

**National FFA Career Development Event
Food Science and Technology 2009 TEST**

1. Aspartame, a common low-calorie sweetener used in beverages such as Diet Coke™ is _____.
 - a. a carbohydrate consisting of maltose
 - b. a dipeptide consisting of aspartic acid and phenylalanine
 - c. derived using a multi-step process that starts with table sugar
 - d. made from a process that involves the transformation of acetoacetic acid

2. Milk aseptically processed and marketed in a box that can be stored without refrigeration for three months or more if unopened is called _____ milk.
 - a. UHT
 - b. BST
 - c. UHP
 - d. AHT

3. A _____ is a substance that reduces, but not necessarily eliminates microbial contamination on inanimate surfaces to levels that are considered to be safe from a public health standpoint.
 - a. sterilant
 - b. disinfectant
 - c. sanitizer
 - d. biocide

4. If a food product undergoing slow freezing is improperly wrapped, the airflow past the food will increase water loss from the frozen product into the air. This could result in _____ on the product surface.
 - a. small ice crystals
 - b. freezer burn
 - c. caramelization
 - d. proteolysis

5. The acid found in vinegar is _____ acid.
 - a. lactic
 - b. citric
 - c. malic
 - d. acetic

6. It takes approximately _____ pounds of milk to make 1 pound of butter.
 - a. 2.3
 - b. 7.6
 - c. 12.1
 - d. 22.8

7. The presence of an agricultural pesticide in a food product would be considered a _____ hazard in a HACCP plan.
- biological
 - physical
 - chemical
 - synthetic
8. Which of the following products would NOT contain trans fat?
- Banquet Fried Chicken fried in partially hydrogenated vegetable oil
 - Vegetable shortening
 - Chocolate chip cookies made with partially hydrogenated vegetable oil
 - Oreo cookies made with canola oil
9. A food chemist conducting research in a laboratory must know how to use all chemicals properly and keep an _____ for each chemical in the lab that describes the safe use of the chemical and steps to take in case of an accident.
- SOP
 - OSHA
 - GFCI
 - MSDS
10. To assess the effectiveness of a heat treatment when processing food, companies use a _____ which is a graph that plots microbes killed against time at a particular temperature
- microbial growth curve
 - sterilization curve
 - thermal death time curve
 - microbial reduction curve
11. As the starch concentration increase in a mixture, the resulting paste becomes more _____.
- viscous
 - crystalline
 - weepy
 - saturated
12. _____ is a linear polymer of D-galacturonic acid that forms an ester with methanol and is used as an ingredient to make jelly.
- Collagen
 - Agar
 - Pectin
 - Carrageenan
13. Vitamins A, D, E, and K are _____.
- water soluble vitamins
 - fat soluble vitamins
 - naturally found in orange juice
 - naturally found in sauerkraut

14. When water boils, a phase change occurs so that liquid turns into a gas. This phase change is called _____.
a. freezing
b. sublimation
c. vaporization
d. condensation
15. Fermentation of glucose with yeast produces _____.
a. ammonia, carbon dioxide, and water
b. carbon dioxide and water
c. carbon dioxide, sodium carbonate, and water
d. ethyl alcohol and carbon dioxide
16. Cream produces foam or whipped cream because of its viscosity and it _____.
a. has a low surface tension
b. has a high surface tension
c. has no surface tension
d. contains a lot of water
17. A Hershey's Milk Chocolate bar contains 13 g fat, 8 g saturated fat, 26 g total carbohydrates, 1 g dietary fiber, 24 g sugar, and 3 g protein. Based on this information, the chocolate bar would contain _____ calories.
a. 180
b. 233
c. 183
d. 298
18. Because triglycerides molecules are _____, they resist the hydrogen bonding that dissolves sugars in water.
a. polar
b. saturated
c. non-polar
d. unsaturated
19. In _____, the Nutrition Labeling and Education Act required food labels to carry basic nutrition information.
a. 1907
b. 1927
c. 1958
d. 1990
20. _____ is a heat resistant connective tissue found in meat.
a. Elastin
b. Myosin
c. Actin
d. Myoglobin

21. Celery wilts when placed in a dry environment because water leaves the cells through a process called _____.
a. drip
b. turgor
c. egress
d. osmosis
22. At the Country Farms Soup Company, a food scientist is evaluating the sensory properties of a new chicken soup and wants to evaluate the impact of savory, or _____, characteristics.
a. sour
b. bitter
c. umami
d. salty
23. The government regulates irradiation as _____.
a. an additive
b. a processing aid
c. a thermal food preservation method
d. a packaging process
24. An avocado will turn brown after it has been cut and bruised due to _____.
a. carmelization
b. enzymatic browning
c. blanching
d. application of antioxidants
25. To prevent or slow oxidative rancidity in a food product, a food processor could _____.
a. prevent light transmission through the use of opaque or non-light-transmitting packaging
b. increase the amount of moisture in the environment
c. add trace metals such as copper or iron
d. package the product in oxygen permeable packaging
26. Fresh fruits, vegetables, and meats are _____ percent water.
a. 10-30
b. 30-50
c. 50-70
d. 70-90
27. The color of ground beef color changes from bright cherry red to brown or _____ when packaged in an oxygen permeable package.
a. oxymyoglobin
b. metmyoglobin
c. nitric oxide myoglobin
d. nitrosylhemochromogen

28. In the U.S., the Food Guide _____ is a visual reminder of what makes up a balanced diet and the icon is found on the labels of some food packages.
- Circle
 - Pyramid
 - Rainbow
 - Pinwheel
29. _____ is a process of preserving food through a combination of partial drying and freezing.
- Dehydration
 - Cryofreezing
 - Dehydrofreezing
 - Thermodehydration
30. A company that manufactures potato chips inspects the product for color, chip size, thickness, and other attributes to assess the degree of acceptability of the chips. In other words, the company is checking _____.
- product quality
 - to determine if it is economical to produce the chips
 - if the marketing campaign is effective
 - product functionality
31. Gluten in flour contains fibrous and globular _____ and gives baked goods their structure and shape.
- starches
 - fats
 - sugars
 - proteins
32. When cabbages are stored they undergo a process termed _____ that yields principally water and carbon dioxide.
- respiration
 - perspiration
 - dehydration
 - oxidation
33. The _____ has the responsibility for regulating additives that are used in food processing.
- FDA
 - USDA
 - CDC
 - HHS
34. Sugar is considered _____.
- a heterogeneous mixture
 - an element
 - a homogeneous mixture
 - a compound

35. MREs or meals ready-to-eat are processed in _____ and have an extended shelf life of up to 3 years.
- a. metal cans
 - b. retort pouches
 - c. aseptic boxes
 - d. glass jars
36. To prevent butterfat from separating out as cream when milk stands during retail display and storage, milk is _____.
- a. pasteurized
 - b. emulsified
 - c. homogenized
 - d. winterized
37. To make ready-to-reheat and eat pancakes that are sold frozen in retail stores, the manufacturing company must cook the pancakes before the freezing process. When pancake batter is poured into a pan that is made hot by energy released from a heating element, the pan transfers the heat by _____ to the batter.
- a. radiation
 - b. convection
 - c. conduction
 - d. electromagnetic waves
38. A low acid food is a food _____.
- a. with very little acid ($\text{pH} > 4.6$)
 - b. with a lot of acid ($\text{pH} \leq 4.6$)
 - c. with a water activity > 0.85
 - d. with a water activity ≤ 0.85
39. _____ is important in baking yeast bread since it acts as a catalyst for the breakdown of a disaccharide into simple sugars, that in turn, break down to produce carbon dioxide which causes dough to rise.
- a. Lactase
 - b. Maltase
 - c. Catalase
 - d. Lipase
40. An IQF process means that a food product has been _____.
- a. individually quick-fried
 - b. individually quick-frozen
 - c. intentional quality fortified
 - d. irradiated quickly frozen

41. A pizza company printed a new package for frozen pizza and the consumer cooking instructions on the package states that the pizza should be reheated to a final temperature of 77°C. The cooking instructions should have listed the final cooking temperature in °F instead of °C. You have been asked to convert 77°C into °F. What should the final cooking temperature be in °F on the label?
- 135
 - 350
 - 160
 - 171
42. Amino acids are the building blocks of _____.
- carbohydrates
 - fats
 - proteins
 - fiber
43. _____ produces a heat stable toxin so even prolonged heating doesn't destroy this toxin if present in food.
- Listeria monocytogenes*
 - Clostridium botulinum*
 - Staphylococcus aureus*
 - Salmonella enteritidis*
44. _____ is the basic sugar molecule from which all other carbohydrates are built.
- Fructose
 - Galactose
 - Amylose
 - Glucose
45. One of the functions of sodium nitrite in cured meat products is to _____.
- improve product yield
 - provide flavor
 - minimize purge in vacuum packaged meats
 - inhibit mold growth
46. Hard wheat will yield a flour that has a higher _____ than that of flour from soft wheat.
- protein-to-starch
 - fat-to-starch
 - moisture-to-starch
 - protein-to-fat
47. Lard, or rendered _____, is popular in the baking industry for use in pastries, cakes, and frostings.
- beef fat
 - lamb fat
 - chicken fat
 - pork fat

48. The word *sanitation* is derived from the Latin word *sanitas*, meaning “_____.”
- a. clean
 - b. health
 - c. hygienic
 - d. fresh
49. Certain foods having a blue or red shade get their hue from pigments called _____ that are sensitive to pH changes. In acid solutions, they turn red, while they turn blue in basic solutions.
- a. anthocyanins
 - b. xanthophylls
 - c. carotenoids
 - d. porphyrins
50. If a food scientist measures a quantity of salt several times with similar results for a formulation, this measurement would be considered _____.
- a. accurate
 - b. precise
 - c. ineaxct
 - d. inaccurate