



**NATIONAL OPEN UNIVERSITY OF NIGERIA**  
**PLOT 91, CADASTRAL ZONE, NNAMDI AZIKIWE EXPRESSWAY, JABI - ABUJA**  
**FACULTY OF SCIENCE**  
**Department of Biological Sciences**  
**2025\_1 EXAMINATION**

**BIO 405: Hydrobiology**

**Time: 2 Hours**

**Credit Units: 2**

**Instruction: Attempt THREE (3) questions only. QUESTION 1 is compulsory.**

1. (a.) Write short notes on (2 marks)  
(i) chemical composition of a water molecule (2 marks)  
(ii) survival of aquatic vertebrates in water (2 marks)  
(iii) role of water in photosynthesis respiration (2 marks)  
(b.) Explain briefly the major/main sources of freshwater for human use (8 marks)  
(c.) Write short note on the type of water pollution sources (5 marks)  
(d.) **List and explain the types of macrophytes found in a freshwater ecosystem (5 Marks)**  
(e.) Explain why aquatic plants are more buoyant than terrestrial plants (6 marks)
2. (a.) Briefly explain the causes of eutrophication (5 marks)  
(b.) Write notes on the types of plankton (9 marks)  
(c.) State how plankton contribute to the aquatic food chain (6 marks)
3. (a.) Explain the process of photosynthesis and its importance in freshwater ecosystems (10 marks)  
(b.) Explain the contribution of bacteria to the process of decomposition in freshwater ecosystems (6 marks)  
(c.) List the factors that influence the temperature of lotic waters (4 marks)
4. (a.) State how light penetration affects primary productivity in lakes (6 marks)  
(b.) State the environmental challenges facing Lake Chilwa and its surrounding wetlands (6 marks)  
(c.) Discuss the biological resources of Wikki spring (8 marks)
5. (a.) In terms of fish species, Explain the significance of Lake Tanganyika as a biological resource (6 marks)  
(b.) Enumerate how diseases like malaria and dengue fever relate to water pollution (6 marks)  
(c.) State roles that microorganisms play in water-related diseases with examples (8 marks)