

**REPUBLIC OF SOUTH AFRICA
DEPARTMENT OF MINERAL RESOURCES
EXAMINATION FOR THE MINE SURVEYORS CERTIFICATE OF COMPETENCY**

DATE: 12 April 2012 (Thursday)
TIME: 12:30 to 14:30 (2 Hours)

TOTAL MARKS: 100
TO PASS: 50

GEOLOGY

QUESTION 1

Name and describe the different types of coal. (12)

QUESTION 2

The Rock-forming “Femic Minerals Group” comprises a number of families in each of which the members have a close relationship to one another. Name and discuss the different families. (10)

QUESTION 3

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

QUESTION 4

Write short notes on the following Geophysical Prospecting methods :
4.1 Gravimetric Surveying
4.2 Magnetometric Surveying
4.3 Seismic Methods
4.4 Radiometric Surveying (10)

QUESTION 5

Discuss “Limestone” in South Africa with reference to the following:
5.1 Uses, composition and properties.
5.2 Occurrence. (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.

(10)

QUESTION 7

Lustre and density are physical characteristic of a mineral.

7.1 Define density.

7.2 Define lustre.

7.3 Name the eight common descriptive terms associated when describing lustre.

Discuss and give an example of a mineral for each term.

(10)

QUESTION 8

Mineral hardness is defined as the resistance to being scratched. Fill in the missing information numbered : a,b,c,d,e,f,g,h in the "Mohs" hardness scale table below.

(Write answers in exam book next to corresponding letter.)

Standard mineral	Hardness	Remarks
Talc	1	Marks cloth (example)
Gypsum	(a)	(b)
Apatite	(c)	(d)
(e)	7	(f)
(g)	(h)	Scratches all substances

(4)

QUESTION 9

9.1 Draw a section along the line A-B on the attached plan , which must be returned with your answer book.

9.2 Give a brief description of the geological history of the area.

(19)

TOTAL 100

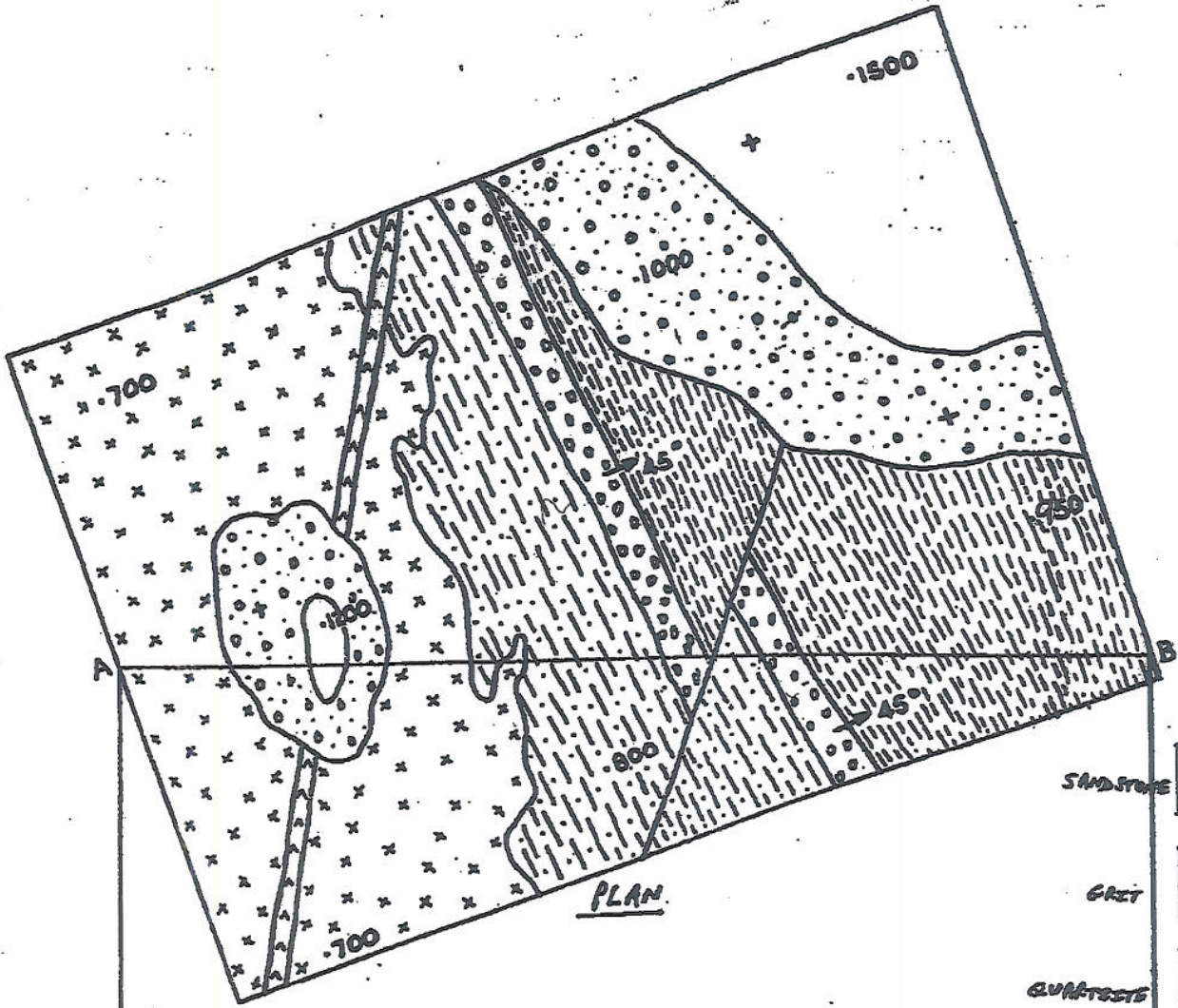
QUESTION 3

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EXAM NO.

	MINERAL				
Physical Properties	Diamond	Fluorite	Gypsum	Copper	Quartz
Crystal System					
Colour					
Lustre					
Fracture					
Density					
Uses					

(15)



PLAN

- SANDSTONE
- GRAIT
- QUARTZITE
- CONGLOMERATE
- SHALE
- SOLERITE
- GRANITE



(9.1)



SECTION ON A-B

ELEVATIONS ABOVE SEA LEVEL