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

FIRST SEMESTER EXAMINATION FOR THE DEGREE OF BTech GEOLOGY 2015/2016 SESSION

Course : GEL 313 (Igneous Petrology) Unit: 2
Date: 12th April, 2016 Time Allowed: 1 hour 30 minutes

Instructions: Answer questions one and any other two of your choice. All questions carry equal marks

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1 a. With the aid of a diagram, discuss at least 5 intrusive igneous structures
b. Discuss the field relations of 1 (a) above
c. Define igneous textures and state its importance in petrology
d. Describe the following terms associated with igneous textures:
(i) Holocrystalline
(ii) Granular
(iii) Xenomorphic
(iv) Amygdular
(v) Graphic
(vi) Obicular
(vii) Myrmekitic

2 a. Define the following terms as used in igneous petrology:
(i) Magma
(ii) Melt
(iii) Primary magma
(iv) Primitive magma
(v) Parental magma
b. Write short notes on ultramafic rocks.

3. Using the Bowen's Reaction Series, explain how an originally basic magma can give rise to granite.

4. Differentiate between a basalt and a granite on the bases of the following:
(i) Texture
(ii) Geological environment of formation
(iii) Silica content
(iv) Colour index
(v) Feldspar content and composition

5a. i. Give the name and chemical formulae of the three alkali feldspar minerals.
ii. Name any two rocks likely to form from the crystallization of residual magma.
iii. List any two minerals in the plagioclase series that are likely to contain more than 60 % calcium.
b. Differentiate between the following pairs of igneous rocks using feldspar contents and composition.
i. Rhyolite and granodiorite.
ii. Granite and granodiorite.
iii. Dacite and granite.
iv. Tonalite and rhyolite.
v. Granite and tonalite.