

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

DATE: 20 April 2007 (Friday)  
TIME: 12:30 to 14:30 (2 Hours)

TOTAL MARKS: 100  
TO PASS: 50

**GEOLOGY**

**Note:** (1) Answer all questions

**QUESTION 1**

Plot the second level horizon showing all construction lines of intersection.  
Name the type of fault and what effect that it has on the ground (show on plan).  
Draw a section along line A – B.  
Indicate the following regarding the reef:  
a) Apparent movement.  
b) Horizontal component of movement showing distance in metres.  
c) Vertical component of movement showing distance in metres.

(20)

**QUESTION 2**

Discuss volcanic eruptions under the following headings :  
2.1 Describe how a volcano is formed.  
2.2 Name and discuss the types of volcanic eruptions.  
2.3 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**

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

(5)

**QUESTION 5**

Name five metals of the Platinum Group, their uses, and where they occur in South Africa.

(10)

## QUESTION 6

Write short notes on the following Geophysical Prospecting methods :

- 6.1 Gravimetric Surveying
- 6.2 Magnetometric Surveying
- 6.3 Seismic Methods
- 6.4 Radiometric Surveying

(10)

## 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.

(10)

## QUESTION 8

Define or describe the following terms :

- 8.1 Ash content.
- 8.2 Proximate analysis.
- 8.3 Coking properties.
- 8.4 Tenacity.
- 8.5 Fusibility.

(5)

## QUESTION 9

“Hardness” is a Physical Characteristic of a Mineral.

Define Hardness and discuss (table form) in detail the “Mohs Hardness Scale”.

(5)

## QUESTION 10

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

- 10.1 Uses and properties.
- 10.2 The location of major Asbestos deposits.

(10)

**TOTAL 100**

**QUESTION 3**

**20 APRIL 2007**

**EXAM NO.**

<b>MINERAL</b>					
<b>Physical Properties</b>	<b>Diamond</b>	<b>Fluorite</b>	<b>Gypsum</b>	<b>Copper</b>	<b>Quartz</b>
<b>Crystal System</b>					
<b>Colour</b>					
<b>Lustre</b>					
<b>Fracture</b>					
<b>Density</b>					
<b>Uses</b>					

**(15)**