**

**NATIONAL OPEN UNIVERSITY OF NIGERIA**

**FACULTY OF SCIENCES**

**DEPARTMENT OF ENVIRONMENTAL SCIENCES**

**Plot 91, Cadastral Zone, Nnamdi Azikwe Expressway, Jabi, Abuja**

**COURSE CODE:** ESM 423

**COURSE TITLE:** Hydrology and Water Resources 2 Credit unit

**TIME ALLOWED:** 2 Hours

**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.

1. Explain the influence of the following on the rate of rain water infiltration into the ground:
2. Vegetation cover (**6marks**).
3. Soil surface condition (**6marks**).
4. Rainfall intensity (**6marks**).
5. Soil moisture condition (**7marks**).
6. Discuss flooding as an environmental hazard under the following headings:
7. Definition (**3marks**).
8. Causes (**4marks**).
9. Effects (**4marks**).
10. Control measures (**4marks**).
11. a. Explain the term water pollution (**3marks**).

b. List and explain five (5) sources of water pollution (**7marks**).

c. Suggest appropriate solutions to the problems mentioned in “b” (**5marks**).

1. a. Discuss the process of groundwater formation (**5marks**).

b. List and explain the typology of aquifer (**10marks**).

1. Write explanatory note on the following:
2. Runoff (**5marks**).
3. Overland flow (**5marks**).
4. Through flow (**5marks**).