

Ohio FFA Food Science & Technology CDE
2009 Written Test

Directions: The test consists of 50 multiple-choice questions. You have 30 minutes to complete the test.

1. Saccharin is an example of _____?
A. a preservative
B. a sequesterant
C. a buffer
D. a non nutritive sweetener
2. Bacteria are responsible in whole or in part for the following foods?
A. Mushrooms
B. Ice Cream
C. Vanilla
D. Root Beer
3. What is the most common food allergen?
A. Eggs
B. Peanuts
C. Shelfish
D. Wheat
4. The main milk protein is called _____.
A. Curds
B. Lactose
C. Whey
D. Casein
5. Which of the following is not a monosaccharide?
A. lactose
B. galactose
C. glucose
D. fructose
6. The most common food infection is caused by _____.
A. *Salmonella*
B. *Escherichia coli* O157:H7
C. *Clostridium botulinum*
D. *Staphylococcus aureus*
7. A cereal bar contains 100 calories. Which profile could be true?
A. 4g fat, 6g protein, 11 carbs
B. 6g fat, 4g protein, 10 carbs
C. 4g fat, 7g protein, 9g carbs
D. 6g fat, 10g protein, 4g carbs
8. Thermophilic bacteria like to grow at temperatures between
A. 110°F to 140°F
B. 10°F to 50°F
C. 110°C to 140°C
D. 0°F to 25°F
9. Which of the following stabilizers, when combined with water, increase viscosity?
A. modified starch
B. guar gum
C. both
D. none of the above
10. Which of the following claim statements are true?
A. Fat free = 100% Fat free
B. Sodium free = less than 10mg per serving
C. Cholesterol Free = Less than 4mg per serving
D. Low in sugar = less than 1/2g per serving

11. What is the main purpose of processing a food?
 A. Makes it fit in the package
 B. Make it taste better
 C. Makes it safer
 D. None of the above
12. Which of the following process is not intended for microbial death?
 A. Sterilization
 B. Pasteurization
 C. Blanching
 D. Freezing
13. Which of the following is a type of carbohydrate?
 A. Lactose
 B. Fiber
 C. Sucrose
 D. Cellulose
14. Three _____ attach to a glycerol to form a triglyceride.
 A. amine groups
 B. amino acids
 C. fatty acids
 D. sugars
15. The use of genetic engineering to improve plant and animal productivity is known as _____.
 A. Nutraceuticals
 B. Biogenetics
 C. Animal Science
 D. Biotechnology
16. Which of the following could be used to shorten the dehydration time of an apple slices?
 A. Raise the humidity of the air
 B. Decrease the temperature of the air
 C. Increase surface area of the banana slices
 D. All of the above
17. Which of the following is not a type of microorganism?
 A. toxin
 B. yeast
 C. bacteria
 D. mold
18. _____ is added to foods to inhibit mold growth and extend shelf life.
 A. Sodium Benzote
 B. Potassium Sorbate
 C. Sodium Propionate
 D. All of the above
19. Which of the following vitamins are not fat soluble?
 A. A
 B. C
 C. D
 D. E
20. What is the term for the length of time a food can safely be kept before deteriorating?
 A. Sell By Date
 B. Shelf Life
 C. Incubation time
 D. Convection
21. Some products when exposed to light develop off flavors and odors as a result of _____.
 A. fermentation
 B. retrogradation
 C. oxidation
 D. denaturation

22. The roll of _____ is to regulate the chemical processes in your body.
- | | |
|-------------------|--------------|
| A. a calorie | C. caffeine |
| B. a carbohydrate | D. a vitamin |
23. Napoleon had a major role in the development of this processing technique to feed his army in the winter.
- | | |
|----------------|-----------------|
| A. Dehydration | C. Canning |
| B. Freezing | D. Fermentation |
24. A lack of which mineral causes the disease osteoporosis.
- | | |
|------------|--------------|
| A. iron | C. magnesium |
| B. calcium | D. potassium |
25. The CDC estimates that improper food handling at home accounts for ___ percent of reported food-related illness outbreaks.
- | | |
|-------|-------|
| A. 60 | C. 75 |
| B. 65 | D. 80 |
26. You can slow down the metabolic process _____, by refrigerating fruits and vegetables soon after harvest.
- | | |
|------------------|-----------------|
| A. dehydration | C. denaturation |
| B. fortification | D. respiration |
27. If Mary's caloric intake is 1500 calories, and she drinks a pop that contains 240 calories, what percent of her caloric intake is coming from the pop?
- | | |
|--------|--------|
| A. 9% | C. 16% |
| B. 12% | D. 20% |
28. What is the chemical process is used to make margarine from vegetable oil?
- | | |
|-------------------|------------------|
| A. Esterification | C. Fractionation |
| B. Hydrogenation | D. Hydrolysis |
29. Which of the following groups will be less likely to develop a food borne illness when exposed to a pathogen?
- | | |
|------------|-------------------|
| A. infants | C. pregnant women |
| B. elderly | D. smokers |
30. Which of the following is correct?
- | | |
|---|--------------------------|
| A. Apple Juice + Acetic Acid Bacteria = Vinegar | C. Milk + yeast = Yogurt |
| B. Cabbage + Yeast = Sauerkraut | D. Grapes + Mold = wine |
31. Which of the following nutrients contains the most calories per gram?
- | | |
|------------|------------------|
| A. alcohol | C. carbohydrates |
| B. fat | D. protein |

32. If a food contains 20% or more of the Daily Value per serving, then the product may be labeled _____.
- | | |
|------------|------------------------|
| A. Rich in | C. Excellent source of |
| B. High | D. All of the above |
33. Which of the following is not considered part of a heart-healthy diet?
- | | |
|------------------|----------------------------------|
| A. Low in fat | C. Low in fiber |
| B. Low in sodium | D. High in fruits and vegetables |
34. Good Manufacturing Practices (GMP's) are guidelines established by the FDA to assure:
- | | |
|----------------------------|--|
| A. the health of employees | C. the efficiency of food production |
| B. proper use of equipment | D. production of safe and wholesome food |
35. All of the following are major changes that happen to dough during the baking process except:
- | | |
|--------------------------------|-------------------------|
| A. dough gets thinner | C. dough changes shape |
| B. dough surface changes color | D. dough loses moisture |
36. Which of the following situations has the potential to contaminate food? An employee...
- | | |
|-------------------------------------|---|
| A. wearing a company-issued uniform | C. wearing a hair and beard net |
| B. with an open cut on his hand | D. not wearing gloves to handle boxed product |
37. The largest cost of producing food comes from _____.
- | | |
|--------------|---------------------|
| A. shipping | C. labor |
| B. packaging | D. food ingredients |
38. Which of the following is considered a foreign material in a processed food product?
- | | |
|----------|---------------------|
| A. glass | C. metal |
| B. wood | D. all of the above |
39. The following practice would not encourage rodent activity in a manufacturing facility?
- | | |
|-----------------------------------|---|
| A. Spilled garbage | C. Windows closed at all times |
| B. Missing traps or bait stations | D. Tall grasses growing near the building |
40. A cleaning chemical used in a food plant is required to be labeled with all of the following except:
- | | |
|-------------------------|-----------------------|
| A. date of last use | C. product name |
| B. chemical composition | D. safety information |

41. Which of the following is not a mode of heat transfer in an oven?
- | | |
|----------------|---------------|
| A. radiation | C. conduction |
| B. irradiation | D. convection |
42. Which of the following elements do amino acids contain that carbohydrates do not contain?
- | | |
|-------------|-----------|
| A. Oxygen | C. Amine |
| B. Hydrogen | D. Sulfur |
43. Title 21 of the CFR is the home to most food regulations. What does CFR stand for?
- | | |
|-----------------------------|----------------------------------|
| A. Code of Food Regulations | C. Code of Federal Regulations |
| B. Code of Federal Rulings | D. Certified Federal Regulations |
44. If a microorganism is pathogenic it _____.
- | | |
|----------------------------------|-------------------------|
| A. is capable of causing disease | C. can be in spore form |
| B. can produce toxins | D. all of the above |
45. Which needs the most water for growth?
- | | |
|-------------|-----------|
| A. yeast | C. spores |
| B. bacteria | D. mold |
46. The least harsh method of food preservation is _____.
- | | |
|--------------------|-------------------|
| A. cold processing | C. dehydration |
| B. fermentation | D. pasteurization |
47. What caused food deterioration?
- | | |
|-----------------------|-----------------------------|
| A. physical stress | C. gain or loss of moisture |
| B. enzymatic activity | D. all of the above |
48. Homogenization of milk is best described as _____.
- | | |
|--|-------------------------------------|
| A. reduction of microorganisms with heat | C. hermetically sealing the product |
| B. cream separation | D. reduction of fat particle size |
49. The process of removing the majority of the water from a product is called _____.
- | | |
|----------------|-------------------|
| A. respiration | C. irradiation |
| B. dehydration | D. lyophilization |
50. Irradiation _____.
- | | |
|---|------------------------------|
| A. is regulated by the FDA | C. needs a metal-plated room |
| B. leaves traces of radiation in the food | D. none of the above |

Ohio FFA Food Science & Technology CDE
2008 Written Test with Answers

Directions: The test consists of 50 multiple-choice questions. You have 30 minutes to complete the test.

1. Which combination most appropriately describes the relative size of the microorganisms to one another?
A. molds > bacteria > yeasts
B. yeasts > bacteria > molds
C. bacteria > molds > yeasts
D. molds > yeasts > bacteria
2. Which of the following elements do amino acids contain that carbohydrates do not contain?
A. Amine
B. Nitrogen
C. Oxygen
D. Hydrogen
3. Title 21 of the CFR deals with food laws. What does CFR stand for?
A. Code of Federal Regulations
B. Certified Federal Rulings
C. Certified Food Regulations
D. Code of Food Regulations
4. A sports nutrition bar has the following nutrition profile: 4 g fat, 24 g carbs, and 8 g protein. How many calories does it contain?
A. 144
B. 168
C. 184
D. None of the above
5. _____ fatty acids attach to _____ to form a triglyceride?
A. Three, glyceride
B. Three, glycerol
C. Two, cholesterol
D. Two, cholesteride
6. If a food contains 20% or more of the Daily Value per serving, then the product may be labeled _____.
A. High
B. Rich in
C. Excellent source of
D. All of the above
7. Which of the following is not a basic method of food preservation?
A. Control the temperature of the food
B. Control the color of the food
C. Control the acid content of the food
D. All of the above are methods
8. Stabilizers (gums, starches, dextrans) combine with water to increase _____.
A. fortification
B. oxidation
C. viscosity
D. None of the above
9. Which of the following is one of the basic freezing methods?
A. Air
B. Direct contact with refrigerant
C. Direct immersion in a freezing medium
D. All of the above

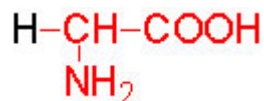
10. If a microorganism is pathogenic it _____.
- | | |
|---|---|
| A. only grows in the absence of oxygen | C. only grows in the presence of oxygen |
| B. is capable of causing disease | D. is in a dormant or resting state |
11. An example of a complex carbohydrate is _____.
- | | |
|------------------|-------------|
| A. glucose | C. sucrose |
| B. starch | D. fructose |
12. Which of the following foods would be least desirable for bacterial growth?
- | | |
|---------|-----------------|
| A. Milk | C. Eggs |
| B. Meat | D. Sugar |
13. The most common food infection is caused by _____.
- | | |
|----------------------------------|-----------------------------------|
| A. <i>Clostridium botulinum</i> | C. Salmonella |
| B. <i>Listeria monocytogenes</i> | D. <i>Clostridium perfringens</i> |
14. Which type of bacteria produces a toxin only in anaerobic environments of little acidity?
- | | |
|--|-----------------------------------|
| A. <i>Clostridium botulinum</i> | C. <i>Salmonella</i> |
| B. <i>Listeria monocytogenes</i> | D. <i>Clostridium perfringens</i> |
15. What is the minimum water activity value for bacterial growth?
- | | |
|----------------|---------|
| A. 0.45 | C. 0.96 |
| B. 0.75 | D. 1.43 |
16. The difference between unsaturated and saturated fats is that _____.
- | | |
|--|---------------------------|
| A. unsaturated fatty acids contain more hydrogen than saturated fatty acids. | C. Both A and B |
| B. unsaturated fats remain solid at room temperature, but saturated fats turn to liquid. | D. Neither A nor B |
17. What is the term for the length of time that a food can be safely stored before deteriorating?
- | | |
|----------------------|-----------------|
| A. Cool storage | C. Sell by date |
| B. Shelf life | D. Half life |
18. Which of the following nutrients contain atoms of carbon, hydrogen and oxygen?
- | | |
|------------------|----------------------------|
| A. Triglycerides | C. Amino acids |
| B. Sugar | D. All of the above |
19. Which type of microorganism is commonly found as a contaminant of highly sugared foods (like jams and jellies)?
- | | |
|-----------------|-------------|
| A. Fungus | C. Bacteria |
| B. Yeast | D. Molds |

20. Proteins are made up of _____.
- A. amino acids
 - B. fatty acids
 - C. nitroglycerides
 - D. lipidglycerides
21. Anaerobic bacteria can grow in which of the following environments?
- A. Vacuum packed lunch meat
 - B. Box of cake mix
 - C. Gallon of milk
 - D. None of the above
22. This type of chemical is used to control bacteria, yeast, and mold by inhibiting their growth.
- A. Sequestrant
 - B. Stabilizer
 - C. Antioxidant
 - D. Preservative
23. A cup of pudding is labeled "low fat". To make this claim, the pudding must contain less than _____ gram(s) of fat per serving.
- A. 0
 - B. 0.5
 - C. 2
 - D. 3
24. The process of removing almost all of the water from a food under controlled conditions is known as _____.
- A. dehydration
 - B. irradiation
 - C. respiration
 - D. lyophilization
25. Fruits and vegetables are refrigerated soon after harvest to reduce detrimental effects caused by the metabolic process known as _____.
- A. dehydration
 - B. irradiation
 - C. respiration
 - D. lyophilization
26. What is another name for freeze-drying?
- A. Dehydration
 - B. Irradiation
 - C. Respiration
 - D. Lyophilization
27. Which of the following takes place when oils are hydrogenated?
- A. Increase in the melting point
 - B. Increase amount of saturation
 - C. Reduce the likelihood of oxidation
 - D. All of the above
28. Which of the following is one of the three types of carbohydrates?
- A. Carboglyceride
 - B. Cholesterol
 - C. Fiber
 - D. Calcium
29. All of the following are fermentation products of lactic acid bacteria except _____.
- A. green olives
 - B. sauerkraut
 - C. vanilla
 - D. vinegar
30. Which of the following are macrominerals?
- A. Calcium, magnesium, copper
 - B. Calcium, potassium, magnesium
 - C. Sodium, copper, iron
 - D. Sodium, iron, potassium

31. Which of the following is a common test used on food packaging materials?
- A. Penetration of fats
 - B. Tensile Strength
 - C. Tear force
 - D. All of the above
32. Cholesterol is found in foods with saturated fats. Which of the following does not contain cholesterol?
- A. Pork
 - B. Eggs
 - C. Soybean Oil
 - D. Butter
33. Sterilization of a product requires a treatment of _____ with _____ heat.
- A. 121°F for 10 minutes, moist
 - B. 121°C for 10 minutes, dry
 - C. 121°F for 15 minutes, dry
 - D. 121°C for 15 minutes, moist
34. Which of the following chemicals is not added to bread to prevent MOLD growth?
- A. Sodium Benzoate
 - B. Potassium Benzoate
 - C. Sodium Propionate
 - D. Potassium Sorbate
35. Shortly after WW II, what was developed to aid in food preservation?
- A. Irradiation
 - B. Microwave ovens
 - C. Ammonia refrigeration
 - D. Fermentation
36. Which of the following groups of people will be most at risk to develop a food borne illness when exposed to a pathogen?
- A. Athletes
 - B. Elderly
 - C. Teenagers
 - D. All of the above
37. Which of the following vitamins can mix with fat?
- A. B6
 - B. E
 - C. B12
 - D. None of the above
38. How is a complete protein different from an incomplete protein?
- A. it contains all 9 essential amino acids
 - B. it contains all 20 essential amino acids
 - C. it is usually derived from sources such as rice or beans
 - D. it is made from only one type of amino acid
39. Molds growing on foods may produce toxic substances called _____.
- A. ethers
 - B. toxic wastes
 - C. esters
 - D. mycotoxins
40. For a food to be labeled as “low sodium” which of the following conditions (per serving) must be met?
- A. 140 mg or less
 - B. 35 mg or less
 - C. 140 mg or less sodium and 2 or less saturated fat
 - D. 140 mg or less sodium and 40 calories or less

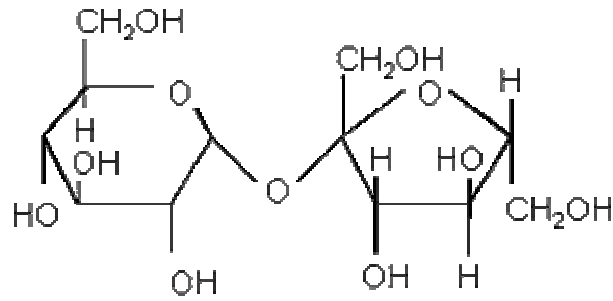
41. For microorganisms to grow, specific conditions must be present. Which of the following is necessary for microbial growth?
- A. salt
B. preservatives
C. **time**
D. light
42. What common process is used to inactivate plant enzymes that destroy the desirable color, texture, flavor, and nutrients found in the food?
- A. pasteurization
B. **blanching**
C. dehydration
D. freezing
43. The addition of Vitamin D to milk is known as _____.
- A. enrichment
B. nutrification
C. homogenization
D. **fortification**
44. Irradiation _____.
- A. **needs a metal-plated room**
B. is a warm food preservation method
C. is regulated by the EPA
D. leaves residue on foods
45. During a retort canning process, _____ heating involves passing energy from high temperature food particles to lower temperature food particles until all particles are the same.
- A. conventional
B. **conduction**
C. convection
D. cold point
46. Which of the following is not a safety concern with metal cans?
- A. Lack of vacuum when can is opened
B. **Corroded defects outside the can**
C. Off-odors to food
D. Discoloration of food
47. Vegetative cell death and spore activation both occur within which temperature range?
- A. 40 – 50 °F
B. 90 – 100 °F
C. **130 – 140 °F**
D. 180 – 190 °F

48. What is this chemical structure?



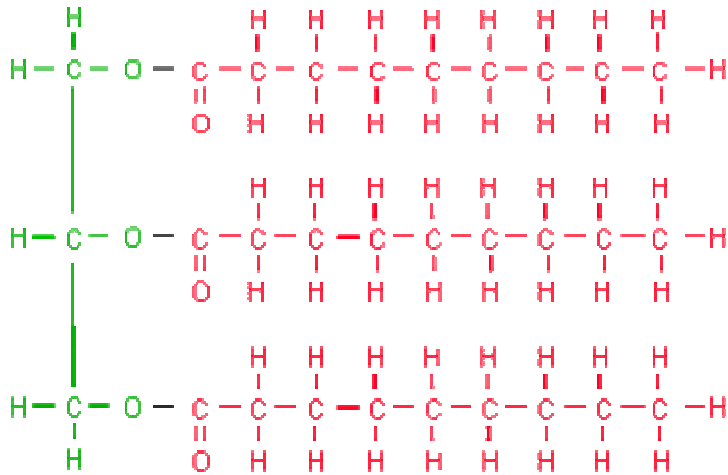
- A. triglyceride
B. monosaccharide
C. disaccharide
D. **amino acid**

49. What is this chemical structure?



- A. triglyceride
B. monosaccharide
C. **disaccharide**
D. amino acid

50. What is this chemical structure?



- A. **triglyceride**
B. monosaccharide
C. disaccharide
D. amino acid