

UNIVERSITY OF FORT HARE

**GLG221
SOUTH AFRICAN GEOLOGY
GEOCHEMISTRY
GEOLOGY OF ORE DEPOSITS
STRUCTURAL GEOLOGY**

SUPPLEMENTARY EXAMINATIONS

JANUARY 2019

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Time: 3 Hours

Subject: GLG221

Marks: 100

This paper consists of 3 pages including the cover page

Internal Examiners

**Mrs V Mazomba
Dr K Madi
Mr S Sinuka**

**External Examiners
(If externally moderated)**

INSTRUCTIONS

Answer one (1) question from each of Section A, B, C and D.

SECTION A: SOUTH AFRICAN GEOLOGY

QUESTION 1

[25]

Discuss the geological formation of the Barberton Greenstone Belt including its tectonic setting, structure, stratigraphy, mineralization and its importance to our economy.

QUESTION 2

[25]

Write an essay on the development of the Transvaal Supergroup. Include the tectonic processes, structure, and development of stratigraphy in certain areas, mineralization and its importance to our economy.

SECTION B: GEOCHEMISTRY

QUESTION 3

[25]

Discuss the geochemistry of magmas or rocks that occur in the mid oceanic ridges and subduction zones.

QUESTION 4

[25]

Discuss the geochemical classification of alkaline rocks, and give the chemical characteristics of shoshonitic igneous rocks.

SECTION C: GEOLOGY OF ORE DEPOSITS

QUESTION 5

[25]

Magmatic segregation deposits form as a direct result of igneous differentiation. Deposition of magmatic ores-ore minerals or rocks formed from parent liquids that are generally silicate than oxide or sulphide melts-can occur in five ways. Explain.

QUESTION 6

[25]

Define the following terms:

- a) Economic Geology
- b) ore
- c) Ore deposit
- d) Gangue
- e) Waste

[10]

2. Ore deposits are classified according to various criteria developed via the study of economic geology, or ore genesis. What are they and give two examples for each. **[10]**

3. Name the various ore-forming processes and give an example of an ore type in each. **[5]**

SECTION D: STRUCTURAL GEOLOGY

QUESTION 7

[25]

- a) Discuss the genesis and occurrence of foreland basins with two typical examples (collision and subduction) around the world. [15]
- b) Explain the occurrence of earthquakes west of the South America plate. [10]

QUESTION 8

[25]

- a) Discuss the formation and occurrence of active and inactive rifts, and the normal faulting systems in the world. [15]
- b) Explain how rifts look like at depths using the case of pure shear and simple shear. [10]