

**BOWEN UNIVERSITY, IWO**  
**COLLEGE OF AGRICULTURE, ENGINEERING AND SCIENCE**  
**MICROBIOLOGY PROGRAMME**  
**2022/2023 FIRST SEMESTER EXAMINATION**  
**MCB 307: BIODETERIORATION**

*Answer question ONE and any two others*

**Time: 2h 15min**

1.
  - (a) How does biodeterioration differ from biodegradation. (3marks)
  - (b) Mention and define the different types of biodeterioration. (12marks)
  - (c) What factors affect the growth of microorganisms in foods (5 marks)
  - (d) Mention two groups of microbes involved in the deterioration of crude oil and oil products and give two specific examples of microorganisms in each group (10 marks)
  
2.
  - (a) Discuss the significance of the bacterium *Clostridium botulinum* in food biodeterioration. (15 marks)
  - (b) Outline the types of damage to art objects on paper (5 marks)
  
3.
  - (a) Give the factors responsible for deterioration in:
    - (i) Leather and textiles (8 marks)
    - (ii) Paint (7 marks)
  - (b) Define biodeterioration of leather. (1 mark)
  - (c) What environmental conditions favour microbial corrosion? (4 marks)
  
4. Write on:
  - (a) The factors favouring the deterioration of materials. (10 marks)
  - (b) Five important groups of microorganisms involved in the deterioration of materials (10 marks)
  
5. Briefly explain:
  - (a) The importance and effects of biofilms in the food industry (9 marks)
  - (b) The strategies to control biofilm formation. (11 marks)