



National Open University of Nigeria
Plot 91, Cadastral Zone, Nnamdi Azikiwe Expressway, Jabi - Abuja
Faculty of Science...
2021_1 EXAMINATIONS

COURSE CODE: ESM 423

COURSE TITLE: Hydrology and Water Resources.

CREDIT: 3 Units

TIME ALLOWED: 2 Hours: 30 minutes

Instruction: Attempt question number ONE (1) and any other FOUR (4) questions. Question number one (1) carries 22 marks, while the other questions carry (12) marks each.

1a) Fill in the missing spaces in the following definitions of hydrology **(6marks)**

Hydrology is the science that encompasses the occurrence, distribution, movement and _____ of the _____ of the earth and their relationship with the environment within each phase of the _____ cycle.

Hydrology is the science dealing with the waters of the earth, their _____ distribution and _____ their chemical and physical properties and their _____ with the environment

1b) List the five major dimensions on which water resource development and management revolve **(5marks)**

1c) Describe extensively how the weighing lysimeter is employed in hydrological studies **(11marks)**

2a) Complete the table with the appropriate branch of hydrology **(8marks)**

Branch	Scope
	This is the study of the isotopic signatures of water.
	This is the study of the transfer of water and energy between land and water body surfaces, and the lower atmosphere.
	This is the study of the adaptation of information technology to hydrology and water resources applications.
	This branch deals with the study of the chemical characteristics of water
	This area of hydrology is concerned mainly with estimating rates or volumes of flow or the changes in these values resulting from human activities.
	This is the study of presence and movement of groundwater.
	This branch is concerned with the study of interactions between organisms and the hydrologic cycle.
	This area focuses on the study of hydrologic processes that operate at or near Earth's surface

2b) List the major inventions that were of particular importance to the growth of hydrological studies in the 20th Century. **(4marks)**

- 3a) Explain the scope of water in the liquid phase **(6marks)**
3b) Diagrammatically Illustrate the process of the water cycle **(6marks)**
- 4a) Draw and label the dendritic drianage pattern **(3marks)**
4b) Explain the growth and development of hydrology in the 18th century **(6marks)**
4c) list the features of large-scale features of drainage **(3marks)**
- 5a) According to Strahler and Strahler, 2006 groundwater is? **(2marks)**
5b) Explain Subsidence as a byproduct of water table depletion **(4marks)**
5c) Explain the scope of drainage basin system **(6marks)**
- 6) Elucidate on the process involved in ground water formation **(12marks)**