

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

DATE: 13 October 2006 (Friday)
TIME: 12:30 to 14:30 (2 Hours)

TOTAL MARKS: 100
TO PASS: 50

GEOLOGY

Note: (1) Answer all questions

QUESTION 1

On the attached plan of the 10 level horizon, a fault X which has displaced a reef is indicated. The direction of movement on fault X is shown on the plan. Graphically determine (in metres) the amount of :

- a) True movement.
- b) The vertical component of movement.
- c) The horizontal component of movement. (20)

QUESTION 2

Discuss volcanic eruptions under the following headings :

- a) Describe how a volcano is formed.
- b) Name and discuss the types of volcanic eruptions.
- c) Products produced from a volcanic eruption. (10)

QUESTION 3

Minerals can be classified by their various properties. Complete the attached tabulation to indicate some of these properties. (15)

QUESTION 4

South Africa is divided into a number of Stratigraphic sub-divisions. The rocks in the Swazian are placed in several sequences and groups.

- a) Name and briefly discuss the three Swazian Sequences.
- b) Name the groups in the Swazian. (8)

QUESTION 5

Regarding the formation of economic deposits name five (5) deposits formed by mechanical concentration. Discuss each deposit giving an example associated with each. (10)

QUESTION 6

“Streak” is a physical characteristic of a mineral.
Define and discuss with examples.

(10)

QUESTION 7

Name and describe five (5) different types of coal.

(10)

QUESTION 8

Define or describe the following terms :

- a) Ash content.
- b) Proximate analysis.
- c) Coking properties.
- d) Tenacity.
- e) Fusibility.
- f) Malleable.
- g) Reverse fault.

(7)

QUESTION 9

Discuss “Limestone” in South Africa with reference to the following:

- a) Uses , composition and properties.
- b) Occurrence.

(10)

TOTAL 100

QUESTION 3

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EXAM NO.

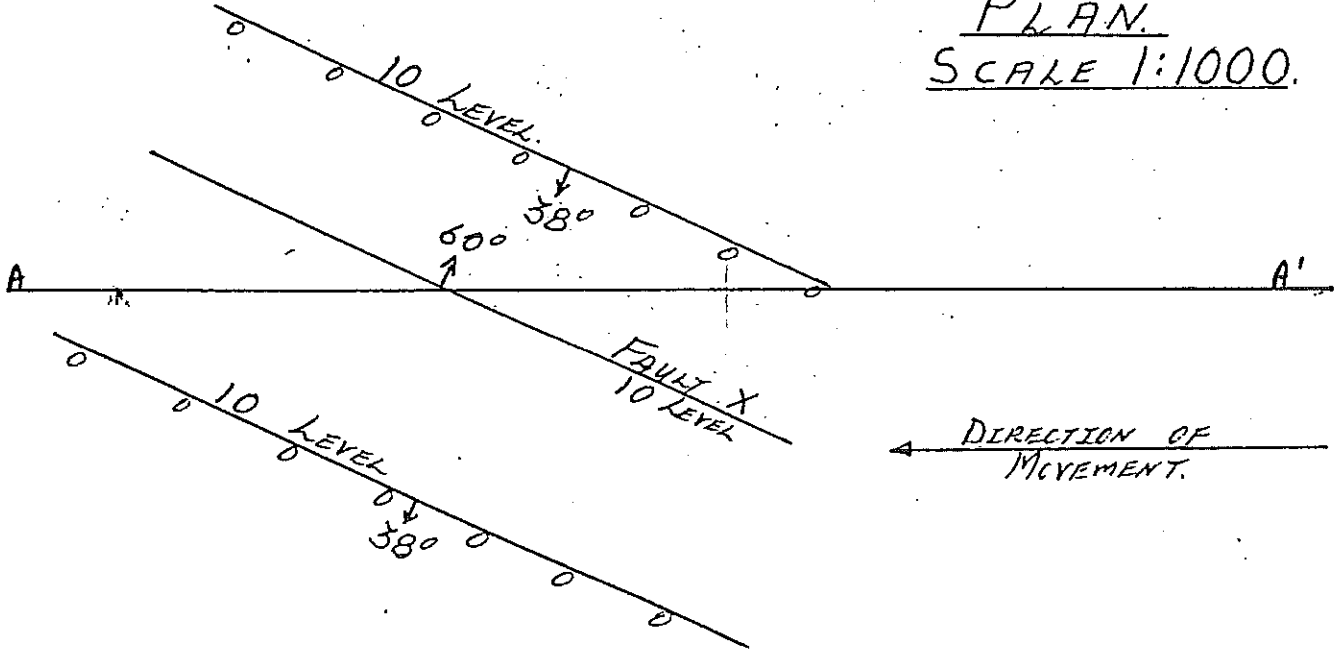
MINERAL					
Physical Properties	Malachite	Fluorite	Pyrite	Galena	Magnetite
Crystal System					
Colour					
Lustre					
Hardness					
Density					
Uses					

QUESTION 1

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PLAN.
SCALE 1:1000.



10' LEV ELEV

11' LEV ELEV

SECTION A-A' ON DIRECTION OF MOVEMENT