Quiz IIA Fall II

1. Important functional groups of organic compounds include:

    a. –COOH.
    b. $–NH_2$.
    c. –OH.
    d. $-PO_4$.
    e. All of the above.

2. Triglycerides belong to which group?

    a. Nucleic acids.
    b. Lipids.
    c. Proteins.
    d. Carbohydrates.
    e. Steroids.

3. One major difference that distinguishes a fat from a carbohydrate is:

    a. Covalent bonds.
    b. Carbon, hydrogen and oxygen.
    c. A Carboxylic acid group.
    d. Ionic bonds.
    e. Nitrogen atoms.

4. The chemical reaction of glycogen into glucose is an example of:

    a. Hydrolysis.
    b. Dehydration synthesis.
    c. Synthesis.
    d. Steroids.
    e. Fatty acids.

5. Lauric acid has the chemical formula $C_{12}H_{24}O_2$ and has saturated carbon bonds. Lauric acid is then a:

    a. Fatty acid with double bonds.
    b. Fatty acid with no double bonds.
    c. Carbohydrate with double bonds.
    d. Carbohydrate without double bonds.
    e. It cannot be determined based on the information.

6. Which of the following is true about Osmosis?

   a. It is the movement of water molecules across a membrane.
   b. It occurs across a selectively permeable membrane that is freely permeable to water, but not freely permeable to solutes.
   c. 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.
   d. a is the only true statement about osmosis.
   e. a, b and c are all true statements about osmosis.

7. Which of the following is false about DNA?

   a. It is double-stranded.
   b. It contains ribose sugar.
   c. It has 4 bases.
   d. It is found inside the nucleus.
   e. It forms an alpha helix.

8. The secondary structure of a protein results from:

   a. Complex coiling and folding producing its 3-dimensional shape.
   b. Its nucleic acid sequence.
   c. Its amino acid sequence
   d. Association with other proteins forming a complex.
   e. Bonds between amino acids.

9. A cell suddenly shrinks due to dehydration when placed in a new solution. Which of the following statements may account for this observation?

   a. A hypotonic solution producing lysis.
   b. A hypertonic solution producing crenation.
   c. A hypertonic solution producing lysis.
   d. A hypotonic solution producing crenation.
   e. An isotonic solution producing crenation.

10. Which of these is not a major functional category of proteins?

   a. Support.
   b. Buffering.
   c. Metabolic regulation.
   d. Energy supply.
   e. Defense (immune system).

11. Complementary base pairing in DNA include the pairs:

    a. Adenine-uracil and cytosine-guanine.
    b. Adenine-thymine and cytosine-guanine.
    c. Adenine-cytosine and thymine-guanine.
    d. Adenine-thymine and cytosine-uracil.
    e. Adenine-guanine and cytosine-thymine.

12. Which of these are characteristic of enzymes?

    a. They catalyze only one type of reaction- (specificity).
    b. The rate of an enzyme reaction is determined by the amount of the enzyme available (saturation).
    c. A variety of factors can turn enzymes on and off (regulation).
    d. a and b.
    e. a, b and c.

13. Complementary base pairs:

    a. Are found in RNA.
    b. Are found in DNA.
    c. Require peptide bonding.
    d. Are characteristic of single-strand DNA.
    e. Produce ATP.

14. The high energy bonds that are found in ATP require:

    a. Complementary base pairing.
    b. Peptide bonding.
    c. Phosphorylation.
    d. Denaturation.
    e. A quaternary structure.

15. The glycocalyx is found:

    a. In the nucleus.
    b. In the cytoplasm.
    c. On the inner surface of the cell membrane.
    d. On the outer surface of the cell membrane.
    e. On the endoplasmic reticulum.

16. The movement of large substances through the cell membrane involves:

    a. Carrier proteins
    b. Enzyme proteins
    c. Anchoring proteins
    d. Recognition proteins.
    e. Diffusion.

17. tRNA has a tight loop containing three nitrogenous bases that interacts with the mRNA. These three bases are known as the:

    a. Codon.
    b. rRNA.
    c. Anticodon.
    d. RNA polymerase.
    e. Promoter.

18. Which of the following are characteristics of mitochondria?

    a. It is membrane bound.
    b. It produces CO_2 as one end product.
    c. It is the site for energy production through the TCA cycle.
    d. Has an inner membrane of called cristae increasing its surface area.
    e. All are characteristics of mitochondria.

19. The packaging center of the cell where newly synthesized materials are modified and distributed to the rest of the cell through vesicles is the:

    a. Nucleus.
    b. Rough Endoplasmic reticulum.
    c. Smooth Endoplasmic reticulum.
    d. Golgi Apparatus.
    e. Peroxisomes.

20. Which of the following is not one of the basic 20 amino acids:

    a. Methionine.
    b. Proline.
    c. Tyrosine.
    d. Thymine.
    e. Tryptophan.

21. Which of the following are true statements about nucleic acids:

    a. Large organic molecules composed of H, O, N and P.
    b. The language by which the genetic information is stored in cells.
    c. There are two classes called RNA and DNA.
    d. Five nitrogenous bases occur in nucleic acids.
    e. All the statements are true.

22. Which of the following help explain why there more possible triplet combinations (codons) of the four DNA bases (A, T, C, G) than there are number of amino acids?

    a. Some encode for a signal to stop protein translation.
    b. Some are flexible in the third position allowing for one triplet to encode for more than one amino acid.
    c. It allows for possible mistakes to occur without necessarily changing the protein sequence.
    d. All of the above.
    e. None of the above.

23. Which is a false statement regarding the Sodium-Potassium exchange pump:

    a. It is a type of active transport.
    b. 3 sodium ions enter the cell for every 2 K ions pumped out.
    c. It requires ATP to be functional.
    d. It is electrogenic contributing to the transmembrane potential.
    e. It requires a concentration gradient.

24. Which of the following is an example of an organelle that does not contain an outer membrane?

    a. Peroxisomes.
    b. Lysosomes.
    c. Mitochondria.
    d. Nucleus.
    e. Proteasomes.

25. Isomers are organic molecules that:

    a. Have the same structure but different chemical formulas.
    b. Have the same chemical properties.
    c. Have the same chemical formulas but different structure.
    d. Have saturated carbon bonds.
    e. Have many repeating chains of glucose molecules such as glycogen and starch.