

# READ THE DIRECTIONS

**BIOLOGY: A HUMAN APPROACH**

**EBIO 1040**

NAME \_\_\_\_\_

**EXAMINATION II  
28, 2011**

**March**

**INSTRUCTIONS:** Use a **SOFT-LEAD** pencil (#1 or #2) for writing in and mark-sensing your name, CU I.D. number, lecture section number and answers on the exam answer sheet, erasing completely when necessary. For the lecture section, use either 0001 or 0002 in the “1,2,3,4” slot on the top left of the sheet. An answer key and test scores will be posted in the glass cabinet at the foot of the stairway in Ramaley across from room **N1B54 (=N.E. corner basement)**, hopefully, by Wednesday noon. Be sure to guess any time you don't know an answer. There are no deliberately tricky questions, so if something doesn't make sense to you, ask one of the proctors. On the bottom of your **answer sheet** you may defend your answer to any question you feel is ambiguous, but you must **FIRST** mark-sense your best guess among the choices. To ensure your not running out of time, complete the entire exam before defending a specific answer. Expect to have the equivalent of one question deducted from your exam score if you are **not** taking the exam in the proper location!

Your cell phone is to be turned off and if you must wear a hat, turn the bill to the back. You are **not** to use ipods, cell phones, digital media players, Zunes, Blackberrys, computers, calculators or mobile devices of any kind during this exam. There cannot be any ear phones, ear pieces, *etc.*, in or around your ears at any time. Any answers you have put on your answer sheet or exam are to be covered in such a way that no one can see them, and do not let your eyes wander.

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**STOP – MAKE SURE YOU ARE SITTING IN THE PROPER LECTURE HALL.**

**The 9:30 a.m. TR LECTURE SESSION (#1) use DUAN G1B20**

**The 12:30 p.m. TR LECTURE SESSION (#2) use DUAN G1B30**

**Please spread out as much as possible in these lecture halls.**

**KEEP YOUR ANSWERS AND ANSWER SHEET COVERED AT ALL TIMES**

1. All of the following are characteristic of the pulmonary membrane **except**:
  - A. It is the site of gaseous exchange.
  - B. It covers an extensive area.
  - C. Upon contraction, we breathe in.
  - D. It is thin.
  - E. It is sensitive to certain toxic chemicals.
  
2. Blood that flows through the capillaries adjacent to the alveolar sacs:
  - A. Becomes low in oxygen and high in CO<sub>2</sub>
  - B. Becomes high in oxygen and low in CO<sub>2</sub>
  - C. Has equal amounts of oxygen and carbon dioxide
  - D. Carries only oxygen and carbon dioxide
  - E. Has a lower than average protein concentration

3. The sheet of tissue between the thoracic and abdominal cavities is:
- A. Involved in breathing
  - B. Muscular tissue
  - C. Called the diaphragm
  - D. All of the above
  - E. Only two of the above are true.
4. In this diagram of gas exchange in the lungs, the bulbous structure (a) is called a/an \_\_\_\_\_ and the highest CO<sub>2</sub> levels would be found at the \_\_\_\_\_ end of the capillary (c).
- A. Alveolus, right
  - B. Alveolus left
  - C. Ventricle, left
  - D. Ventricle, right
  - E. Arteriole, left
5. The exchange of oxygen and carbon dioxide in the lungs is **not** influenced by:
- A. Respiratory Control Center in the medulla
  - B. CO<sub>2</sub> and O<sub>2</sub> concentration in the blood
  - C. The oxygen sensors in the aorta/carotids
  - D. pH of the blood
  - E. The hemoglobin concentration in the blood platelets
6. **Pharyngitis** refers to:
- A. A swollen voice box
  - B. An irritated glottis
  - C. A sore (inflamed) throat
  - D. Inflamed adenoids
  - E. Irritated nasal passages
7. Cigarette smoking is **not** directly associated with which of the following?
- A. Bronchitis
  - B. Pulmonary edema
  - C. Lung cancer
  - D. Emphysema
  - E. Cardiovascular disease
8. All of the following statements regarding lung cancer are true **except**:
- A. There are no obvious warning signs for early detection.
  - B. The incidence could be significantly reduced if people stopped smoking.
  - C. Once lung cancer has been diagnosed, the average person will live about eight years.
  - D. Lung cancer and smoking are highly correlated with each other.
  - E. The incidence of lung cancer among females is increasing in this country.
9. Emphysema is characterized by:
- A. Blockage of the pulmonary arteries
  - B. Fluid in the alveolar sacs
  - C. Abnormal (malignant) growth in the lungs
  - D. An osmotic imbalance in the lungs
  - E. Deterioration of the pulmonary membrane
10. The combined ingestion of **alcohol** and **sleeping pills** is extremely dangerous because:
- A. It produces hyperventilation
  - B. The synergistic effect depresses the Respiratory Control Center.
  - C. Relatively small amounts in combination can cause death.
  - D. Activity of the hypothalamus is depressed.
  - E. Both B and C are correct.

11. Which of the following is **not** an immediate **cardiopulmonary** adjustment to reduced oxygen?
- A. Increased cardiac output
  - B. Increased alveolar ventilation
  - C. Blood fluid loss to the lymph
  - D. Decreased motor function
  - E. Increased rate of RBC synthesis
12. Acclimatization to high elevations involves all of the following **except**:
- A. Increased number of red blood cells
  - B. Increased rate of breathing
  - C. Blood CO<sub>2</sub> regulated at a lower level
  - D. Tissues adjusting so they need less O<sub>2</sub>
  - E. Kidneys adjusting pH to a new homeostatic level
13. Which of the following statements is **false**?
- A. The brain medulla regulates respiratory rate by monitoring blood CO<sub>2</sub> concentration.
  - B. CO<sub>2</sub> concentration is related to pH.
  - C. Blood O<sub>2</sub> concentration is the primary regulator of respiration.
  - D. CO<sub>2</sub> build-up in the body is toxic.
  - E. Regardless of altitude, there is normally 21% O<sub>2</sub> in the air.
14. Which of the following is **false**?
- A. Some diving mammals can stay submerged for over an hour.
  - B. A **warm** water drowning victim is more likely to be revived than a victim in cold water.
  - C. Altitude sickness is not commonly fatal.
  - D. Pulmonary edema can be life threatening.
  - E. Severe chest pains may be a symptom of respiratory stress at high altitude.
15. The best way to explain people surviving more than 30 minutes under cold water in the case of **near drownings** is:
- A. The mammalian diving reflex
  - B. Counter-current heat exchange
  - C. Expulsion of water by the pulmonary membrane
  - D. Some people's ability to hold their breaths for long periods of time
  - E. A special response and redirection of the synaptic impulses in some neurons.
16. Which is **not** true of reflexes (or of a reflex arc)?
- A. A reflex arc is a structural unit of the nervous system involving a sensory neuron, an inter neuron and a motor neuron.
  - B. Results in a response that occurs automatically to a specific stimulus
  - C. An example is an eye blinking.
  - D. An example is vomiting.
  - E. Help us explain instinctive behaviors
17. In a neuron there are many **dendrites**. This allows the neuron to:
- A. Be capable of rapid firing
  - B. Fire more than once
  - C. Carry the impulse long distances
  - D. Develop a larger resting potential
  - E. Accept information from many neurons
18. The **white matter** of the nervous system appears white due to:
- A. AC accumulation
  - B. Waste products due to high ATP production
  - C. Neuron cell bodies
  - D. Neurotransmitters

C. Schwann cells (mostly fat)

19. The increased intensity of a stimulus is communicated by a single sensory neuron by:
- A. Increasing the number of brain cells to which the message is sent
  - B. Increasing the firing rate
  - C. Changing the threshold of the neuron
  - D. Switching to a more powerful neurotransmitter
  - E. Increasing the velocity of the impulse
20. Which of the following is **false**?
- A. Neurons remove sodium ions by active transport.
  - B. Neurons remove sodium ions by diffusion.
  - C. Neurons remove sodium ions by the sodium pump.
  - D. Active transport requires the use of lots of energy (ATP).
  - E. Active transport is a very selective process.
21. Nervous system communication can readily be altered by **all** of the following **except**:
- A. AC blockers (inhibitors)
  - B. AC-ase blockers (inhibitors)
  - C. Increasing the length of the axons
  - D. Increasing the frequency of action potentials (impulses)
  - E. Depriving the nervous system of adequate oxygen
22. Which of the following statements does **not** refer to neurotransmitters?
- A. They work in very small concentrations.
  - B. They travel by diffusion.
  - C. They are released from synaptic vesicles into axons.
  - D. An example is acetylcholine (AC).
  - E. They carry information from a synaptic bulb to the next cell.
23. A neurotransmitter:
- A. Can inhibit a nerve from firing
  - B. Can stimulate a nerve to fire
  - C. Is quickly reabsorbed intact by the synaptic bulb
  - D. All of the above
  - E. A and B only
24. In **fight or flight** situations:
- A. Epinephrine is released at many natural synapses.
  - B. The sympathetic system is strongly activated.
  - C. The parasympathetic system is strongly activated.
  - D. Both A and B
  - E. Both A and C
25. The synapse has all of the following characteristics **except**:
- A. Is unidirectional
  - B. Chemical transmission
  - C. Transmits information more slowly than impulses
  - D. Can be influenced by foreign chemicals in the body
  - E. Neurotransmitters are released by the dendrites.

26. Which of the following is **false**?
- A. The nervous system message is carried across the synapse by the secretion of a chemical like acetylcholine (AC).
  - B. A single impulse going down a single nerve cell does not differ in strength from any other impulse passing down the nerve cell.
  - C. The impulse flowing down the axon is an electrochemical process.
  - D. The **resting** potential of the neuron does **not** change while the impulse is being transmitted.
  - E. A nervous system message passing through several neurons will always flow in the same direction as any other message passing through these neurons.
27. Which of the following statements about hormones is **false**?
- A. They are chemical messengers.
  - B. They can be effective in very small amounts.
  - C. They are secreted into specialized ducts or tubes which empty into another organ.
  - D. They can act on glands to affect the production of other hormones.
  - E. They are found in plants and animals.
28. Which of the following is **false** about hormones?
- A. They move more slowly than neuronal impulses.
  - B. They are generally secreted by endocrine glands.
  - C. Their function involves body communication.
  - D. They can deliver their message for days at a time.
  - E. They are generally released into synapses.
29. The hypothalamus does **not**:
- A. Control hormone release *via* the pituitary gland.
  - B. Control osmotic pressure.
  - C. Control body temperature
  - D. Control respiration
  - E. Regulate the pituitary gland
30. Which of the following areas of the brain would be primarily associated with the regulation of coordinated muscular activities?
- A. Cerebrum
  - B. Cerebellum
  - C. The brainstem
  - D. Thalamus
  - E. Hypothalamus
31. A blindfolded, split-brained woman holding a key in her **right** hand would be able to do all of the following **except**:
- A. Hear normal conversations with both ears
  - B. Say what she has in her right hand
  - C. Open a lock handed to her
  - D. Setting the key down first, write what she had been holding with her right hand
  - E. Using her left hand, write what she is holding in her right hand



