



NATIONAL OPEN UNIVERSITY OF NIGERIA
PLOT 91, CADASTRAL ZONE, NNAMDI AZIKIWE EXPRESSWAY, JABI - ABUJA
FACULTY OF SCIENCE
Department of Biological Sciences
2023_1 POP EXAMINATION

BIO 320: Microbial Ecology

Credit: 3 Units

Time allowed: 2½ hours

INSTRUCTION: Answer FOUR questions in all. Question 1 is compulsory

1. a. What is an Ecosystem (3marks)
- b. Enumerate the role of water in the soil (6 marks)
- c. Illuminate mutualism as a type of microbial interaction giving examples (16 marks)

- 2a. Describe the isolation of soil microorganisms using Simple Gravity Plate technique (7½ marks)
 - b. Enumerate the inadequacies in this technique (7½ marks)

3. a. Explain the term ‘Amensalism’. (6 marks)
- 3b. Explain 3 factors which can lead to Amensalism (9 marks)

4. List and explain the stages involved in the dispersal of aerial micro-organisms (15 marks)

- 5a. Enumerate 3 differences between Biodegradation and Biodeterioration (9 marks)
- 5b. Give 3 examples each of Biodeterioration and Biodegradation processes (6 marks)

6. The table below shows some of the extreme changes in the environment, the damage caused and the form of organisms that resist such changes. Copy and complete the following table: (15marks)

Environment Extreme	Damage caused	Resistant forms
? (1 mark)	Enzyme denaturation	? (1 mark)
Low pH	? (2 marks)	? (1 mark)
Extreme hydrostatic pressure	? (2marks)	? (1 mark)
Ionization radiation	? (2marks)	? (1 mark)
Low water activity	? (2marks)	<ul style="list-style-type: none"> • Halophiles • Osmophiles • Xenophiles
? (1 mark)	Loss of regulation, Decrease in membrane permeability as a result of crystallization of major cytoplasm components. 2 marks	? (1 mark)