



NATIONAL OPEN UNIVERSITY OF NIGERIA
Plot 91, Cadastral Zone, Nnamdi Azikwe Expressway, Jabi, Abuja
FACULTY OF SCIENCES
DEPARTMENT OF ENVIRONMENTAL SCIENCE AND RESOURCE MANAGEMENT
2025_2 EXAMINATIONS.

COURSE CODE: ESM423

COURSE TITLE: Hydrology and Water Resources

CREDIT: 3 Units

TIME ALLOWED: 3Hours

Instruction: Attempt question number ONE (1) and any other THREE (3) questions. *Question number one (1) is compulsory and carries 25 marks, while the other questions carry equal marks (15) each.*

1a). Define flooding **(5marks)**.

1b). Succinctly discuss the evaporation processes as it relates, water, soil and snow to the **(15marks)**

1c). Explain how the measurement of soil moisture is obtained using the gravimetric method **(5marks)**

2a). List and explain the typology of the aquifer **(5marks)**

2b). Discuss the early stage of hydrology development during the following eras **(10 marks)**

- ROMAN
- EUROPEANS

3a) Discuss the importance of drainage basins **(5 marks)**

3b) List the factors that influence input, output, and transport of sediment and water in a drainage basin. **(5 marks)**

3c) Describe the zone of saturation in groundwater **(5 marks)**

4). Expatriate on the features of the drainage basin **(15 marks)**

5a) How is groundwater replenished? **(5 marks)**

5b) Discuss the issues related to groundwater management, focusing on water table depletion." **(10marks)**

6a) Explain the concept of stream flow **(5marks)**

6b) What is surface water pollution? **(5 marks)**

6c) What are the classifications of water pollutants? **(2marks)**

6d) Differentiate between overland flow and stream flow **(2marks)**

6e) From the environmental viewpoint, state the two approaches to deal with water pollution **(1mark)**