

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

DATE: 17 April 2009 (Friday)
TIME: 12:30 to 14:30 (2 Hours)

TOTAL MARKS: 100
TO PASS: 50

GEOLOGY

Note: (1) Answer all questions

QUESTION 1

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

QUESTION 2

- 2.1 Explain what is meant by “Denudation of the earth’s crust”.
- 2.2 Describe fully the agents which are responsible for the Denudation of the earth’s crust. (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 is a physical characteristic of a mineral.
Name the eight common descriptive terms associated when describing lustre.
Discuss and give an example of a mineral for each term. (8)

QUESTION 5

Give a brief description of the occurrence of Manganese under the following :

5.1 The distribution of Manganese in South Africa
5.2 The most common type of Manganese mined.
5.3 The types and uses of Manganese. (10)

QUESTION 6

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

- 6.1 Name and briefly discuss the three Swazian Sequences.
6.2 Name the groups in the Swazian.

(8)

QUESTION 7

Name the five groups into which common sedimentary rocks can be classified.

(5)

QUESTION 8

There are three agents that bring about Metamorphism :

- 8.1 Name the three agents.
8.2 Name and discuss the three types of Metamorphism.
8.3 List six metamorphic rocks.

(12)

QUESTION 9

- 9.1 Define the “the process of coalification”.
9.2 Name the four agents of coalification.
9.3 What is meant by the “rank of coal” ?

(5)

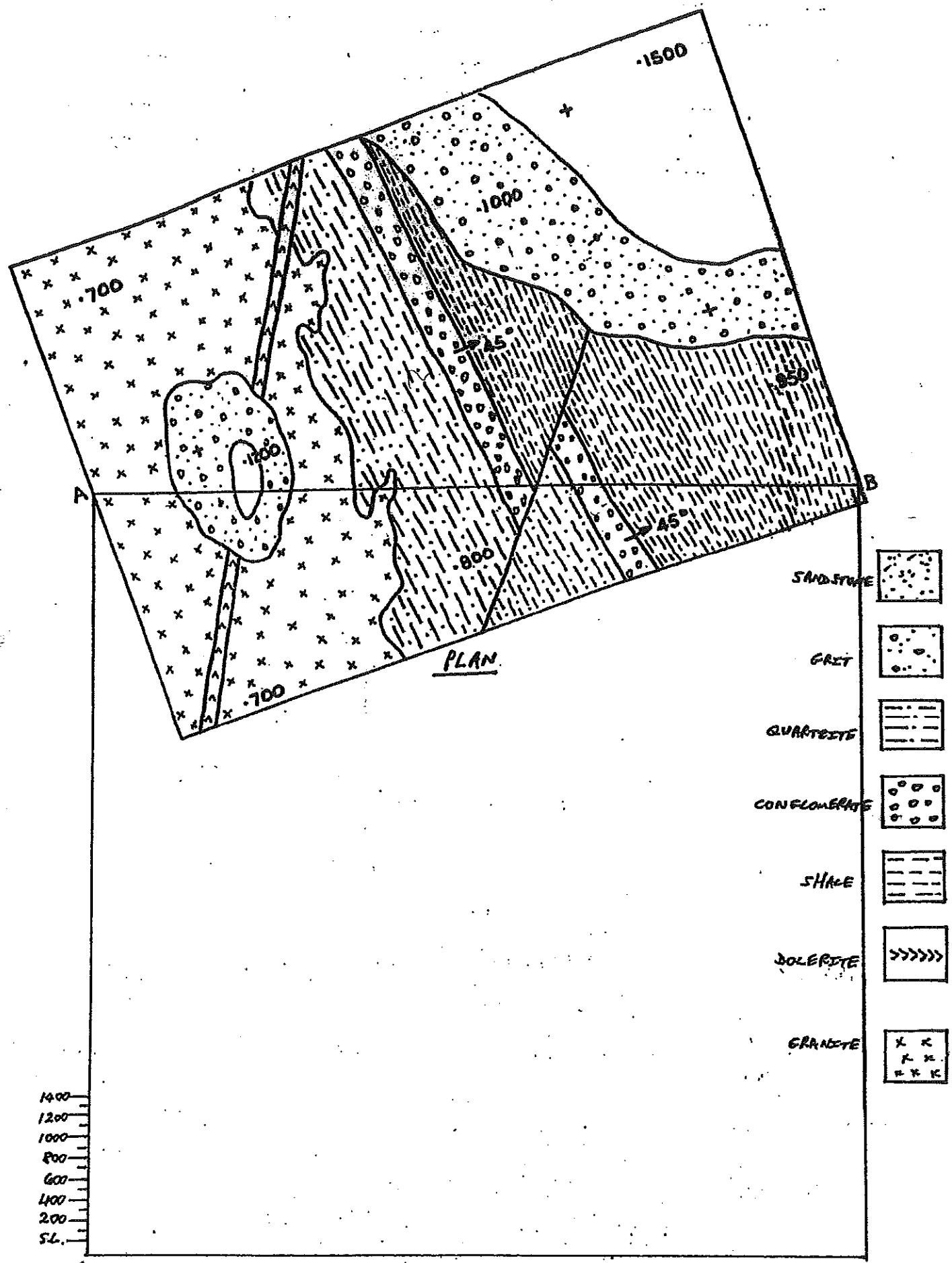
QUESTION 10

Define or describe the following terms:








- 10.1 Ash content.
10.2 Proximate analysis.
10.3 Coking properties.
10.4 Tenacity.
10.5 Fusibility.
10.6 Malleable.
10.7 Reverse fault.

(7)

TOTAL 100



PLAN

- SANDSTONE 
- GRIT 
- QUARTZITE 
- CONGLOMERATE 
- SHALE 
- DOLOMITE 
- GRANITE 

1400
1200
1000
800
600
400
200
SL.

A
ELEVATIONS ABOVE
SEA LEVEL

SECTION ON A-B

B

QUESTION 3

17 APRIL 2009

EXAM NO.

MINERAL					
Physical Properties	Bornite	Apatite	Magnetite	Graphite	Gold
Crystal System					
Streak					
Lustre					
Fracture					
Density					
Uses					