UNIVERSITY OF JOHANNESBURG

PROGRAM	:	NATIONAL DIPLOMA *MINING ENGINEERING*
SUBJECT	:	**MINE SURVEY AND VALUATION III**
CODE	:	**MSV3211**
DATE	:	FINAL EXAMINATION 18 NOVEMBER 2019
DURATION	:	(X-PAPER) 08:30 - 11:30
WEIGHT	:	40 : 60
TOTAL MARKS	:	105

EXAMINER	:	MR K S PHOGOLE
MODERATOR	:	MS Z MDLULI
NUMBER OF PAGES	:	7 PAGES

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

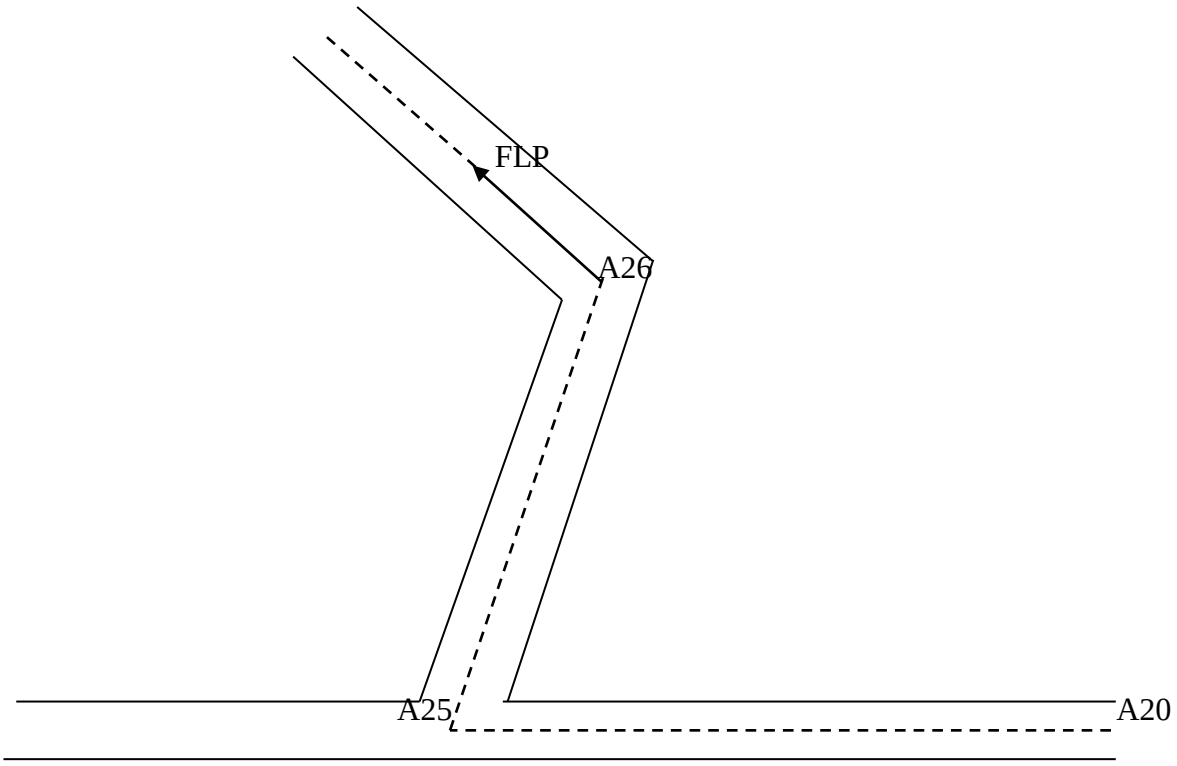
INSTRUCTIONS TO CANDIDATES:

1. PLEASE ANSWER ALL THE QUESTIONS.
2. MARKS WILL BE ALLOCATED FOR NEATNESS AND CHECKS
3. NUMBER THE QUESTIONS CLEARLY

QUESTION 1

The following observations were taken in an ore pass being developed. From the information given below and the cross-measurements taken at Peg B26, calculate:

1.1. The co-ordinates and elevation of Peg A26.
1.2. The direction A26 – FLP.
1.3. Elevation of the FLP.
1.4. The length of the chains to be suspended from Peg A26 and the FLP.



GIVEN:

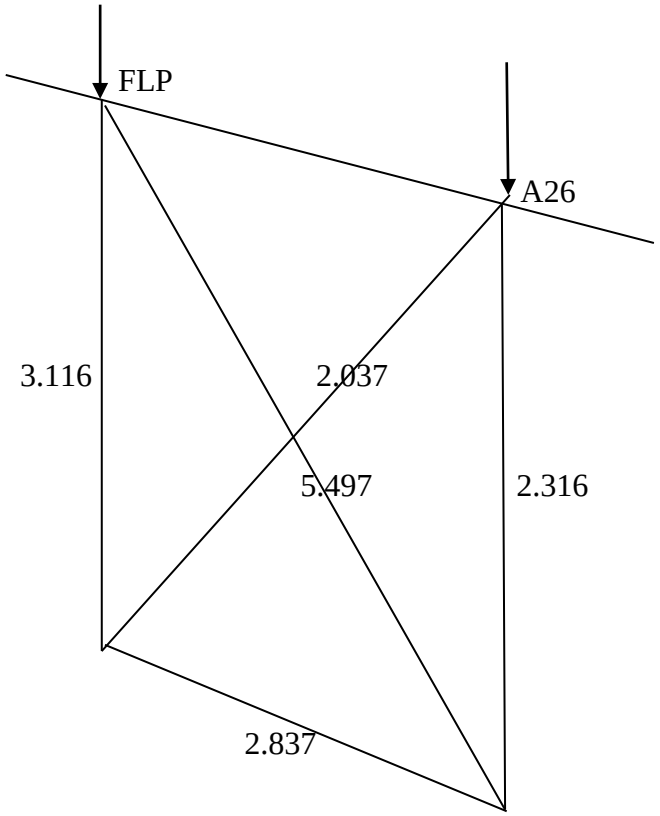
Co-ordinates Peg	A25	+ 730.516 - 293.518
Elevation Peg	A25	-1 613.516 metres
Grade Elevation Peg	A25	- 1 614.939 metres
Direction A25 – A20		152:13:10
Required dip of the Ore Pass		+ 55

Observations at Peg A25

Horizontal Clockwise angle A20 – A25 – A26	=	276:13:15
Vertical Angle A25 – A26	=	+ 54:17:10
Slope Distance A25 – A26	=	15.966 m
Bob Length at A26	=	1.013 m
Height of Instrument at A25	=	1.427 m

Observations at Peg A26

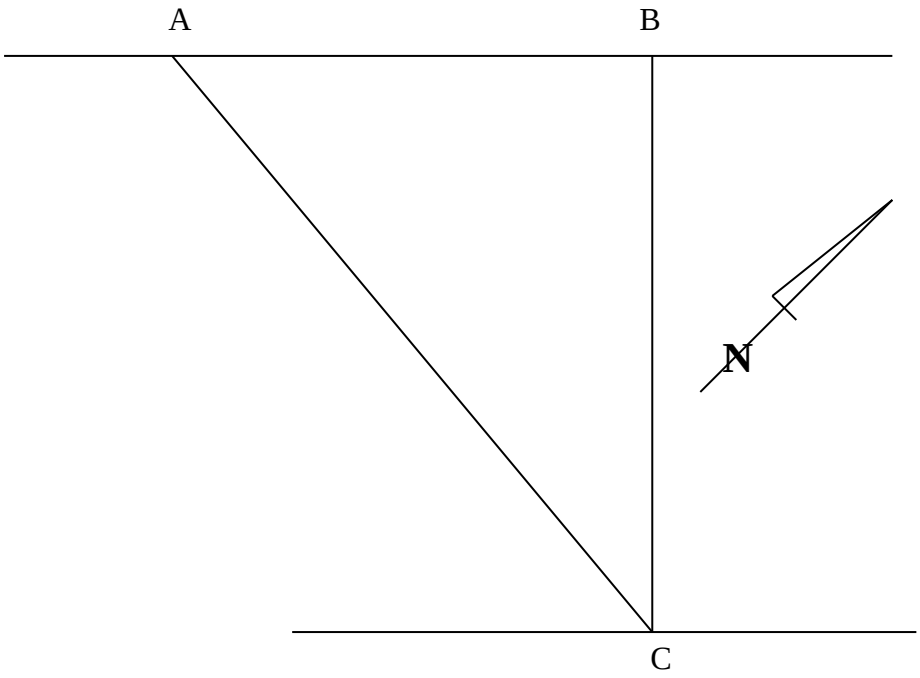
Horizontal Clockwise angle A25 – A26 – FLP	=	130:14:05
Vertical Angle A26 – A25	=	- 55:38:20
Slope Distance A25 – A26	=	16.508 m
Bob Length at A25	=	2.282 m
Height of Instrument at A26	=	1.201 m



(20)

QUESTION 2

Survey pegs A and C indicate the top and bottom corners of an underhand stope respectively. CB was the original raise, developed on the true dip of the reef.



GIVEN :

		Y	**X**
• Coordinates of	A]	+ 6 153.208	+ 1 709.365
	C]	+ 6 098.100	+ 1 697.960

- Elevation of A = - 2 605.750
- Elevation of C = - 2 644.790
- Direction of strike (i.e direction A – B) = 218:00:00

CALCULATE :

2.1. The dip of the reef along the stope face. (5)

2.2. The length of the stope face. (4)

2.3. The true dip of the reef. (3)

2.4. The inclined length of the raise. (3)

(15)

QUESTION 3

In the re-opening of an old section of a mine, it was decided to continue a drive from which the rails had been stripped.

Points on the footwall were levelled and the following results were obtained:-

POINT NO	B/S	I/S	F/S	ELEVATION	HD. FROM **1** (m)	REMARKS
431	0.980			- 1225.790		An inverted staff reading
1		1.480			0	of 0.980 at peg 431 was
2		1.165			15	taken as an intermediate
3		1.100			30	sight
4	1.295		1.000		45	
5		1.160			60	
6		1.085			75	
7	1.450		1.010		90	
8		1.160			105	
9		1.015			120	
10			1.105		140	

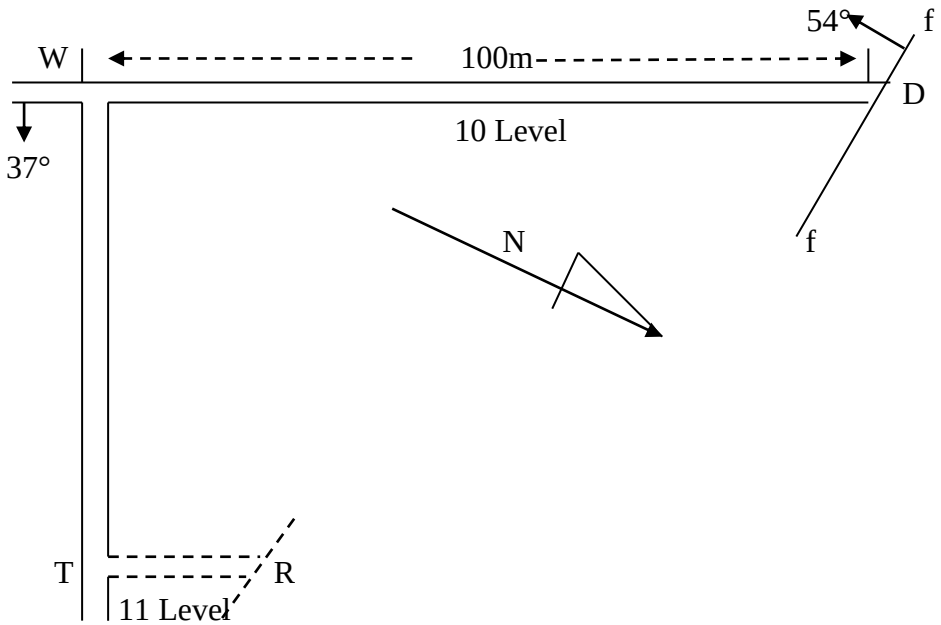
It was decided to lay new rails on the average grade existing between 0m and 120m (i.e. points 1 to 9) thereafter to continue the drive at a grade of +1:150

Calculate:

1) The reduced elevations at points 1 to 10 .
2) The gradient between 1 and 9.
3) The grade elevation at points 1 to 10, if the grade elevation at point 1 is1.0m above the footwall elevation at point 1.

(25)

QUESTION 4



The figure above shows a reef drive on 10 level which has been intersected by a fault "ff" at point D. A reef winze has been sunk at a point W, 100 metres south of D on the true dip of the reef. From a point T in the winze, 11 level drive north is developed and intersects the fault at point R.

GIVEN:

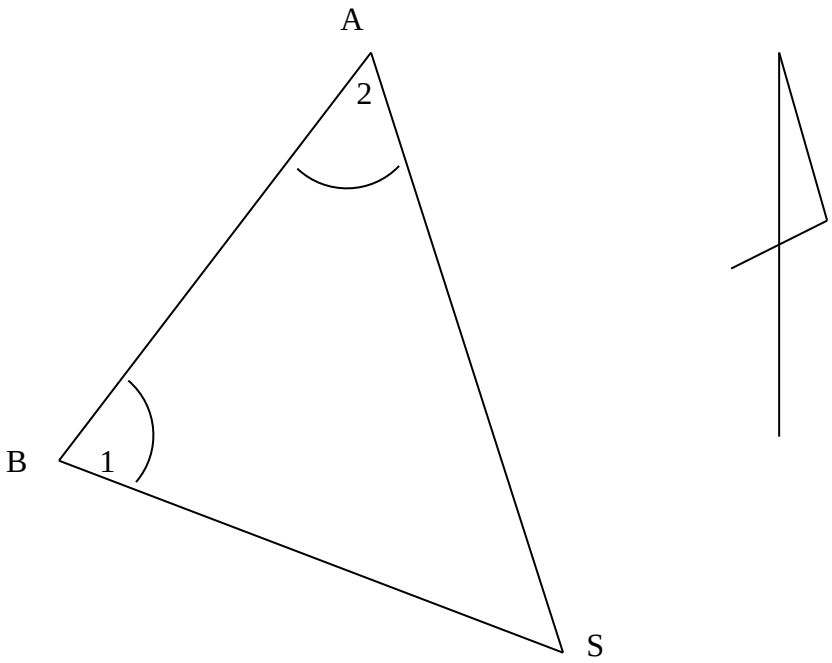
True dip of reef	=	37° in an easterly direction.
Direction of strike of the reef	=	151° 00′ 00″.
Dip of the fault	=	54° in a southerly direction.
Direction of strike of the fault	=	269° 00′ 00″.
Elevation of 10 level	=	- 1 040. 000m
Elevation of 11 level	=	- 1 088. 000m

CALCULATE:

4.1. The direction of the line of intersection.
4.2. The dip along the line of intersection.
4.3. The distance the drive on 11 level will advance from point T to intersect the fault.
4.4. The length of the raise along the line of intersection.
4.5. The area available for mining from the winze to the reef/fault line of intersection.

(20)

OUESTION 5



Two new points [S] and [T] were triangulated from two known points [A] and [B].

The new point [S] lies to the **South** of the line A – B.
The new point [T] lies to the **North** of the line A – B.

	Y	**X**
Co-ordinates of **A**]	+ 1 301.349	+ 451.614
Co-ordinates of **B**]	+ 1 537.715	+ 763.883

Horizontal Clockwise Angle ABS = 65º 32′ 32″ = 1

Horizontal Clockwise Angle SAB = 51º 36′ 38″ = 2

Horizontal Distance from A to T = 727.178 m

Horizontal Distance from B to T = 683.412 m

Calculate:

5.1 The co-ordinates of S.
5.2 The co-ordinates of T.

(25)

Total marks = [105]