

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

DATE: 13 October 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.

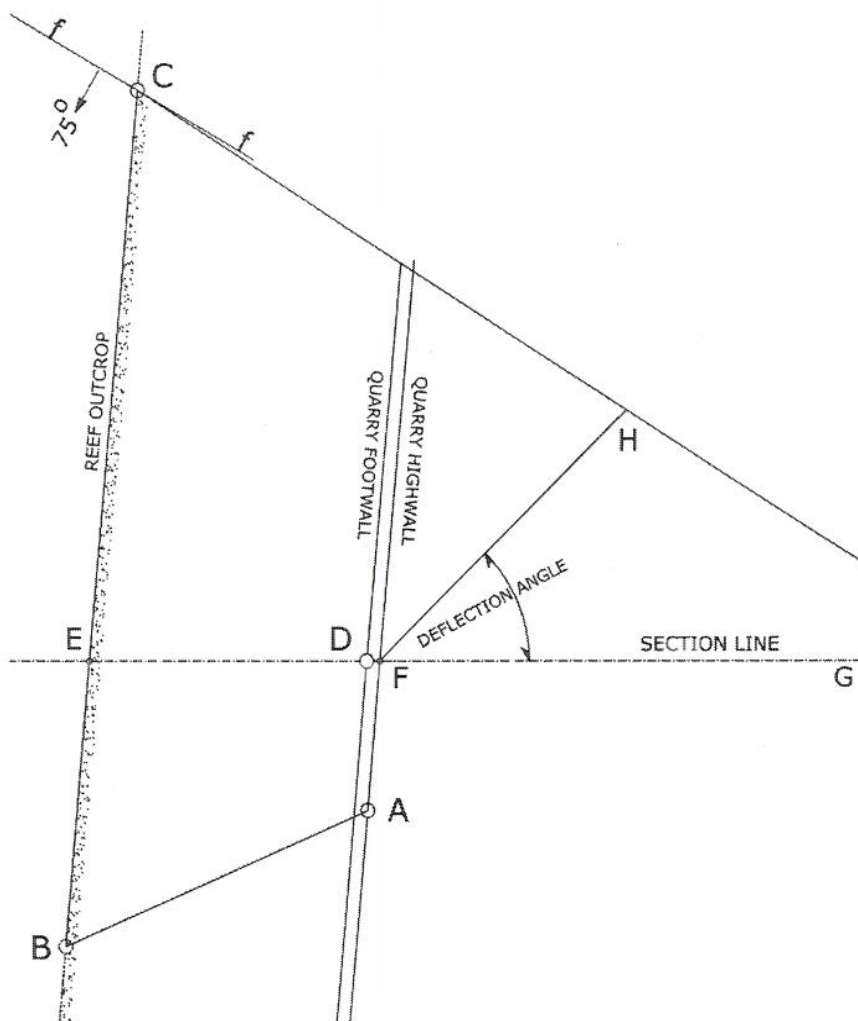
Co-ordinates			
Point	Y	X	Elevation
A	- 682,955	+ 172,614	+ 1 798,694
B	+ 1 728,998	+ 634,517	+ 1 849,726
C	+ 1 477,029	- 2 245,484	+ 1 805,298
D	+ 685,007	- 325,484	+ 1 665,641
True dip direction of diagonal fault at C			30° 00' 00"
True dip of the diagonal fault at C			75° 00' 00"
Deflection angle			45° 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 EDFG is a straight line on the true dip of the reef.
CH is the line of intersection between the reef and the diagonal fault.

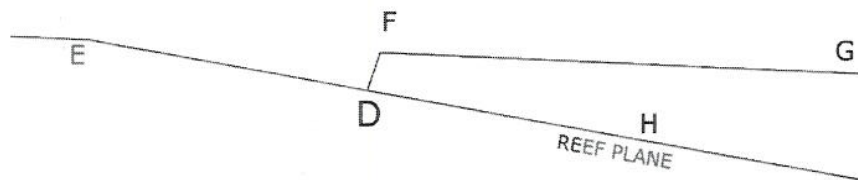
- a) Calculate the co-ordinates and elevations of E and F on the section EDFG along the direction of true dip, intersecting the outcrop and highwall respectively.
- b) Calculate the co-ordinates and elevation of point H at the reef intersection with the diagonal fault.
- c) Calculate area ABECHFA in hectares.

[100 marks]

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PLAN



SECTION EG

SURVEY III 2006 October