

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA
SCHOOL OF PHYSICAL SCIENCES
DEPARTMENT OF GEOLOGY

SECOND SEMESTER EXAMINATION FOR THE DEGREE OF BTech GEOLOGY
2017/2018 SESSION

COURSE CODE: GEL 525

UNIT: 3

COURSE TITLE: APPLIED HYDROGEOLOGY

**INSTRUCTIONS: ANSWER FOUR QUESTIONS IN ALL. AT LEAST TWO
QUESTION MUST BE ANSWERED FROM EACH SECTION**

TIME ALLOWED: 2 HOURS

DATE: 22ND SEPT. 2018

SECTION A

1. Write brief notes on the following;
 - a. Hydrogeological mapping techniques.
 - b. Flow system mapping.
 - c. How to generate hydrogeological data from fieldwork.
2. Explain groundwater development and management under the following;
 - a. Geophysical survey methods.
 - b. Drilling and completion.
 - c. Water quality test.
3. What is a flownet? Use a flownet to find the seepage through and beneath a dam that is 15m long, 7.5m high, with impounded water 6.2 m deep, tail water 2.2m high and entire length of dam being 80m. Take hydraulic conductivity to be 6.1×10^{-4} cm/sec.

SECTION B

4. (a) State Darcy's equation.
(b) Discuss any four methods used in determining hydraulic conductivity of an aquifer.
5. (a) When is groundwater said to be contaminated.
(b) Explain any five methods by which aquifers attenuate contaminants.
6. (a) Explain the concept of rock-water interaction.
(b) Discuss five sources of groundwater pollution.