

Midterm Exam IA January 30, 2006

Choose the best answer!

1. The presence of an internal callus would suggest that:
  - a. A first degree burn occurred.
  - b. A deep cut penetrating into the dermis and subcutaneous layer occurred.
  - c. A bone fracture occurred.
  - d. Long bone ossification has been completed.
  - e. The epidermis has been compromised.
  
2. Blood cell formation occurs in the bones of the skeleton in the:
  - a. Yellow bone marrow.
  - b. Matrix of the bone.
  - c. Ground substance.
  - d. Synovial fluid.
  - e. Red bone marrow.
  
3. The majority of the weight in bone is:
  - a. Calcium phosphate crystals.
  - b. Collagen.
  - c. Osteocytes.
  - d. Calcium carbonate.
  - e. Keratin.
  
4. Which of the following is not found in spongy bone:
  - a. Trabeculae
  - b. Lamellae.
  - c. Canaliculi.
  - d. Osteon.
  - e. Endosteum.
  
5. Which of the following bones cells is responsible for producing new bone matrix?
  - a. Osteoclasts.
  - b. Osteocytes.
  - c. Osteoprogenitor cells.
  - d. Osteoblasts.
  - e. None of the above.

6. A type of immovable joint that is characterized by a cartilaginous bridge between 2 articulating bones is called a:
- Suture.
  - Gomphoses.
  - Synchondroses.
  - Synostoses.
  - Syndesmosis.
7. The cavity of a freely movable joint is encased by areolar tissue with an incomplete epithelial layer. This is also known as the:
- Synovial membrane.
  - Cutaneous membrane.
  - Mucous membrane.
  - Serous membrane.
  - None of the above.
8. The type of joint where the bones are connected by a ligament such is found between the tibia and fibula is called a:
- Symphysis.
  - Syndesmosis.
  - Suture.
  - Synarthroses.
  - Synostoses.
9. Endochondral ossification during formation of a long bone involves:
- Killing of chondrocytes.
  - Increased vascularization of the developing bone.
  - Differentiation of fibroblasts into osteoblasts.
  - Secondary ossification centers.
  - All of the above.
10. A strong base may be described as:
- Alkaline.
  - A proton acceptor.
  - Releases hydroxyl ions.
  - A pH value much greater than 7.
  - All of the above.

11. Which of the following molecules does not contain a double or triple bond:
- NO.
  - H<sub>2</sub>.
  - N<sub>2</sub>.
  - O<sub>2</sub>.
  - CO<sub>2</sub>.
12. The definition of pH is:
- Natural log of the hydrogen ion concentration.
  - Log of the hydrogen ion concentration.
  - log of the hydroxide ion concentration.
  - natural log of the hydrogen ion concentration.
  - None of the above.
13. Dissociation of a salt in water produced negatively charged molecules called:
- Anions.
  - Onions.
  - Protons.
  - Cations.
  - Electrons.
14. An atom that has its first three energy levels completely filled has:
- 2 electrons.
  - 8 electrons.
  - 10 electrons.
  - 18 electrons.
  - 20 electrons.
15. The reaction  $AB + H_2O \rightarrow A + B$  may be described as:
- Decomposition reaction.
  - A hydrolysis reaction
  - A dehydration reaction.
  - a and b.
  - a and c.

16. What is the correct abbreviation for potassium:
- P
  - S
  - Cu
  - C
  - None of the above.
17. Which of the organ systems involves primarily the kidneys?
- Endocrine.
  - Reproductive.
  - Lymphatic.
  - Digestive.
  - None of the above.
18. Arachidonic acid has the chemical formula  $C_{20}H_{40}O_2$  and has saturated carbon bonds. Arachidonic acid is then a:
- Lipid with double bonds.
  - Lipid with no double bonds.
  - Carbohydrate with double bonds.
  - Carbohydrate with no double bonds.
  - Protein with double bonds.
19. Steroids belong to which group?
- Nucleic acids.
  - Proteins.
  - Carbohydrates.
  - Lipids.
  - Triglycerides.
20. The term that refers to all of the chemical reactions in the body is known as:
- Respiration.
  - Reproduction.
  - Metabolism.
  - Differentiation.
  - Excretion.

21. Epidermal ridges form patterns on thick skin provide us with fingerprints and are part of the:
- Stratum germinativum.
  - Stratum spinosum.
  - Stratum granulosum.
  - Stratum lucidum.
  - Stratum corneum.
22. The free edge of the nail that continues past the nail bed extends over an area of thickened stratum corneum called:
- Eponychium.
  - Lateral nail fold.
  - hyponichium.
  - Lunula.
  - Proximal nail fold.
23. The 2 major types of exocrine glands in the skin are:
- Merocrine and sudoriferous glands.
  - Sebaceous and sudoriferous glands.
  - Apocrine and sudoriferous glands.
  - Eccrine and sudoriferous glands.
  - Ceruminous and sudoriferous glands.
24. Arrector pili muscles of a hair follicle extends from the papillary layer of the dermis to the:
- Hair shaft.
  - Hair bulb.
  - Hair papilla.
  - Connective tissue sheath.
  - Root hair plexus.
25. The major protein found in the outer layers of the epidermis is:
- Melanin.
  - Collagen.
  - Elastin.
  - Keratin.
  - Cartilage.

26. A subcutaneous injection is a useful method because:
- It is highly vascularized.
  - It is highly innervated.
  - It contains a limited number of capillaries.
  - It contains a lot of fat.
  - Drugs are metabolized faster.
27. Burns that destroy the epidermis and some of the dermis is termed a:
- First degree burns.
  - Second degree burns.
  - Third degree burns.
  - Fourth degree burns.
  - Full thickness burns.
28. The 2 major components of the dermis are the:
- Papillary layer and reticular layer.
  - Hypodermis and epidermis.
  - Papillary layer and hypodermis.
  - Epidermis and reticular layer.
  - Reticular layer and hypodermis.
29. Beginning at the basal lamina and traveling toward the free surface, the epidermis includes the following layers:
- Corneum, lucidum, spinosum, germinativum, corneum.
  - Granulosum, lucidum, spinosum, granulosum, lucidum, corneum.
  - Germinativum, spinosum, granulosum, lucidum, corneum.
  - Lucidum, granulosum, spinosum, germinativum, corneum.
  - Germinativum, lucidum, spinosum, granulosum, corneum.
30. Each of the following is a function of the integumentary system except:
- Protection.
  - Excretion of salts.
  - Maintenance of body temperature.
  - Synthesis of Vitamin D.
  - All of the above.

31. The 3 major types of cartilage are:
- Hyaline, areolar and fibrocartilage.
  - Hyaline, elastic and fibrocartilage.
  - Hyaline, elastic and tendons.
  - Ligaments, areolar and collagen.
  - Tendons, elastic and reticular cartilage.
32. The reticular layer of the dermis is intimately associated with the region directly below it which is known as the:
- Papillary layer.
  - Stratum germinativum.
  - Epidermis.
  - hypodermis.
  - Stratum lucidum.
33. The type of glandular secretion in which the cell swells and bursts releasing vesicles and in the process destroys the cell is:
- Endocrine secretion.
  - Merocrine secretion.
  - Holocrine secretion.
  - Apocrine secretion.
  - None of the above.
34. Which of the following is a false statement regarding epithelial tissues?
- Polarity of cell ends.
  - Attachment to a basement membrane.
  - The ability to regenerate new cells.
  - Highly vascularized.
  - Cells communicate by interconnections or cell junctions.
35. Which of the following is true about Osmosis?
- It is the movement of water molecules across a membrane.
  - It occurs across a selectively permeable membrane that is freely permeable to water, but not freely permeable to solutes.
  - Water flows across a membrane toward the solution that has the higher concentration of solutes, because that is where the concentration of water is lower.
  - a is the only true statement about osmosis.
  - a, b and c are all true statements about osmosis.

36. Which of the following is false about DNA?
- It is double stranded.
  - It contains deoxyribose sugar.
  - It has 4 bases.
  - It is found inside the cytoplasm.
  - It forms an alpha helix.
37. The tertiary structure of a protein results from:
- Complex coiling and folding producing its 3-dimensional shape.
  - Its nucleic acid sequence.
  - Its amino acid sequence
  - Association with other proteins subunits forming a complex.
  - Weak bonds between amino acids of the polypeptide chain.
38. A cell suddenly shrinks due to dehydration when placed in a new solution. Which of the following statements may account for this observation?
- A hypotonic solution producing crenation.
  - A hypertonic solution producing crenation.
  - A hypertonic solution producing lysis.
  - A hypotonic solution producing lysis.
  - It cannot be determined based on the information provided.
39. Which of these is not a major functional category of proteins?
- Support.
  - Buffering.
  - Metabolic regulation.
  - Energy supply.
  - Defense (immune system).
40. Complementary base pairing in DNA include the pairs:
- Adenine-uracil and cytosine-guanine.
  - Adenine-thymine and cytosine-guanine.
  - Adenine-cytosine and thymine-guanine.
  - Adenine-thymine and cytosine-uracil.
  - Adenine-guanine and cytosine-thymine.

41. Which of these is a property of an enzyme?
- One enzyme may catalyze many types of reactions.
  - There is enough enzymes to modify all available substrates.
  - Enzymes are always “on” to catalyze a reaction.
  - An enzyme is no longer functional after catalyzing a reaction.
  - Enzymes lower the activation energy required for a reaction.
42. The high energy bonds that are found in ATP require:
- Complementary base pairing.
  - Peptide bonding.
  - Phosphorylation.
  - Denaturation.
  - A quaternary structure.
43. Histones are found:
- Cytoplasm.
  - Nucleus.
  - Plasma membrane.
  - Golgi apparatus.
  - None of the above.
44. Which of the following are true statements about nucleic acids:
- Large organic molecules composed of H, O, N and P.
  - The language by which the genetic information is stored in cells.
  - There are two classes called RNA and DNA.
  - Five nitrogenous bases occur in nucleic acids.
  - All the statements are true.
45. Which of the following is not a characteristic of mitochondria?
- It is membrane bound.
  - It produces ATP and O<sub>2</sub> as end products.
  - It is the site for energy production through the TCA cycle.
  - Has an inner fluid of called the matrix.
  - All are characteristics of mitochondria.

46. Which of the following is not one of the basic 20 amino acids:
- Thymine.
  - Phenylalanine.
  - Cysteine.
  - Leucine.
  - Tryptophan.
47. Which is a false statement regarding the Sodium-Potassium exchange pump:
- It is a type of secondary active transport.
  - 3 sodium ions exit the cell for every 2 K ions brought in.
  - It requires ATP to be functional.
  - It is electrogenic contributing to the transmembrane potential.
  - It does not require a concentration gradient.
48. Isomers are organic molecules that:
- Have the same structure but different chemical formulas.
  - Have the same chemical properties.
  - Have the same chemical formulas but different structure.
  - Have saturated carbon bonds.
  - Have many repeating chains of glucose molecules such as glycogen and starch.
49. Which of the following is an example of an organelle that contains an outer membrane?
- Peroxisomes.
  - Lysosomes.
  - Golgi apparatus.
  - Nucleus.
  - They all have an outer membrane.
50. The plausible order of events for a protein destined to reach the cell membrane may be:
- nucleus, mRNA, cytoplasm, translation, Golgi, ER, cell membrane.
  - nucleus, translation, mRNA, cytoplasm, ribosomes, Golgi, ER, cell membrane.
  - translation, mRNA, nucleus, Golgi, ER, cytoplasm, cell membrane.
  - nucleus, cytoplasm, mRNA, translation, ER, Golgi, cell membrane.
  - None of the above scenarios are possible.