

**REPUBLIC OF SOUTH AFRICA
DEPARTMENT OF MINERALS AND ENERGY
EXAMINATION FOR THE MINE SURVEYORS CERTIFICATE OF COMPETENCY**

DATE: 18 April 2008 (Friday)
TIME: 12:30 to 14:30 (2 Hours)

TOTAL MARKS: 100
TO PASS: 50

GEOLOGY

Note: (1) Answer all questions

QUESTION 1

- a) Draw a section along the line A-B on the attached plan , which must be returned with your answer book.
- b) Give a brief description of the geological history of the area. (20)

QUESTION 2

Discuss "Limestone" in South Africa with reference to the following:

- 2.1 Uses , composition and properties.
- 2.2 Occurrence. (10)

QUESTION 3

Minerals can be classified by their various properties.

Complete the attached tabulation to indicate some of these properties. (15)

QUESTION 4

Lustre and density are physical characteristic of a mineral.

- 4.1 Define density.
- 4.2 Define lustre.
- 4.3 Name the eight common descriptive terms associated when describing lustre.
Discuss and give an example of a mineral for each term. (10)

QUESTION 5

South Africa is divided into a number of Stratigraphic sub-divisions.

The rocks in the Swazian are placed in several sequences and groups.

- 5.1 Name and briefly discuss the three Swazian Sequences.
- 5.2 Name the groups in the Swazian. (8)

QUESTION 6

There are three agents that bring about Metamorphism :

- 6.1 Name the three agents.
- 6.2 Name and discuss the three types of Metamorphism.
- 6.3 List six metamorphic rocks. (12)

QUESTION 7

- 7.1 Explain what is meant by “Denudation of the earth’s crust”.
- 7.2 Describe fully the agents which are responsible for the Denudation of the earth’s crust considering both the mechanical and the chemical processes. (10)

QUESTION 8

Discuss “Diamonds” in South Africa with reference to the following :
Uses , location and types of deposits. (10)

QUESTION 9

Define or describe the following terms :

- 9.1 Calorific value (c.v.) and give it’s unit of measurement.
- 9.2 Moisture content.
- 9.3 Streak of a mineral.
- 9.4 Normal fault. (5)

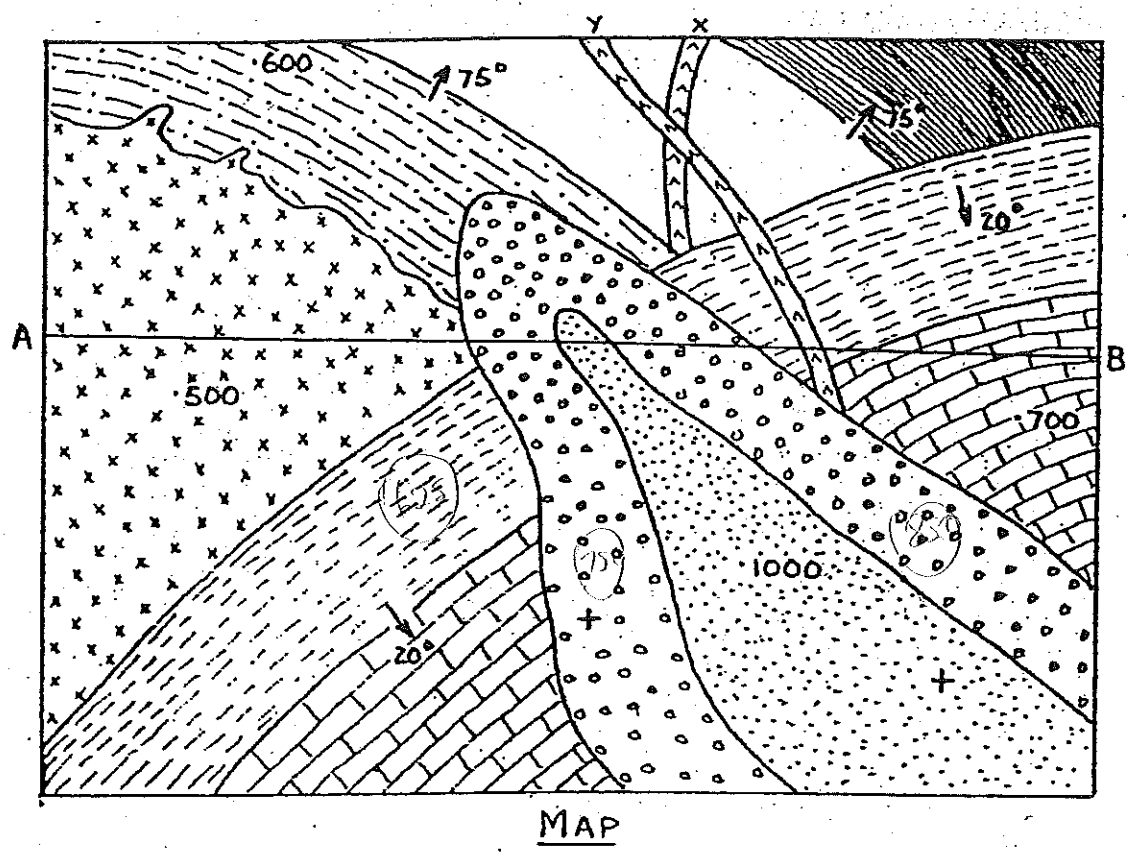
TOTAL 100

QUESTION 3

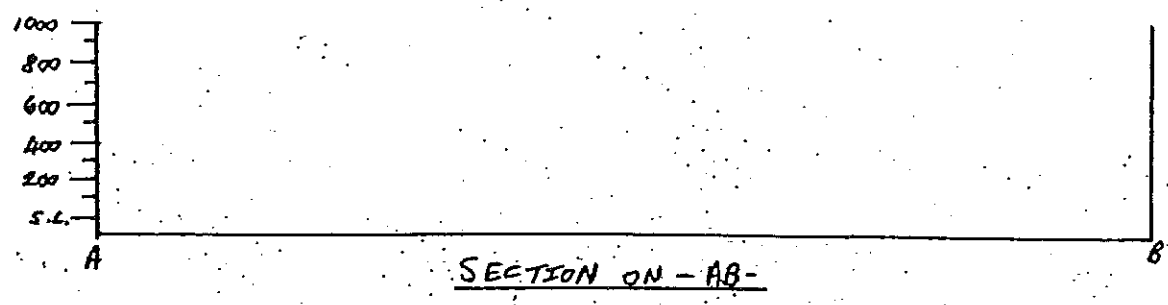
18 APRIL 2008

EXAM NO.

MINERAL					
Physical Properties	Diamond	Gold	Gypsum	Quartz	Magnetite
Crystal system					
Colour					
Lustre					
Density					
Use					
Common South-African occurrence					



MAP



SECTION ON - AB -

MARL

SHALE

GRANITE

SANDSTONE

CONGLOMERATE

QUARTZITE

SHALE

DOLERITE

LIMESTONE