

This exam consists of 55 questions over 7 pages. Please check to see that all the pages are present before you begin. Use a #2 pencil and bubble in all answers. Your score will be posted on the UIC Blackboard site as soon as they are in. Good Luck! THE FINAL EXAM WILL BE HELD IN LECTURE CENTER D5!!!!

Use the key below to answer questions 1 to 5. Choose the best answer.

- I. Bryophytes (mosses) III. Coniferophyta (Pines)
II. Pteridophyta (ferns) IV. Anthophyta (angiosperms, flowering plants)

1. This/these plants contain an egg sac as the female gametophyte
A. I only B. I, II C. III only D. IV only **E. III, IV**
2. This/these plants contain vascular tissue:
A. I only B. III, IV **C. II, III, IV** D. IV only E. I, II, III, IV
3. This/these plants have their reproductive structures in cones:
A. I only B. I, II **C. III only** D. IV only E. III, IV
This was the only question this semester that 100% of you got right
4. This/these plants commonly utilize insects and birds for pollination:
A. I only B. I, II C. III only **D. IV only** E. III, IV
5. This/these plants produce spores:
A. I only B. II only **C. I, II** D. I, II, III E. III, IV only
6. Which of the following is NOT a benefit to seed-based reproduction?
A. The food in the seed helps to nurture the plant while it becomes established
B. The seed coat provides protection for the embryo
C. It is energetically cheaper for the sporophyte to produce seeds than to produce spores
D. The embryo is dormant and can germinate when environmental conditions are conducive for growth
E. All of the above are benefits to seed-based reproduction.
7. Which of the following plant organs is used to attract animals to the plant?
A. Nectaries B. Petals C. Anthers **D. A & B** E. A, B, & C
8. Which of the following statements (A-D) about angiosperms is FALSE. If statements A-D are true, then choose E
A. Angiosperms completely lack gametophytes
B. Flowers are a characteristic unique to angiosperms
C. Angiosperms have coevolved with animals to facilitate pollination
D. In angiosperm double fertilization, one sperm fertilizes the egg producing the zygote while the another fertilizes the two polar nuclei, producing the endosperm
E. All of the above statements about angiosperms are TRUE

20. Which of the following statement (A-D) about plants is FALSE? If statements A-D are true, then choose E
- A. Plants have indeterminate growth
 - B. Meiosis and gametogenesis are separate in plants
 - C. Plants, such as trees, have a large portion of their biomass comprised of dead cells
 - D. All plants contain xylem and phloem**
 - E. All of the above statements about plants is TRUE
21. Which of the following cells or molecules would you not expect to find in the blood?
- A. Erythrocytes
 - B. Leucocytes
 - C. Macrophages
 - D. Hormones
 - E. Schwann cells**
22. Which side of the heart is involved in pulmonary circulation?
- A. The right side**
 - B. The left side
 - C. The atria
 - D. The ventricles
 - E. None of the above
23. Which of the following statement (A-D) about blood vessels is FALSE? If statements A-D are true, then choose E
- A. Arteries in the systemic circuit carry oxygenated blood
 - B. Veins have the thickest and most elastic walls**
 - C. The greatest loss of blood pressure occurs in the arterioles
 - D. Inflammation makes the capillary walls 'leaky' so that fluid and cells may escape
 - E. All of the above statements about blood are TRUE
24. During inhalation:
- A. The diaphragm contracts
 - B. The chest muscles cause the chest to raise
 - C. Air actively forced into the lungs
 - D. A & B**
 - E. A, B, & C
25. Which of the following correctly traces blood flow from the heart, to the lungs, back to the heart, and then to the body
- A. Vena cava - right ventricle - right atrium - pulmonary trunk - pulmonary veins - lungs - pulmonary arteries, left ventricle - left atrium - aorta
 - B. Vena cava - right atrium - right ventricle - pulmonary trunk - pulmonary veins - lungs - pulmonary arteries, left atrium - left ventricle - aorta
 - C. Vena cava - right ventricle - right atrium - pulmonary trunk - pulmonary arteries - lungs - pulmonary veins, left ventricle - left atrium - aorta
 - D. Vena cava - right atrium - right ventricle - pulmonary trunk - pulmonary arteries - lungs - pulmonary veins, left atrium - left ventricle - aorta**
 - E. None of the above

Use the key below to answer questions 26, 27, & 28

I. Mouth II. Stomach III. Small Intestine IV. Large Intestine

26. Which of the following organs perform both chemical and mechanical digestion?
A. II only B. III only **C. I, II** D. II, III E. I, II, III
27. Which of the following organs has the greatest internal surface area?
A. I B. II **C. III** D. IV
28. Where does most of the reabsorption of water take place?
A. II only B. III only **C. IV only** D. III, IV E. II, III
29. How is most of the carbon dioxide transported to lungs?
A. Bound to the hemoglobin B. Directly dissolved into the plasma
C. As carbonic acid H_2CO_3 **D. Converted to bicarbonate (HCO_3^-)**
E. None of the above
30. Which of the following statement (A-D) about the small intestine is FALSE? If statements A-D are true, then choose E
A. The duodenal region of the small intestine is where the acidic chyme from the stomach is neutralized
B. Most of the absorption of nutrients occurs in the duodenum and the jejunum
C. The inner wall of the small intestine contains highly vascularized villi which increase the surface area and aid in absorption
D. Chemical digestion of fats occurs in the small intestine, aided by bile salts produced in the liver
E. All of the above statements about the small intestine are TRUE
31. Where does oxygenation of blood take place?
A. In the larynx B. In the left atrium **C. In the alveolar capillaries**
D. In the bronchial tubes E. None of the above
32. Which of the following statements (A-D) about the condition of the skin (as related to the immune system) is FALSE? If statements A-D are true, then choose E.
A. The skin is dry
B. The skin is alkaline (basic)
C. The skin contains flourishing colonies of harmless bacteria
D. The skin contains mucous membranes which secrete lysozymes to break down bacteria
E. All of statements about the skin are TRUE
33. Which of the following cells are not utilized in the non-specific line of defense?
A. B-cells B. Nutrinophils C. Eosinophils
D. Macrophages E. Basophils

34. What is a phagocyte?
- A cell which can produce antibodies
 - A cell involved in the memory function of the immune system
 - A cell which secretes interleukins
 - D. An amoeboid-like cell which can engulf and destroy pathogens**
 - None of the above
35. Which of the following statements about inflammation is FALSE?
- Inflammation produces localized swelling and pain
 - Capillary walls near the source of inflammation become leaky, allowing leukocytes and fluids to leave the blood
 - Interleukins secreted in inflamed area attract other immune cells to the affected area
 - D. Interleukins secreted in inflamed area act as a stimulant to speed up the body's activity, energizing it help fight off the pathogen**
36. Which of the following cells are involved **both** in the cell-mediated and antibody-mediated immune responses?
- Macrophages
 - Helper T-Cells
 - B-Cells
 - D. A & B**
 - A, B, & C
37. In the cell-mediated immune response, what two signals must an inactive Cytotoxic T-Cell receive in order to become active?
- A. Interleukins from an active Helper T-Cell; activation by an antigen-presenting cell**
 - Interleukins from an active Helper T-Cell; direct activation by contact with the pathogen
 - Interleukins from an active Helper T-Cell; interleukins from a memory Cytotoxic T-Cell
 - Direct activation by contact with the pathogen; direct activation by contact with the appropriate antibody
 - Direct activation by contact with the pathogen; activation by an antigen-presenting cell
38. Which of the following cells can become an antigen-presenting cell?
- B-cells
 - Nutrinophils
 - Eosinophils
 - D. Macrophages**
 - Basophils
39. In the antibody-mediated immune response, what two signals must an inactive B-Cell receive in order to become active?
- Interleukins from an active Helper T-Cell; activation by an antigen-presenting cell
 - B. Interleukins from an active Helper T-Cell; direct activation by contact with the pathogen**
 - Interleukins from an active Helper T-Cell; interleukins from a memory Cytotoxic T-Cell
 - Direct activation by contact with the pathogen; direct activation by contact with the appropriate antibody
 - Direct activation by contact with the pathogen; activation by an antigen-presenting cell

50. Which of the following statements (A-D) about nerve cells is false. If statements A-D are true, then choose E
- A. **A nerve cell at rest has an positive electrical potential of +70 mV caused by a Na⁺/K⁺ pump actively pumping Na⁺ into the cell**
 - B. An action potential is created when Na⁺ channels open, causing enough Na⁺ ions to cross the plasma membrane to depolarize the neuron
 - C. An impulse will travel faster down a myelinated neuron than an unmyelinated neuron
 - D. The direction of impulse travel is in through the dendrites and then out through the axon.
 - E. All of the above statements about nerve cells are TRUE.
51. Which of the following statements about synapses is FALSE?
- A. A synapse is a junction between two nerve cells or a nerve cell and a muscle cell
 - B. The depolarization of the neuron at the pre-synaptic terminal triggers the release of neurotransmitters
 - C. **Neurotransmitters are positively-charged molecules which cross the synaptic cleft, are taken in at the post-synaptic terminal, and directly cause depolarization in the post-synaptic neuron**
 - D. Neurotransmitters may be recycled through a process known as reuptake
52. An action potential is an all-or-none phenomenon
- A. **True**
 - B. False
53. In mammals, which portion of the brain is the largest?
- A. Pons
 - B. Medulla
 - C. Cerebellum
 - D. **Cerebrum**
 - E. Hypothalamus
54. During the digestive system lecture, Mike went on long-winded and ultimately pointless digression about:
- A. his frequent childhood vomiting
 - B. his ability to eat anything
 - C. **his ability to chug two pitchers of beer back-to-back**
 - D. his ill-fated experiences with Olestra
 - E. his spastic colon
55. Where will the final exam be held? (Hint: the answer is in the instructions on page one!)
- A. **D5**
 - B. F1
 - C. A1
 - D. 3086 SEL
 - E. Pizza Hut

Sadly, 100% of you didn't get this one right - but you know about pine cones! :)