

Review Questions: Carbohydrates

8. What is an example of a monosaccharide?

- a. cellulose
- b. fructose
- c. lactose
- d. sucrose

9. Cellulose and starch are examples of _____.

- a. disaccharides
- b. lipids
- c. monosaccharides
- d. polysaccharides

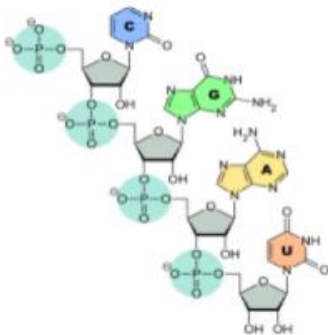
42. Why is it impossible for humans to digest food that contains cellulose?

- a. There is no energy available in fiber.
- b. An inactive form of cellulase in human digestive tract renders it undigested and removes it as waste.
- c. The acidic environment in the human stomach makes it impossible to break the bonds in cellulose.
- d. Human digestive enzymes cannot break down the β - β -1,4 glycosidic linkage in cellulose, which requires a special enzyme that is absent in humans.

44. Which of these best describes the production of sucrose, maltose, and lactose?

- a. Glucose and fructose combine to form sucrose. Glucose and galactose combine to form lactose. Two glucose monomers combine to form maltose.
- b. Glucose and fructose combine to form sucrose. Glucose and galactose combine to form maltose. Two glucose combine to form lactose.
- c. Two glucose combine to form lactose. Glucose and galactose combine to form sucrose. Glucose and fructose combine to form maltose.
- d. Two galactose combine to form sucrose. Fructose and glucose combine to form lactose. Two glucose combine to form maltose.

Identify the Sugar in the RNA molecule below:



Review Questions: Lipids

14. Which fat serves as an animal's major form of energy storage?

- a. cholesterol
- b. glycerol
- c. phospholipid
- d. triglycerides

16. Which of the following characteristics is not true for saturated fats?

- a. They are solid at room temperature.
- b. They have single bonds within the carbon chain.
- c. They contain mostly hydrogen and carbon atoms.
- d. They tend to dissolve in water easily.

20. What is the basic structure of a steroid?

- a. four fused hydrocarbon rings
- b. glycerol with three fatty acid chains
- c. two fatty acid chains and a phosphate group
- d. two six carbon rings

46. What are three functions that lipids serve in plants and/or animals?

- a. Lipids serve in the storage of energy, as a structural component of hormones, and also as signaling molecules.
- b. Lipids serve in the storage of energy, as carriers for the transport of proteins across the membrane, and as signaling molecules.
- c. Lipids serve in the breakdown of stored energy molecules, as signaling molecules, and as structural components of hormones.
- d. Lipids serve in the breakdown of stored energy molecules, as signaling molecules, and as channels for protein transport.

48. How do phospholipids contribute to cell membrane structure?

- a. Phospholipids orient their heads towards the polar molecules and tails in the interior of the membrane, thus forming a bilayer.
- b. Phospholipids orient their tails towards the polar molecules of water solutions, and heads in the interior of the membrane, thus forming a bilayer.
- c. Phospholipids orient their heads towards the non-polar molecules and tails in the interior of the membrane, forming a bilayer.
- d. Phospholipids orient their tails towards the polar molecules and heads in the non-polar side of the membrane, forming a bilayer.

50. What part of cell membranes gives flexibility to the structure?

- a. carbohydrates
- b. cytoskeleton filaments
- c. lipids
- d. proteins

Review Questions: Proteins

24. Which of the following is a function of proteins in cells?
- energy storage
 - gene storage and access
 - membrane fluidity
 - structure
25. What type of protein facilitates or accelerates chemical reactions?
- an enzyme
 - a hormone
 - a membrane transport protein
 - a tRNA molecule
27. What are the monomers that make up proteins called?
- amino acids
 - chaperones
 - disaccharides
 - nucleotides
29. The α -helix and the β -pleated sheet are part of which protein structure?
- the primary structure
 - the secondary structure
 - the tertiary structure
 - the quaternary structure
31. Which of the following may cause a protein to denature?
- changes in pH
 - high temperatures
 - the addition of some chemicals
 - all of the above

68. What categories of amino acids would you expect to find on the surface of a soluble protein and which would you expect to find in the interior? Which of these are some examples for each part of the answer?

- a. Non-polar and charged amino acids will be present on the surface and polar in the interior of the membrane whereas non-polar will be found in the membrane embedded proteins.
- b. Non-polar and uncharged proteins will be found on the surface with non-polar in the interior, while only non-polar will be found in the embedded proteins.
- c. Polar and charged amino acids will be found on the surface whereas non-polar in the interior.
- d. Polar and charged amino acids will be found on the surface of a membrane protein whereas non-polar in the interior. The membrane protein will be polar and hydrophobic.

69. You have been identifying the sequence of a segment of a protein. The sequence to date is: leucine-methionine-tyrosine-alanine-glutamine-lysine-glutamate. You insert arginine between the leucine and methionine. What effect would this have on the segment?

- a. Arginine is a negatively charged amino acid and could attach to the glutamate at the end of the segment
- b. Inserting arginine places a positively charged amino acid in a portion that is non-polar, creating the possibility of a hydrogen bond in this area.
- c. There would be no effect other than an additional amino acid.
- d. The arginine could attach to the lysine and bend the protein chain at this point.