



UNIVERSITY OF SWAZILAND
Faculty of Health Sciences

DEGREE IN ENVIRONMENTAL HEALTH
FINAL EXAMINATION PAPER 2018

TITLE OF PAPER : FOOD HYGIENE & PRESERVATION

COURSE CODE : EHM 309

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. In meat stored in the cold temperature, which group of spoilage organisms is susceptible to injury at temperatures below 3.3deg C?
 - A. gram positive cocci
 - B. gram negative rods
 - C. gram positive rods
 - D. bacterial spores
 - E. psychrophiles

2. The effect of freezing bacteria is;
 - A. to inactivate some; whereas others are sensitive to freezing, frozen storage, and thawing; others resist freezing but are susceptible to frozen storage; others are unharmed
 - B. to injure vegetative bacteria which can recover later
 - C. to kill vegetative cells but not spores
 - D. to stop their growth, but not to kill them
 - E. to delay the multiplication of microorganisms

3. Which form of sulfur dioxide is more active against microorganisms?
 - A. bisulfate ions
 - B. sulfite ions
 - C. undissociated sulfur dioxide
 - D. any undissociated form
 - E. all forms are equally effective

4. Which type of microorganism is most resistant to UV irradiation?
 - A. bacterial spores
 - B. gram-positive cocci in chains
 - C. gram-positive cocci in clusters
 - D. gram-negative non-sporing rods
 - E. mold spores

5. Treatments such as drying or freezing affect bacteria in foods in which of the following ways?
 - A. kill all of them
 - B. have no effect on their viability
 - C. kill and injure some of them
 - D. resuscitate them
 - E. make them more resistant to chemicals

6. Benzoic acid cannot be relied on to preserve foods capable of supporting bacterial growth because?
- A. It can inhibit most yeast and molds
 - B. It is an antimycotic agent
 - C. Many spoilage bacteria are much more resistant to it
 - D. Food poisoning and spore-forming bacteria are generally inhibited by 0.01-0.02 % undissociated acid
 - E. Both A and B
7. UV light can damage certain foods, but it does not;
- A. cause butter to become rancid
 - B. cause oxidation of lipid in pork
 - C. cause oxidation of milk and the development of off flavors
 - D. cause sugar to become lumpy
 - E. produce discoloration spots on leaves of green vegetables
8. Which part of a microbial cell is the most susceptible to decomposition by UV irradiation?
- A. amino acids
 - B. lipids
 - C. nucleic acids
 - D. the cell wall
 - E. water molecules
9. UV irradiation is most useful for killing microbes;
- A. in aerosols
 - B. in air or surfaces
 - C. in milk
 - D. in untreated water
 - E. on surfaces of wet or greasy foods
10. Bakeries have found UV helpful in controlling microorganisms;
- A. in interiors of cream-filled pies
 - B. in flour that is stained by rodent urine
 - C. in air to prevent spread of viable microorganisms to surface of bread
 - D. in jam and jelly fillings
 - E. in dough to accelerate fermentation
11. Curing salts are;
- A. ascorbic acid and nitrous oxide
 - B. sodium or calcium chloride and potassium permanganate
 - C. sodium chloride and sodium or potassium nitrite or nitrate
 - D. sodium and potassium nitrite or nitrate
 - E. sodium or potassium chloride and sodium nitrite

12. Assume you prepared several batches of the same type of the salad under the same conditions, except that you added varying amounts of vinegar. In the salads with high vinegar content, you would expect;
- A. a higher pH and a lower bacteria count
 - B. a lower pH and a lower bacteria count
 - C. a higher pH and a higher bacteria count
 - D. a lower pH and a higher bacteria count
 - E. a neutral pH and no change in bacteria count
13. The main reason for not allowing smoking in food preparation areas is because:
- A. the fingers become contaminated with saliva
 - B. smoke causes cancer
 - C. it wastes time
 - D. ashtrays make the kitchen look dirty
 - E. all of the above
14. Which one of the following statements explains what is meant by the term 'clean as you go'?
- A. Clean down before you leave for home.
 - B. Clean up every hour throughout the day
 - C. Once a year thoroughly clean the premises
 - D. Clean before moving on to the next task
 - E. Clean before going home
15. Factors inherent in a food that can influence microbial growth are known as:
- A. extrinsic factors
 - B. intrinsic factors
 - C. nutritional factors
 - D. physicochemical factors
 - E. processing factors
16. Basic steps for cleaning kitchen utensils are to:
- A. remove gross soil, apply detergent, scrub and rinse.
 - B. remove gross soil, wash, rinse and dry
 - C. remove gross soil, apply detergent, scrub, apply disinfectant, and rinse
 - D. remove gross soil, wash and then disinfect
 - E. remove gross soil, apply detergent, scrub, rinse, apply disinfectant and rinse.
17. Which one of these agents is a solvent for cleaning agents and a carrier for the removal of soil?
- A. alcohol
 - B. inorganic acids
 - C. organic acids
 - D. mild alkalis
 - E. water

18. Which type of agents is used to loosen and soften charred food residues on ovens?
- A. Abrasive compounds
 - B. Amphoteric compounds
 - C. Anionic wetting compounds
 - D. Cationic wetting compounds
 - E. Nonionic wetting compounds
19. Which one these types of substances has both wetting ability and antibacterial action?
- A. anionic wetting agents
 - B. cationic wetting agents
 - C. Chlorinated wetting compounds
 - D. nonionic wetting compounds
 - E. soap
20. The direct or indirect transmission of objectionable matter to a food product is called by which of these names?
- A. adulteration
 - B. contamination
 - C. infection
 - D. infestation
 - E. pollution
21. Which of these microorganisms are sensitive to freezing temperatures?
- A. *Clostridium botulinum* type E
 - B. Spores and toxins
 - C. *Clostridium perfringens* and *Bacillus subtilis*
 - D. *Listeria monocytogenes* and *Yersinia enterocolitica*
 - E. *Cladosporium herbarum*
22. Which of the following statements is **not correct** in relation to freezing temperatures?
- A. *Pseudomonas*, and *Alcaligenes* species will grow
 - B. *Penicillium* and *Thamnidium* species grow in frozen meat
 - C. Parasitic protozoa and *Cystercus bovis* are destroyed
 - D. Rod shaped bacteria are more resistant than cocci shaped bacteria
 - E. The growth of psychrophiles in meat results in color defects.
23. Which statement is **not correct** in relation to Quaternary ammonium cleaning agents?
- A. Highly effective against *Listeria monocytogenes* and reduce mold growth
 - B. Very good at penetrating porous surfaces
 - C. Used in the cleaning of food equipment, building interior fittings and working surfaces
 - D. Has a poor killing effect on gram negative bacteria
 - E. Cannot be mixed with soap, because it inactivate it.

24. Bacterial contaminants;
- Multiply rapidly in dehydrated foods
 - Resume multiplication when dried foods are reconstituted.
 - Do not grow well in reconstituted dehydrated foods.
 - Are eliminated in foods during the dehydration process.
 - Are not found in dehydrated foods
25. Anionic wetting agent is a good detergent but it will not;
- wet surfaces
 - emulsify fats, waxes and pigments
 - penetrate crevices and woven fabrics
 - destroy bacteria
 - do any of the above

[25 Marks]

Question 2

- Why disinfectants cannot be relied or depended on to sterilize the items or equipment to which they are applied? [6]
- How does cleaning agents or sanitizers assist the cleaning process? [6]
- Using appropriate examples, explain how do the following factors influence the efficiency of cleaning agents?
 - Nature or material of the equipment [6]
 - Organic matter [3]
 - Hard water [4]

[25 Marks]

Question 3

- Using appropriate examples, explain why antioxidants are added in foods. [4]
- In what type of food would you add sodium nitrate and why? [5]
- Show the relationship between pKa and the preservation of foods by organic acids. [4]
- Explain the health risk in the process of canning vegetables for the following processes.
 - Exhaustion [3]
 - Sterilization [6]
 - Cooling of cans [3]

[25 Marks]

Question 4

- Select **any three** organic acids of your choice and then discuss each under the following topics.
 - antimicrobial activity [3]
 - limitation [2]
 - types of food added [2]

b) Discuss the shortcomings for amphoteric cleaning agents in food utensils and equipment?

[4]

[25 marks]

Question 5

The physical environment in food premises has an important contribution to the quality of the final food product. Explain this statement.

[25 Marks]