

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

Course: GEL 212 (Crystallography and Descriptive Mineralogy)

Unit: 3

Date:

Time Allowed: 2 hours

Instructions: Answer any two questions from each section. All questions carry equal marks.

SECTION A
CRYSTALLOGRAPHY

- 1 a. What is a unit cell?
b. With the aid of diagrams describe four Bravais Lattices indicating the unit cells involved where possible.
- 2 a. What is a crystal class?
b. Name three crystal classes with characteristic minerals belonging to each class.
- 3 a. Give detail account of the formation of crystals.
b. Using diagrams differentiate between crystal face, form and habit.

SECTION B
DESCRIPTIVE MINERALOGY

- 1 a. Define the following terms:
 - (i) Mineralogy
 - (ii) Mineral
 - (iii) Ionic radius
 - (iv) Element
b. Using the two polymorphs of carbon as examples, explain how the properties and uses of a mineral depend on the electrical forces that bind together the particles of a mineral.
2. Differentiate between the following:
 - (a) Isomorphism and polymorphism
 - (b) Rock forming minerals and minerals of economic importance
- 3 (a) What is the bases of classification of silicates minerals?
(b) Write short notes on nesosilicates as a group of silicate minerals.
(c) In a tabular form write the group and chemical formulae of the following minerals:
 - (i) Apatite
 - (ii) Cassiterite
 - (iii) Chalcopyrite
 - (iv) Fluorite
 - (v) Gold
 - (vi) Gypsum
 - (vii) Siderite