

ACH 2201 – PRINCIPLES OF FOOD SCIENCE

END SEMESTER EXAMINATION

Answer all questions

Time: Three hours

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1. a) Explain the importance of '12 D Concept' in heat sterilization of foods.  
b) Give a brief account of the factors that you would consider and procedures that you would use to establish a satisfactory thermal process for a new can food product.  
c) A fermentation culture medium contains  $10^2$  bacterial endospores / litre. If the  $D_{121^\circ\text{C}}$  of the spore is 2.5 minutes, how long at  $121^\circ\text{C}$  is required to sterilize 10 litres of media. Assume instantaneous heating and cooling from  $121^\circ\text{C}$  and that sterility corresponds to one survivor/ 10,000 litres. Show all your calculations.
  
2. a) Explain the influence of freezing rate on ice crystal formation and product quality during frozen storage of foods.  
b) How and why is blanching carried out on vegetables destined for freezing or dehydration.
  
3. a) Briefly explain the production technology of corn syrup and it's importance in food industry.  
b) Describe the heat treatments that are used in the preparation of liquid milk for retail sale.
  
4. Write a brief account on the following:
  - a) Gas storage of foods
  - b) Single cell protein
  - c) Edible coating of foods

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5. a) What advice will you give to a mother of a child in a village to prevent Protein Energy Malnutrition (PEM)?
- b) Describe the measures which you would like to adopt to prevent Xerophthalmia in a village community.
- c) List the methods of control for Iron Deficiency Anemia and Iodine Deficiency Disorders.
- d) How would you prevent Non-Communicable Diseases in human?
6. Discuss the importance of following in human nutrition;
- a) Principle Food Groups
- b) Balance Diet
- c) Recommended Daily Allowance and Food Composition Table
- d) Assessment of Nutritional Status in human

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