UNIVERSITY OF JOHANNESBURG

PROGRAM	:	NATIONAL DIPLOMA *MINING ENGINEERING*
SUBJECT	:	**MINE SURVEY AND VALUATION 11**
CODE	:	**MSV 3211**
DATE	:	FINAL EXAMINATION 2014 12 NOVEMBER 2014
DURATION	:	(SESSION 1) 08:30 - 11:30
WEIGHT	:	40 : 60
TOTAL MARKS	:	100

ASSESSOR	:	MR K S PHOGOLE	082504322
MODERATOR	:	MS Z MDLULI	5034
NUMBER OF PAGES	:	6 PAGES	

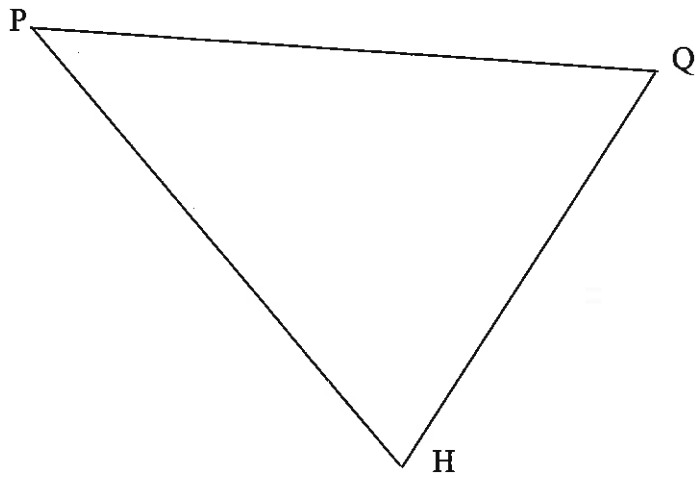
INSTRUCTIONS : 1. ANY CALCULATOR IS ALLOWED
2. SKETCHES ARE NOT DRAWN TO SCALE
3. DRAWING INSTRUMENTS ARE ALLOWED

INSTRUCTIONS TO CANDIDATES:

1. PLEASE ANSWER ALL THE QUESTIONS.
2. NUMBER THE QUESTIONS CLEARLY.
3. SHOW ALL STEPS IN THE CALCULATIONS.
4. CALCULATE TO THREE DECIMAL PLACES AND TO THE NEAREST SECOND
4. **MARKS WILL BE ALLOCATED FOR NEATNESS AND CHECKS**

QUESTION 1

P and Q are two points on the outcrop of a reef deposit. A vertical borehole sunk at point H intersected the reef at the depth of 49. 200m vertically below point H



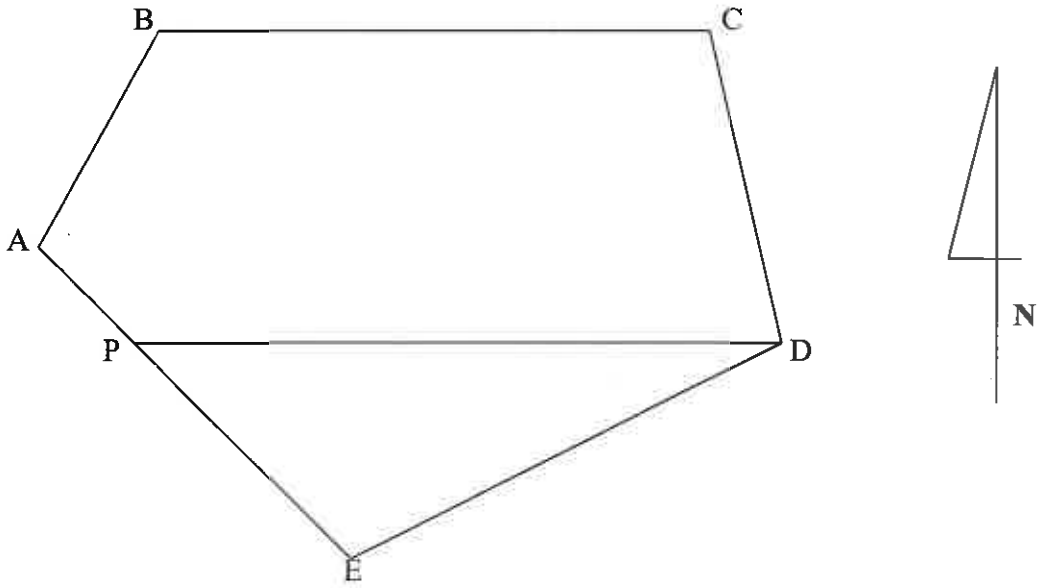
GIVEN:

Line	Direction	Horizontal Distance	Point	Elevations
P – H	318:14:00	108.660	P	-1 420.000
Q – H	22:36:00	79.200	Q	-1 408.800
Q – P	94:24:30	103.120	H	-1 412.600

Calculate the amount of true dip and the direction of true dip of the reef deposit. **(15)**

QUESTION 2

A piece of land ABCDE must be sub-divided into two portions by a line DP. The line DP must be parallel to CB and it has been established that point P will fall on the line AE.



Given :

	Y	X
A]	+ 388. 690	+ 265. 080
B]	+ 341. 240	+ 101. 000
C]	+ 125. 180	+ 7. 030
D]	+ 28. 070	+ 205. 320
E]	+ 211. 320	+ 374. 650

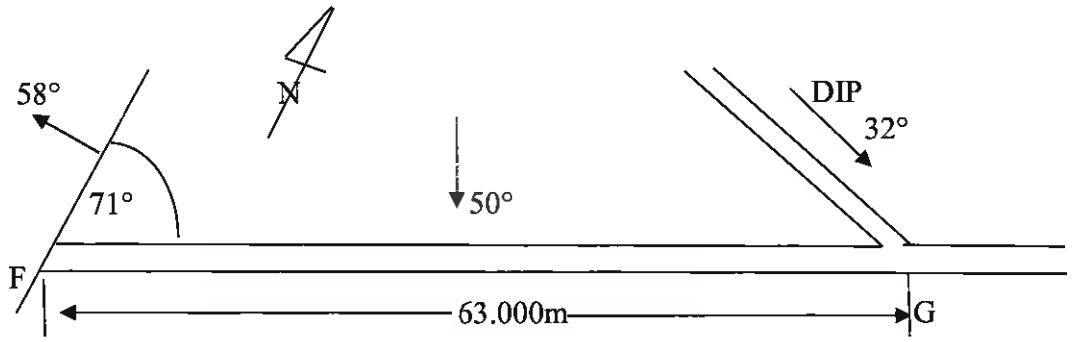
Direction D – E = 47° 15′ 39″ and distance DE = 249. 506 m
Direction E – A = 121° 42′ 20″

CALCULATE:

a) The co-ordinates of point P by triangulation from points D and E. (15)
b) The area of ABCDP from the corner points A, B, C, D and P. (10)

(25)

QUESTION 3



The figure above represents a reef drive which has intersected a fault at point F. A raise is developed from point G, 63.000 metres north-east of F at a dip of 32°, in a westerly direction.

GIVEN:

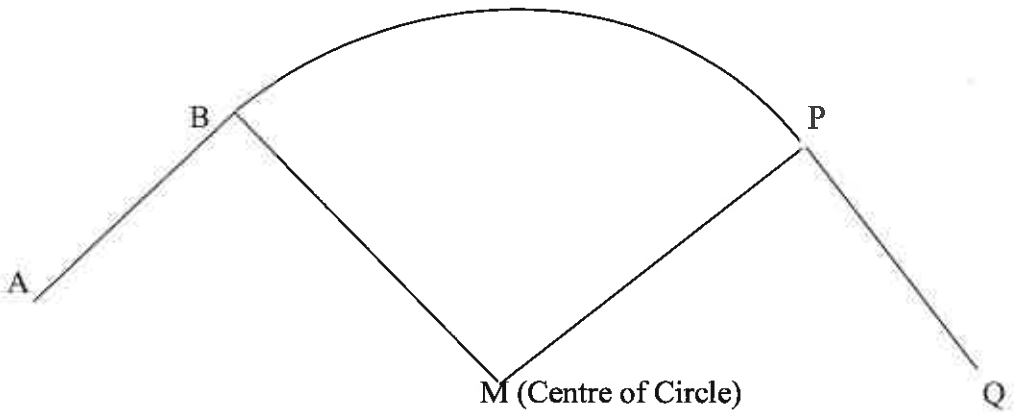
Direction of the Reef Drive	=	244:00:00
Angle between the reef and fault	=	71:00:00
Dip of the reef	=	50° in a southerly direction
Dip of the fault	=	58° in a westerly direction.

CALCULATE:

a). Direction of the line of intersection of the reef and fault;
b). Dip along the line of intersection;
c). Direction of the raise;
d). How far the raise will advance before intersection the fault, and
e). The stoping area bounded by the reef drive, the fault and the raise. **(20)**

QUESTION 4

AB and QP are two railway straights which must be connected by a circular curve, as shown in the figure below.

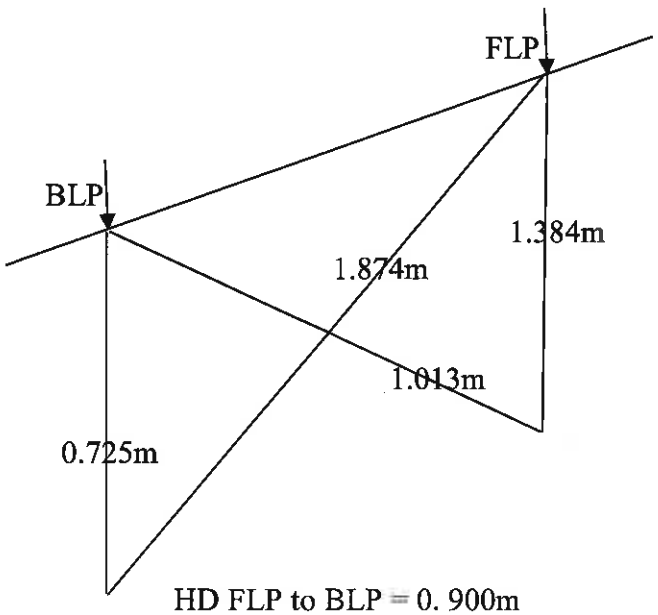


GIVEN:

Co – ordinates of B	=	+ 236.450	+ 150.000
Co – ordinates of Q	=	- 227.224	+ 229.833
Direction A – B	=	220:00:00	
Radius of the curve	=	200.000 metres	

Calculate the total length of the track to be laid from B to Q. **(15)**

QUESTION 5



HD FLP to BLP = 0. 900m

(Sketch Not to Scale)

Two line pegs BLP and FLP were established in an orepass and the measurements were taken as shown in the sketch below.

Assume the hangingwall elevation at peg FLP to be correct and that a grade of +55° is required. The grade line is to be 1. 000m from the hangingwall measured at right angles to the dip.
Calculate the lengths of the grade chains. **(10)**

QUESTION 6

The table below shows leveling observations made for the purpose of effecting a holing, between two drives advancing eastwards and westwards from pegs 115 and 132 respectively.

GIVEN :

Horizontal distance from peg 115 and 132 = 112 m
Grade Elevation at peg 115 = - 102.000
The required gradient is + 0.4% in the easterly direction
The rail is to be carried 1,000 m vertically below the grade line

STATION	BS	IS	FS	Elevation
Peg 115	1.450			
Rail @ Peg 115		1.550		
Rail @ A	1.365		1.400	
Rail @ B		1.205		
Rail @ Peg 124		1.255		
Peg 124	1.800		2.005	- 99.550
Rail@ C		1.310		
Rail @ Peg 125		1.200		
Peg 125	1.655		1,750	
Peg 132		1.585		
Rail @ Peg 132			1.395	

CALCULATE :

a) The elevations of all the survey pegs and points that have been observed. (5)
b) The vertical amount by which the rail at pegs 115 and 132 must be raised or lowered. (5)
c) The grade elevation at peg 132 + 40 m west. (5)

(15)

[TOTAL : 100]