UNIVERSITY OF FORT HARE

GLG 313
Structural Geology
South African Geology

Main Examinations: June 2023

Time: 3 Hours **Marks: 100**

Subject: Geology **One paper**

This paper consists of 2 pages including the cover pages

Internal Examiners:

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External Examiner:

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INSTRUCTIONS

Answer all (2) questions from Section A and two questions from Section B

SECTION A: STRUCTURAL GEOLOGY

QUESTION 1

[25]

(a) Discuss the relation of fault mechanism to stress; [10]

(b) Briefly explain the histories of development leading to different types of shear zones; [10]

(c) What makes a ductile shear zone different from a fault? [5]

QUESTION 2

[25]

Give an account on mylonitic foliations and shear bands (S-C structures). Your account should include an introduction, a description on microscale foliations, mica fish and porphyroclasts.

SECTION B: SOUTH AFRICAN GEOLOGY

QUESTION 3

[25]

(a) With the aid of illustrations, show the major tectonic/structural settings of South Africa, and explain the formation processes and the ages, the characteristics and relationships between the different tectonic/structural segments of South Africa. [12]

(b) Discuss the stratigraphic sequence and main lithologies of the Paleozoic Natal Group, and explain the tectonic setting and depositional environment for these sediments. [13]

QUESTION 4

[25]

(a) With the aid of table, list the stratigraphic sequence and main lithologies of the Ecca Group of Karoo Supergroup in the Eastern Cape, and discuss the depositional environments for each Formation of the Ecca Group. [13]

(b) Write an account on the climate and environmental changes in the geological history during the deposition of the **Karoo Supergroup**. You should use lithology, rock colouration, sedimentary structures, mineralogical and biological (fossil) features to support your explanation. [12]

QUESTION 5

[25]

Write an essay on the Witwatersrand Supergroup deposits. Explain the tectonic setting, stratigraphic sequence, depositional environments, ore deposits and developmental history of formation of the Witwatersrand Supergroup deposits.

.....END OF THE PAPER.....