



**NATIONAL OPEN UNIVERSITY OF NIGERIA**  
**14-16 AHMADU BELLO WAY, VICTORIA ISLAND LAGOS**  
**MARCH/APRIL 2016 EXAMINATION**  
**SCHOOL OF AGRICULTURAL**

**COURSE CODE:** HCM431      **CREDIT UNIT: 2**  
**COURSE TITLE:** ADVANCED FOOD AND BEVERAGE PRODUCTION

**TIME ALLOWED:** 2 HOURS

**INSTRUCTIONS:** 1. Attempt question Number one (1) and any other three (3).

2. Question number 1 is compulsory and carries 40 marks, while the other questions carry equal marks each

3. Present all your points in coherent and orderly manner

1. (a) Discuss in detail, the morphological structure of a bacteria organism (10 marks).  
(b) Write short notes on the following  
i) Staining techniques  
ii) Food additives  
iii) Types of Culture Media (15 marks).  
(c) Name any Ten (10) food borne pathogens common in our environment and briefly describe any five (5) of the identified pathogens (15 marks).
- 2 (a). Define the term "Microbiology" (2 marks)  
(b) List five examples of microorganisms in food (5 marks)  
(c) Mention 8 primary sources of microorganisms in food (8 marks)  
(d) Describe the effect of spoilage on the following:  
i. Protein  
ii. Carbohydrates  
iii. Fats and oil

- iv. Fruits and vegetable (5 marks).
3. (a) Mention the two parameters that affect growth of microorganisms. Explain how these parameters influence microbial growth and control (10 marks).
- (b) Identify and describe the different sources of food contaminants (10marks)
4. (a) i. outline the groupings of food for the purpose of microbiological testing (2 marks)  
ii. With the aid of an illustration, describe the phases of microbial growth (10 marks).
- (b) The method you use for thawing food is also an integral part of safe food handling. Describe these methods (8 marks).
- 5 (a) Briefly explain the two major causes of spoilage in foods (10 marks).
- (b) Explain four ways of reducing spoilage in a restaurant. (8 marks)
- (c) Mention four antimicrobial agents (2 marks)
6. (a) Define the term 'food preservation' (2 marks).
- (b) List 12 and describe at least 5 methods of food preservation (13 marks).
- (c) Describe briefly, the application of fermentation in the food industry (5 marks).