

### Exam 1 Practice Questions:

1. The key function(s) of water in terms of both cooking and chemistry is it(s) \_\_\_\_\_ ?
  - a. Polarity
  - b. Ability to hydrogen bond
  - c. Ease in dissolving other substances
  - d. All of the above**
  - e. None of the above
2. Ice (solid) water damages cells of food which because \_\_\_\_\_ ?
  - a. Water expands when turning into solid form (ice)**
  - b. The salt of the cells is excluded from the water bonds
  - c. Proteins denature and curd at low pH
  - d. Hydrogen bonds become tighter at low temperatures and cause the solid ice to contract
  - e. All of the above
3. An acid is any compound that produces \_\_\_\_\_ ?
  - a. A higher pH number
  - b. H<sup>+</sup> ions**
  - c. OH<sup>-</sup> ions
  - d. Citric acid
  - e. Baking soda
4. The chemical reaction which combines monomers such as amino acids into a longer polymer such as a protein is called \_\_\_\_\_ ?
  - a. De-condensation
  - b. Reconstitution
  - c. Dehydration**
  - d. Hydrolysis
  - e. None of the Above
5. Hydrolysis \_\_\_\_\_ ?
  - a. Is how cell break down macromolecules
  - b. Is the process of using water to break a bond
  - c. Of starch results in glucose
  - d. All of the above**
  - e. None of the above
6. Milk sugar \_\_\_\_\_ ?
  - a. Is lactose which is made of two glucose molecules
  - b. Is lactose which is made of glucose and galactose**
  - c. Is sucrose which is made of glucose and fructose
  - d. Is the same as table sugar
  - e. Is not degraded by the enzyme lactase
7. Polysaccharides (also known as oligosaccharides) are essentially tasteless because \_\_\_\_\_ ?
  - a. They are too large to trigger our sweet detectors**
  - b. They are digested only in the lower colon well beyond our sweet detection
  - c. Are not found in edible food
  - d. Are only starch and because they hold water are tasteless
  - e. Are complexed with proteins and not tasted well

8. The monosaccharide from milk sugar that is used to create insulation cells in brain and neural tissue is

- a. **Galactose**
- b. Sucrose
- c. Fructose
- d. Maltose
- e. Inulin

*For the next several questions, please refer to the figure page at the end of this test*

9. Which of the following is an image of a lipid?

- a. 1 b. 2 **c. 3** d. 7 e. none of the above

10. Figure \_\_\_\_ is a polymer of simple sugars.

- a. 1** b. 2 c. 3 d. 6 e. 7

11. Which of the two figures represents a lipid with a higher melting point?

- a. Fig 8** b. Fig 9

12. When canning fruit to make jellies, acids like citrate are used to help \_\_\_\_\_ form a stable gel?

- a. Pectin**
- b. Plant Gums
- c. Cellulose
- d. Emulsifiers
- e. Inulin

13. The carbohydrate polymer which cooks sometimes use instead of starch for thickening and gelling foods and stabilize emulsions is

- a. Pectin
- b. Plant Gums
- c. Cellulose**
- d. Emulsifiers
- e. Inulin

14. An amphiphilic molecule \_\_\_\_\_ .

- a. Has both a hydrophobic and a hydrophilic region**
- b. Does not dissolve in water and does not aggregate with other hydrophobic molecules
- c. Have two charges on opposite ends of the molecule

15. Casein is a natural \_\_\_\_\_ macromolecule found in foods. Casein micelles are largely responsible for storing and transporting calcium.

- a. Lipid b. Triglyceride **c. protein** d. starch

16. You are cooking and find you have two containers of lipids. One is animal fat, mostly saturated and long chains. The second container is vegetable fat with many polyunsaturated fatty acids. Which of the following statement is correct?

- a. The molecules in the first container will be less tightly packed with less hydrophobic interactions than the fats in the second container
- b. There will be more water associated with the double bonded fats of the second container
- c. The molecular arrangement of the fats in the first container will be more closely packed and need more energy to change the material from solid to liquid than the lipids found in the second container.**
- d. The fats found in the first container are healthier due to the types of fats.
- e. None of the above

17. The conversion of unsaturated plant oils to fat-like shortening (solids) requires adding hydrogens and removing a double bond. This process is called \_\_\_\_\_?
- Trans fatty acid acylation
  - Full hydrogen ion translocation
  - Hydrogenation**
  - Transamination
18. If you have food that curdles and or oils which separates, you need to add a food compound which will keep them separated. This kind of a molecule is \_\_\_\_\_?
- Sometimes an amphiphilic lipid
  - Sometimes a soap
  - Called an emulsifier
  - All of the above**
19. A properly folded and functional protein is considered \_\_\_\_\_
- Native**
  - Denatured
  - None of the above
20. Proteins and amino acids impart flavor to food because \_\_\_\_\_
- they participating in browning reactions
  - Some have their own tastes
  - When broken down, some proteins add to aged taste of food
  - Can add a richness to food like tomatoes
  - All of the above**
21. An example of a protein's secondary structure is \_\_\_\_\_?
- An alpha helix**
  - The specific sequence of amino acids
  - The R-group interaction
  - A disulfide bonding
  - The amino acid side groups
22. When cooking, heat and/or acid does what to the structure of a protein?
- Binds to fats
  - Always generates curds
  - Often unfolds and denatures proteins**
  - Leaves the proteins in solutions where they cannot interact with each other
23. Lactose is found in what component of milk
- Aqueous phase**
  - Protein phase
  - Fat phase
  - Sugar phase
  - All of the above
24. The enzyme which digests lactose is called
- Lactose dissolving enzyme
  - Lactase**
  - Galactose hydrolyase
  - Milk sugar acid phosphatase

25. Fat globules of milk tolerate heat because
- The globules are surrounded by phospholipid membranes
  - The proteins surrounding the lipid globules are difficult to denature**
  - The fat in the globules are saturated and thus solid at most temperatures
  - Milk comes from the hot part of the cow
26. Casein proteins are found in the aqueous phase of milk and are \_\_\_\_\_ when the aqueous layer is made acidic
- Soluble
  - Unstable**
  - Digestible
  - Resistant
27. Pasteurization
- Is essentially the same as sterilization**
  - Homogenizes milk to stop cream from separating
  - Degrades & completely cooks proteins and bacteria
  - Is most effective at high temperatures for long periods
  - Is essentially the same as homogenization
28. Over whipping cream results in a greasy mixture. Why?
- Proteins in the whipped cream are denatured and bind to each other
  - The whipping breaks the fat globules into small particles which can no longer be covered by proteins**
  - The milk foam proteins and sugars separate under denaturing conditions
  - The fat globules avoid each other because of emulsifying starches
29. Whipping cream stabilizes foam (trapped air) because \_\_\_\_ ?
- The fat globules are reduced in size stripping some of the membranes away creating a network of neighboring globules**
  - The protein covers the fat globules and due to their hydrophobic interactions, bind to each other creating a solid network around the air bubbles.
30. Churning butter \_\_\_\_\_
- Breaks the fat globules farther than whipping cream creating a pool of congealed fat (the grains of butter)
  - Mechanically damages the membranes of the fat globules
  - Separates the remaining water from the milk creating buttermilk
  - All of the above**
  - None of the above
31. The salt in butter serves what main purpose
- Inhibits bacterial growth**
  - Decreases the water content
  - Stabilizes the grains of fat
  - Further solidifies the solid butter
  - Enhances the salty flavor of the butter

