

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

DATE: 21 April 2006
TIME: 12:30 to 15:30 (3 Hours)

TOTAL MARKS: 100
TO PASS: 50

SURVEY III

- Note:**
- (1) Work to 1 second of arc and 0,001m.
 - (2) Logs and functions must be shown to six (6) decimal places.
 - (3) All steps and checks must be shown.
 - (4) All calculations and answers to be shown clearly.
 - (5) Sketch are not drawn to scale and attached herewith.
 - (6) The make and model number of your calculator **must** be written on the front cover of your answer book.

QUESTION 1

B and C are points surveyed on the outcrop of a quarry. At point C a fault is mapped dipping in a Southerly direction. D is a point on the intersection of the footwall and the highwall of the quarry. A is a point on the intersection of the surface and the highwall of the quarry.

Co-ordinates			
Point	Y	X	Elevation
A	-2 293,108	-880,580	+949,211
B	-1 247,065	-418,677	+1 000,243
C	-1 499,034	-3 298,677	+955,815
D	-2 291,056	-1 378,677	+816,158
True dip direction of diagonal fault at C			30° 00' 00"
True dip of the diagonal fault at C			75° 00' 00"

Assume the reef and surface planes are even and evenly dipping.

Assume the highwall height has been maintained throughout the area shown.

Section line EDFHG is a straight line on the true dip of the reef.

CG is the line of intersection between surface and the diagonal fault.

CH is the line of intersection between the reef and the diagonal fault.

- a) Calculate the co-ordinates and elevations of E and F on the section EDFHG along the direction of true dip, intersecting the outcrop and highwall respectively.
- b) Calculate the co-ordinates and elevations of points G and H at the surface and the reef intersections with the diagonal fault respectively.

[100 marks]

