



**National Open University of Nigeria**  
**Plot 91, Cadastral Zone, Nnamdi Azikiwe Expressway, Jabi - Abuja**  
**Faculty of Science**  
**SEPTEMBER, 2020\_1 EXAMINATION**

**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) What is Hydrology? **(2marks)**
- 1b) Explain and discuss the scope of Hydrology **(5marks)**
- 1c) List the major branches of hydrology **(8marks)**
- 1d) Highlight on the structure of Water Molecule **(7marks)**
  
- 2a) What is a water shed? **(2marks)**
- 2b) Describe the five major drainage patterns we have **(10marks)**
  
- 3a) What is the central theme around which hydrology revolves? **(1mark)**
- 3b) Write explanatory note on the following **(6marks)**
  - i)Runoff
  - ii)Overland flow
  - iii)Through flow
- 3c) Highlight the applications of hydrology in our everyday lives **(5marks)**
  
- 4a) State the remedial measures, for reducing excessive sediment **(3mks)**
- 4b) List the factors that influence the rate of rain water infiltration into the ground **(4marks)**
- 4c) Explain the concept of flooding as an environmental hazard. **(5marks)**
  
- 5a) Discuss the problems of groundwater management from the perspective of pollution **(7marks)**.
- 5b) Mention the key dimensions in the development and management of water resources according to Wurbs (2003) **(5mks)**
  
- 6a) Highlight the preventive measures for reducing excessive sediment load in streams **(6marks)**
- 6b) Elucidate on any six impacts of sediment on the environment **(6marks)**