



UNIVERSITY OF SWAZILAND
Faculty of Health Sciences

DEGREE IN ENVIRONMENTAL HEALTH
FINAL EXAMINATION PAPER 2018

- TITLE OF PAPER** : FOOD SAFETY
- COURSE CODE** : EHS 324
- DURATION** : 2 HOURS
- MARKS** : 100
- INSTRUCTIONS** :
- : ANSWER ONLY FOUR QUESTIONS
 - : QUESTION ONE IS COMPULSORY
 - : EACH QUESTION CARRIES 25 MARKS.
 - : READ THE QUESTIONS & INSTRUCTIONS CAREFULLY
 - : NO PAPER SHOULD BE BROUGHT INTO THE EXAMINATION ROOM.
 - : BEGIN EACH QUESTION ON A SEPARATE SHEET OF PAPER.

DO NOT OPEN THIS QUESTION PAPER UNTIL PERMISSION IS GRANTED BY THE INVIGILATOR.

Question 1

***Multiple Choice Questions
(Choose the Best Answer)***

1. Reduction of water content in liquid foods without conversion to a dry state is known as;
 - A. concentration
 - B. condensation
 - C. evaporation
 - D. extraction
 - E. sublimation

2. Some countries consistently report more foodborne outbreaks and more cases than others. The most likely explanation for this observation is that:
 - A. The countries reporting high numbers of outbreaks have notoriously poor health departments
 - B. The environmental health officers "health inspectors" in these high reporting countries are lazy, inefficient, and poorly trained
 - C. These countries have higher rates because they encourage reporting and investigation of foodborne diseases.
 - D. The countries with higher rates have inferior sanitation practices in their food establishments.
 - E. These countries reporting higher rates are likely to be third world countries.

3. Which one of the following statement is **not correct**?
 - A. Too low temperature in storage of fruits and vegetables interferes with enzymatic system, allowing toxic substances to build up resulting in pitting
 - B. Excessive carbon dioxide accumulation during the storage of fruits and vegetables which results in chemical damage leading to brown heart in apples and pears.
 - C. Ascorbic acid is frequently added in fruits salads to minimize non-enzymatic browning
 - D. Too much low temperature may result in chilling injury in fruits and vegetables which may lead to woolen factor in peaches and brown color in bananas.
 - E. Drupes have one seed or one stone; examples include cherries, apricots, and plums.

4. Factors that cause inhibition and death of microorganisms in carbonated beverages are;
 - A. carbon dioxide and low pressure
 - B. carbon dioxide and pH
 - C. pH and water activity
 - D. reduced oxidation-reduction potential and water activity
 - E. water activity and sugar content

5. Sodium benzoate is added in soft drinks for;
 - A. acidification in drinks so that pH remain low
 - B. inhibiting enzymatic coloring in soft drinks.
 - C. killing molds and yeasts growing in the soft drinks
 - D. killing bacteria likely to spoil soft drinks
 - E. destroy molds, yeasts and bacteria

6. Ropines in baked goods is likely to have been caused by,
 - A. retrodegradation during storage
 - B. *Bacillus subtilis*
 - C. flour mite, *Tyroglyphus farinae*
 - D. *Alcaligenes viscolactis*
 - E. fat oxidation in the dough

7. Staling in bread is caused by;
 - A. retrodegradation during storage
 - B. *Bacillus subtilis*
 - C. *Alcaligenes viscolactis*
 - D. Fat oxidation in the dough
 - E. Flour mite, *Tyroglyphus farinae*

8. Which beverage is likely to have the lowest alcohol content?
 - A. Wine
 - B. Brandy
 - C. Beer
 - D. Rum
 - E. Vodka

9. Which alcoholic drink (s) can be made from maize grains;
 - A. Wine
 - B. Vodka
 - C. Beer
 - D. Rum
 - E. Brandy

10. Under normal, comparable circumstances, which of the following would be expected to have the highest bacterial count per gram?
 - A. T-bone steak
 - B. Rump steak
 - C. Hamburger
 - D. Drumstick
 - E. Ox-liver

11. Which of the following foods would be more suspect as the vehicle for botulism
 - A. Canned peaches
 - B. Canned pineapples
 - C. Home roasted beef
 - D. Fried chicken
 - E. Home canned green beans

12. Which condition of canned food stuff spoilage is **not likely** to result in blown can;
 - A. Thermophilic microorganism
 - B. *Clostridium botulinum*
 - C. Lacquer stripping
 - D. Leaker spoilage
 - E. Metallic taint

13. Which classes of microorganisms have the lowest risk in egg spoilage?
 - A. ascaris worms
 - B. gram-positive
 - C. gram-negative
 - D. molds
 - E. yeasts

14. What is the primary factor in the preservation of fermented foods?
 - A. acidity
 - B. alkalinity
 - C. chemical preservatives
 - D. heat
 - E. water activity

15. Fruits that are known as drupes, include;
 - A. cherries and litchi
 - B. prunes and dates
 - C. cape gooseberry
 - D. loquat and cranberry
 - E. Both A and B

16. Which of these alcoholic beverages is made from the distillation of wine?
 - A. Gin
 - B. Rum
 - C. Whiskey
 - D. Brandy
 - E. Vodka

17. Pineapples are a rich source of;
- A. Vitamin A and C
 - B. Vitamin A and B₁
 - C. Vitamin A and B₂
 - D. Vitamin A, B₁ and B₂
 - E. Vitamin A, B₁, B₂ and C
18. Enzymatic browning cannot occur in;
- A. tangerine
 - B. brinjal
 - C. mushrooms
 - D. cherries
 - E. dates
19. Sour rot or watery rot in pumpkin may be caused by;
- A. *Botrytis cinerea*
 - B. *Geotrichum candidum*
 - C. *Penicillium expansum*
 - D. *Colletotrichum coccodes*
 - E. *Rhizopus stolonifer*
20. Grey mold rot on grapes is likely to have been caused by;
- A. *Botrytis cinerea*
 - B. *Geotrichum candidum*
 - C. *Penicillium expansum*
 - D. *Colletotrichum coccodes*
 - E. *Rhizopus stolonifer*
21. Blue mold on apples or pear is more likely to have been caused by;
- A. *Botrytis cinerea*
 - B. *Geotrichum candidum*
 - C. *Penicillium expansum*
 - D. *Colletotrichum coccodes*
 - E. *Rhizopus stolonifer*
22. Fusarium species growing on potato or general vegetables is likely to result in;
- A. soft rot
 - B. blight
 - C. black rot
 - D. spraing
 - E. dry rot

23. Ropines in milk is likely to have been caused by;
- A. *Alcaligenes viscolactis*
 - B. *Bacillus subtilis*
 - C. *Bacillus lichiniiformis*
 - D. *Pseudomonas marginalis*
 - E. Both B and C
24. Ropines in baked goods is likely to have been caused by;
- A. *Alcaligenes viscolactis*
 - B. *Bacillus subtilis*
 - C. *Bacillus lichiniiformis*
 - D. *Pseudomonas marginalis*
 - E. Both B and C
25. Which of the following statements is **not correct** in relation to hen eggs?
- A. Hens with heavy worm infestation may 'packaged' a worm in the egg during production.
 - B. Lack of vitamin k increases the incidence of blood spots in egg white.
 - C. Excessive intake of protein by hen result in abnormal egg shape
 - D. Pink discoloration in egg white is due to cotton seed and oil in the diet of hens.
 - E. Excessive intake of riboflavin in the diet result to egg white appearing slightly yellow-green.

[25 Marks]

Question 2

- a. Discuss the intrinsic factors that ensures shelled eggs are safe and health. [6]
- b. Why are dietetics commonly referred to as more healthier than table sugar in soft drinks? [3]
- c. Which vitamins are affected by the presence of oxygen, sunlight and long storage in fruits? [6]
- d. You find that some vegetables on the vegetable tray are showing a watery soaked appearance and a soft mushy consistency with a foul smell. Give at least three of the likely causative agents. [6]
- e. Name the molds that may be suspected to have caused the following vegetable spoilage.
 - i) gray rot in onions. [2]
 - ii) sour or watery rot in carrots [2]

[25 marks]

Question 3

- a) During food inspection you observe a milk contain labeled homogenized.
 - i) Describe the process of milk homogenization [6]
 - ii) Explain why milk is homogenized. [2]

- b) When milk is brought into the dairy plant, it is treated and then tested before being declared ready for sale. Why is milk tested? [3]
 - c) Methylene Blue test is one of the important raw milk tests. Describe the process of the test. [7]
 - d) How is pasteurized milk different from “UHT” milk? [7]
- [25 Marks]

Question 4

- a. In wine manufacture, sulfur dioxide is added to destroy microbes and inhibit enzymatic and non-enzymatic browning. Discuss non-enzymatic and enzymatic wine spoilage. [5]
- b. Most enzymes are destroyed during the blanching of fruits and vegetables. Give two enzymes that are likely to survive the blanching. [2]
- c. Through a Ministry of Health request, the “VAT” is not charged on brown bread. Why is that so? [6]
- d. How is alcoholism associated with impotence in males? [6]
- e. Why are the following tests important in milk?
 - i) Garber test [2]
 - ii) Phosphatase test [2]
 - iii) kjeldahl test [2]

[25 Marks]

Question 5

- a. Discuss the role of diet in eggs quality. [6]
 - b. Eggs when displayed for sale there are given a standard grading for quality. If an egg tray is graded AA, what does that mean? [10]
 - c. Describe the water method for determining the quality of shelled eggs. [9]
- [25 Marks]