READ THE DIRECTIONS

BIOLOGY: A HUMAN APPROACH EXAMINATION II NAME_______________________

EBIO 1040, SECS. #0001 & #0002 6:30 PM April 3, 2017

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 number, use either 0001 or 0002 in the “Section ID” slot at the bottom of the answer sheet. An answer key, your percent exam score and the grade cut-offs you will need to calculate your grade will be posted on D2L ASAP. Be sure to guess any time you do not know an answer. There are no deliberately tricky questions, so if something doesn’t make sense to you, ask one of the proctors. Expect to have the equivalent of one question deducted from your exam score if you are not taking the exam in the proper location (See below!)

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 phones, computers, calculators, mobile devices or screens of any kind during this exam. There cannot be any earphones/pieces/pods 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. Note in the “course syllabus” that a low exam score may be dropped in the ten days following Exam II. Use the lavatory before, not during the exam!

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

The 8:30 am TR LECTURE SESSION (0001) use DUAN G1B20
The 12:30 pm TR LECTURE SESSION (0002) use DUAN G1B30
A special room for students needing extra time (6 pm): DUAN G1B35
Please spread out as much as possible in these lecture halls.

KEEP YOUR ANSWERS AND ANSWER SHEET COVERED AT ALL TIMES.

1. People can die when exposed to carbon monoxide (CO) because:
   A. CO combines with oxygen to produce carbon dioxide.
   B. CO destroys red blood cells.
   C. The RCC in the medulla is fooled into thinking the blood has a high oxygen level.
   D. CO binds tightly to hemoglobin, preventing the attachment of O₂.
   E. The pH of the blood is drastically altered.

2. Which of the following is true?
   A. Lung cancer is the only major cancer in the U.S. on the increase today.
   B. Emphysema is the condition of constricted bronchioles.
   C. Pneumonia is the deterioration of lung tissues.
   D. An immediate response to reduced oxygen is an increase in body metabolism.
   E. All of the above are true.

3. A “Café Coronary” is the result of:
   A. Drinking too much coffee
   B. Blockage of the coronary arteries
   C. Getting food caught in the glottis
   D. Mucus accumulation in the bronchi
   E. The “Heimlich Maneuver”
4. Emphysema impairs respiration by:
   A. Reducing the surface area of the pulmonary membrane
   B. Thickening the pulmonary membrane
   C. Causing antibodies to attack red blood cells
   D. Increasing the affinity of hemoglobin for carbon monoxide
   E. Raising the osmotic pressure of the blood

5. An overdose of sleeping pills often causes death because:
   A. The heart pacemaker is inhibited and circulation drops below a critical level.
   B. The cerebrum is irreversibly anesthetized.
   C. The oxygen receptors fail to recognize the decreased oxygen concentration and the person suffocates.
   D. Mass dilation of the arterioles in the body causes a drastic decrease in the blood pressure.
   E. The respiratory control center (RCC) is anesthetized and the person stops breathing.

6. Which of the following does **not** increase the body’s ability to deliver oxygen to the tissues?
   A. Increased production of red blood cells
   B. Reduction of fluid in the blood, increasing the hematocrit
   C. Increased lung capacity
   D. Increases in total blood volume
   E. **All** of the above increase the body’s ability to deliver oxygen.

7. Which of the following concerning the **diving reflex** in endotherms is **false**?
   A. The heart speeds up.
   B. The brain and heart continue to function using oxyhemoglobin – HbO₂
   C. There may be a buildup of lactic acid in the general body cells
   D. Body metabolism drops.
   E. Body temperature may drop.

8. **All** of the following would be considered to be deep-diving endotherms **except**:
   A. Humpback whales
   B. Sperm whales
   C. Weddell seals
   D. Southern elephant seals
   E. Leatherback turtles

9. **Pharyngitis** refers to:
   A. A swollen voice box
   B. An irritated glottis
   C. A sore (inflamed) throat
   D. Inflamed adenoids
   E. Irritated nasal passages

10. Cigarette smoking is **not** directly associated with which of the following?
    A. Bronchitis
    B. Pulmonary edema
    C. Lung cancer
    D. Emphysema
    E. Cardiovascular disease
11. The combined ingestion of **alcohol** and **sleeping pills** is extremely dangerous because:
   A. It produces hyperventilation
   B. The negative synergistic effect depresses the Respiratory Control Center (RCC).
   C. Relatively small amounts in combination can cause death.
   D. Activity of the hypothalamus is depressed.
   E. Both B and C are correct.

12. Reflex arcs:
   A. Explain low-level learning in rats
   B. Occur only in arms and legs
   C. Are not well developed in humans because humans use their learning capacity instead
   D. Can involve neurons which reach 2 feet in length in some adults
   E. Operate only with heat or touch stimuli

13. Which of the following is not a part of the central nervous system?
   A. Cerebrum  B. Medulla oblongata  C. Spinal cord  D. Sensory nerves  E. Hypothalamus

14. At the **initiation** of a nerve impulse, there is an immediate and momentary change in the permeability of a small area of the neuron membrane. The change in permeability first allows:
   A. Sodium ions to flow in
   B. Sodium ions to flow out
   C. Potassium ions to flow in
   D. Potassium ions to flow out
   E. Calcium ions to flow in

15. Which of the following statements about the **reflex arc** is false?
   A. Impulses are carried to the effector via motor neurons.
   B. Impulses are carried to the spinal cord or brain by sensory neurons.
   C. Incoming impulses are usually processed in the hypothalamus.
   D. An inter neuron links incoming and outgoing impulses.
   E. Reflex arcs can explain simple control systems.

16. Acetylcholine (AC):
   A. Is produced and released by the adrenal medulla gland
   B. Is another name for adrenaline
   C. Increases the permeability of some neuronal cell membranes to sodium ions
   D. Always has an excitatory effect
   E. **None** of the above

17. Which is false?
   A. The **synapses** constitute the “weakest” link in the nervous system.
   B. Two common neurotransmitters are norepinephrine and acetylcholine esterase (AC-ase).
   C. Information can go across a synapse in only one direction.
   D. A drug blocking acetylcholine (AC) would be an effective depressant or general anesthetic.
   E. Nerve gases act by blocking acetylcholine esterase (AC-ase).

18. Body areas which would be **inhibited** by the **parasympathetic N.S.** stimulation would include:
   A. Digestive system, skin circulation, kidneys
   B. Skin circulation, kidneys, heart pacemaker
   C. Heart pacemaker, eye iris, skeletal muscles
   D. Skeletal muscles, eye iris, digestive system
   E. Both C and D are correct responses
19. Neurosecretory cells which govern or control endocrine secretions of the anterior pituitary gland are found in the:
   A. Cerebral cortex  B. Adrenal cortex  C. Medulla  D. Posterior pituitary  E. Hypothalamus

20. Which of the following does **not** describe **hormones**?
   A. They are chemical messengers.
   B. They help maintain body homeostasis.
   C. They are transported by the circulatory system.
   D. They are produced in large quantities.
   E. They are produced in one part of the body and have an effect on a different part (i.e., their target organ).

21. An endocrine gland may be distinguished from other glands in the body because it:
   A. Secretes hormones
   B. Has products that go directly into the blood
   C. Can secrete chemicals that regulate activities in widespread parts of the body
   D. Secretes chemicals that may regulate the activity of other endocrine glands
   E. **All** of the above

22. Which of the following brain parts do **not** go together?
   A. Cerebrum : thought
   B. Cerebellum : balance and coordination
   C. Thalamus : relay center
   D. Hypothalamus : body temperature control
   E. Medulla : deep emotions control

23. Which is **false**?
   A. Reflexive behaviors are adaptive in unchanging and/or predictable environments.
   B. Behaviors requiring thinking/learning are adaptive in changing environments.
   C. If the optic and auditory nerves could be successfully crossed, one would first hear the lightning and then see the thunder.
   D. A person’s right big toe could hurt even though s/he didn’t have a right leg.
   E. An amplifying circuit helps explain the wiring of rod cells in the retina.

24. Historically, mammalian intelligence has been associated with **all** the following cerebral factors **except**:
   A. The ratio of dendrites to axons
   B. Number of grooves/ridges on the brain surface
   C. Ratio of brain size to body weight
   D. Amount of gray matter
   E. Surface to volume ratio of the cerebral cortex

25. The “window of consciousness” is located in the:
   A. Pineal gland
   B. Cerebellar cortex
   C. Hypothalamus
   D. Reticular formation
   E. Pituitary gland
26. Body functions compromised by alcohol’s effect on the brain would be logically ordered in which of the following sequences?
   A. Reasoning, breathing, walking                      D. Breathing, reasoning, walking
   B. Talking, walking, breathing                       E. Reasoning, walking, talking
   C. Walking, seeing, breathing

27. All of the following would represent a brain disorder except:
   A. Cerebral aneurism   B. Stupor   C. Stroke   D. Seizure   E. Coronary

28. Which of the following is not part of a neuron?
   A. Axon   B. Dendrite   C. Effector   D. Synaptic bulb   E. Schwann cell

29. All of the following adjectives can be used to describe a reflex arc except:
   A. Automatic   B. Reflexive   C. Instinctive   D. Hard wired   E. Learned

30. Which of the following is false?
   A. The spinal cord contains lots of interneurons.
   B. The spinal cord consists almost entirely of white matter.
   C. The spinal cord is protected in the vertebral column.
   D. The cell bodies of sensory neurons are protected in the vertebral column.
   E. The spinal cord is part of the central nervous system.

31. Synaptic transmission would involve all of the following except:
   A. Releasing hormone   D. Neurotransmitter
   B. Synaptic bulb   E. Neurotransmitter inhibitor
   C. Synaptic vesicle

32. The human body is specifically primed for “rest and relaxation and homeostatic functions” via:
   A. Peripheral N.S.   D. Parasympathetic N.S.
   B. Central N.S.   E. Sympathetic N.S.
   C. Automatic N.S.

33. All of the following would be pituitary hormones except:
   A. Antidiuretic hormones ADH   D. Thyroid hormone (thyroxin)
   B. Growth hormone GH   E. Thyroid stimulating hormone TSH
   C. Luteinizing hormone LH

34. During the elk rutting (breeding) season in Colorado, the cow communicates to the bull that she is in estrous (ready to breed) via:
   A. Hormones
   B. Neurotransmitters   D. Hormones and neurotransmitters
   C. Pheromones   E. None of these

35. Which of the following animals would have the largest proportion of its brain devoted to its cerebellum?
   A. Mountain gorilla   B. Chimpanzee   C. African lion   D. Sheep dog   E. Fruit bat
36. Which of the following improperly relates brain region and function?
   A. Cerebrum – responsible for balance and coordination
   B. Hypothalamus – houses homeostatic controls
   C. Medulla – houses cardiovascular control center
   D. Pons – connects two sides of the cerebellum
   E. Thalamus – relays/routes sensory information

37. All of the following lobes of the brain are associated with a correct function they house except:
   A. Parietal – sensory interpretation
   B. Occipital – interpreting images
   C. Frontal – motor control
   D. Temporal – interpreting sound
   E. Parietal – interpreting odors

38. Which of the following is not an infection, inflammation or disorder of the brain?
   A. Optic nerve atrophy
   B. Tetanus
   C. Dyslexia
   D. Multiple sclerosis
   E. Epilepsy

39. Which of the following organisms can see into the ultraviolet spectrum?
   A. Honey bees
   B. Rattlesnakes
   C. Squids
   D. Hawks
   E. Bats

40. All of the following are true about the threshold of sensory receptors except:
   A. All receptors of one type tend to have equal thresholds.
   B. It is the lowest intensity of stimulation that causes the receptor to fire.
   C. It may be different for various receptors in the same sensory organ.
   D. It enables receptors to ignore certain weak and unimportant stimuli.
   E. It may increase markedly upon repeated stimulation.