiac cells*
  - c) *contractile cardiac cells*
  - d) **all the above**
  - e) only a and c
12. Depolarization of the membrane caused by  $Na^+$  entering the cell when threshold is reached occurs
- a) *In neurons*
  - b) *In autorhythmic cardiac cells*
  - c) *In contractile cardiac cells*
  - d) *In all the above*
  - e) **In only a and c**
13. During the ST segment ventricular pressure is \_\_\_\_\_ pressure in the arteries and atrial pressure is \_\_\_\_\_ ventricular pressure.
- a) higher than; higher than
  - b) less than; higher than
  - c) equal to; higher than
  - d) **higher than; less than**
  - e) less than; less than
14. so blood \_\_\_\_\_.
- a) **flows into the arteries from the ventricles**
  - b) flows into the atria from the ventricles
  - c) flows into the ventricles from the atria
  - d) both a and c
  - e) none of the above

15. Stroke volume is equal to
- end diastolic volume
  - end systolic volume
  - end systolic volume + end diastolic volume
  - end diastolic volume - end systolic volume**
  - end systolic volume - end diastolic volume
16. Diffusion in the capillaries is facilitated by
- thin capillary walls**
  - small surface area of capillaries
  - high blood velocity through capillaries
  - all the above
  - a and b only
17. What percent of your blood plasma volume passes through your lymph system each day?
- About 10%
  - About 25%
  - About 50%
  - About 75%
  - About 100%**
18. Which blood vessel experiences the highest pressure? Which experiences the lowest pressure?
- Capillaries; veins
  - Arteries; veins**
  - Arteries; capillaries
  - Arterioles; veins
  - Arterioles; capillaries
19. Doubling the radius of a vessel will
- increase the flow rate through the vessel by a factor of 2
  - increase the flow rate through the vessel by a factor of 4
  - decrease the flow rate through the vessel by a factor of 2
  - increase the flow rate through the vessel by a factor of 16**
  - not change the flow rate through the vessel
20. The major component of plasma is
- Water**
  - Proteins
  - Na<sup>+</sup>
  - Cl<sup>-</sup>
  - Nutrients and waste
21. When mean arterial blood pressure drops
- Baroreceptors send an afferent signal to the cardiovascular control center in the medulla*
  - Baroreceptors send an efferent signal to effector organs
  - The cardiovascular control center sends efferent signal to effector organs*
  - Both a and c are true**
  - None of the above are true