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

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

COURSE CODE: GEL 513 **UNIT:** 3

COURSE TITLE: APPLIED GEOCHEMISTRY

INSTRUCTIONS: ANSWER QUESTION **ONE** AND ANY THREE OTHERS

TIME ALLOWED: 2 HOURS 30 MIN. **DATE:**

Q1. (a) Write explanatory notes on the terms:

i. Anomaly
ii. threshold
iii. background.

(b) Using the data in Table 1, plot a frequency distribution curve and use it to identify the threshold, background and anomalous values.

(c) Explain two other methods of defining the threshold concentration in geochemical prospecting.

Table 1

Log Concentration	0.6	0.8	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.6	2.8	3.0
Frequency	5	12	25	35	50	38	8	3	5	12	8	5	1

Q2. (a) Explain why the stable isotopes of H, C, N, O, Cl and S are useful in the interpretation of some biogeochemical processes.

(b) List four applications of stable isotope geochemistry.

(c) (i) What is deuterium excess?

(ii) Write an equation for this in rain water and explain its implications.

Q3. (a) Explain why anomalous stream sediments may not necessarily be accompanied by anomalies in the water with which they are in contact.

(b) With the aid of a well labelled diagram, explain how drainage geochemical survey is carried out.

Q4. (a) List five factors that affect the mobility of elements in low temperature geochemical environments.

(b) Give a classification of secondary dispersion patterns based on their geometry and relationship with the ore body.

Q5. (a) Define a geochemical province and highlight its significance in mineral exploration and medical geology.

(b) Write short notes on the following:

i. Geochemical environments.

ii. Geochemical association.

iv. Geochemical mobility.

Q6. Enumerate and explain five various applications of geochemistry in solving human problems.