

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

DATE: 15<sup>th</sup> October 2010 (Friday)  
TIME: 12:30 to 14:30 (2 Hours)

TOTAL MARKS: 100  
TO PASS: 50

**GEOLOGY**

**Note:** 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**

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

**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 family groups into which Igneous Rocks can be divided and give a South African example where each of these family groups occur. (10)

**QUESTION 5**

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

### QUESTION 6

Give the Densities of the following minerals:  
Gold, Pyrite, Galena, Limonite and Quartz.

(5)

### QUESTION 7

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

(10)

### QUESTION 8

Briefly describe the following:

8.1 Calorific value (CV) and give it's unit of measurement.

8.2 Ash content.

8.3 Moisture content.

8.4 Proximate analysis.

8.5 Coking properties.

(5)

### QUESTION 9

When confined and subjected to immense forces that slowly build up, rocks can be folded. Name six types of folding that can occur in strata.

(3)

### QUESTION 10

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

10.1 Uses and properties.

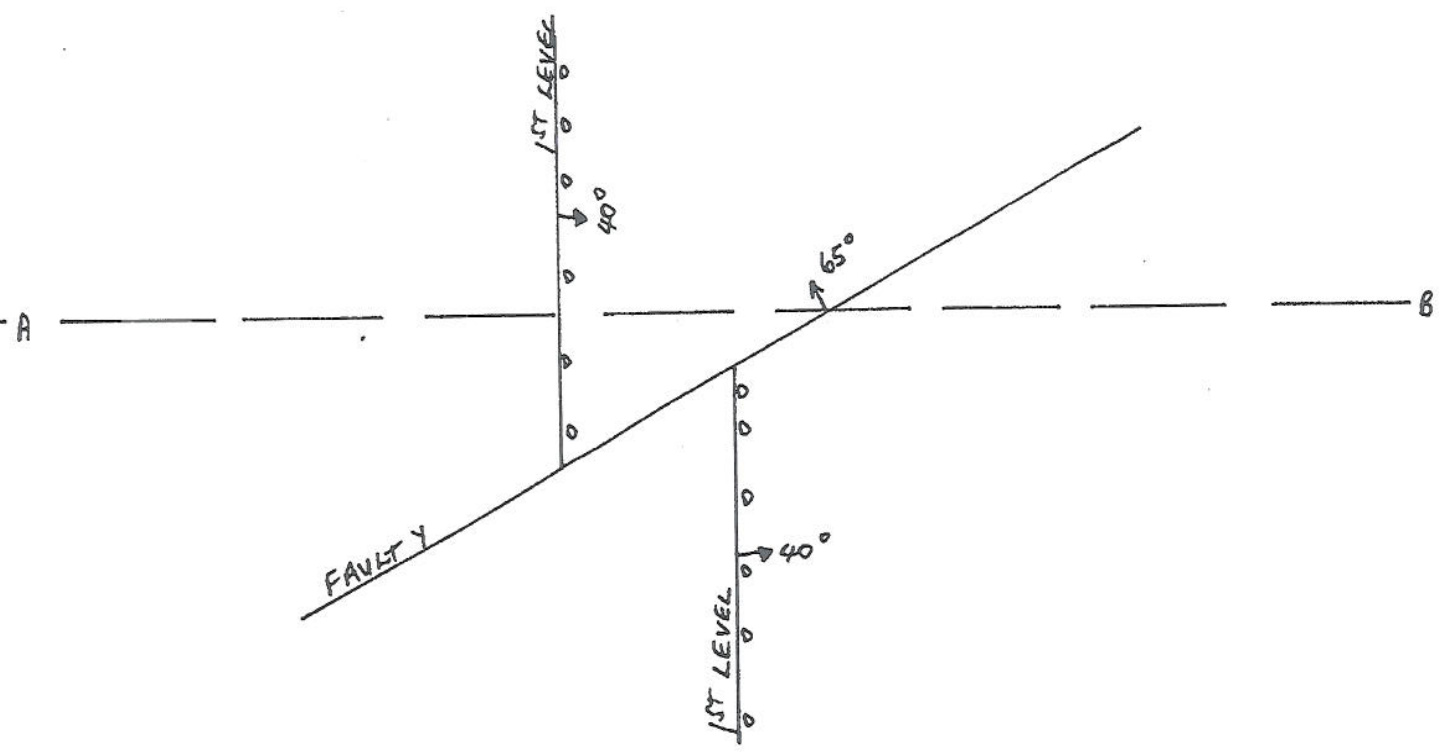
10.2 Main Copper ore minerals.

10.3 The location of major Copper deposits.

(10)

**TOTAL 100**

PLAN

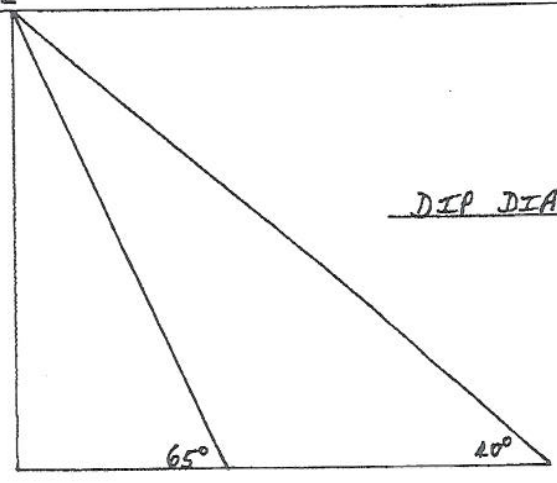


SECTION A-B

1ST LEVEL

2ND LEVEL

DIP DIAGRAM



QUESTION 3

OCTOBER 2010

EXAM NO.

**MINERAL**

	<i>Calcite</i>	<i>Haematite</i>	<i>Bornite</i>	<i>Magnetite</i>	<i>Fluorite</i>
<i>Physical Properties</i>					
<i>Colour</i>					
<i>Streak</i>					
<i>Lustre</i>					
<i>Fracture</i>					
<i>Crystal System</i>					
<i>Hardness</i>					

(15)