



PROGRAM : B ENG TECH : MINING ENGINEERING
MINING ENGINEERING AND MINE SURVEYING

SUBJECT : MINE SURVEYING 2A

CODE : MSVMSA2

DATE : FINAL EXAMINATION
07 JUNE 2019

DURATION : 08h30 – 11h30

TOTAL MARKS : 100

EXAMINER : Ms R Mukwevho

MODERATOR : Mr D Wilson

NUMBER OF PAGES : 7 PAGES
(INCLUDES 2 ATTACHMENTS)

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**Answer True or False to the following:****Please write out full words and not "T" or "F"****NB : You will be not get marks if you do not follow this instruction!**

- (a) The advantage of using GPS is that underground stopes and tunnels can be measured accurately.
- (b) $\cot 84^\circ = 0.105$
- (c) A vertical plane is one at 91° to the horizontal.
- (d) RPAS stands for remotely piloted aircraft systems.
- (e) In $\triangle ABC$, where $AC = 12.620\text{m}$, $BC = 18.000\text{m}$, and $\angle C = 115:05:00$, AB is then 25.979m .
- (f) The Bob height is the same as the Target height.
- (g) Setting out a road for construction is also a purpose of levelling.
- (h) A box hole is usually mined flat.
- (i) A trapezium has 2 sides parallel.
- (j) The area of a circle with a 520m diameter is 21.2 ha

[10]**QUESTION 2** (See attached graph paper and area sheet)

Given the following co-ordinates of M, I, N, E, and R below:

Pt	Y(m)	X(m)
M	+240.000	+40.000
I	+80.000	+82.000
N	+195.000	-33.000
E	+200.000	+80.000
R	+40.000	-4.000

- 2.1 Plot the above-listed co-ordinates on the attached graph paper using a scale of 1:1000 (10)
- 2.2 Indicate the North Arrow. (2)
- 2.3 Calculate the area of the figure using co-ordinates. (17)

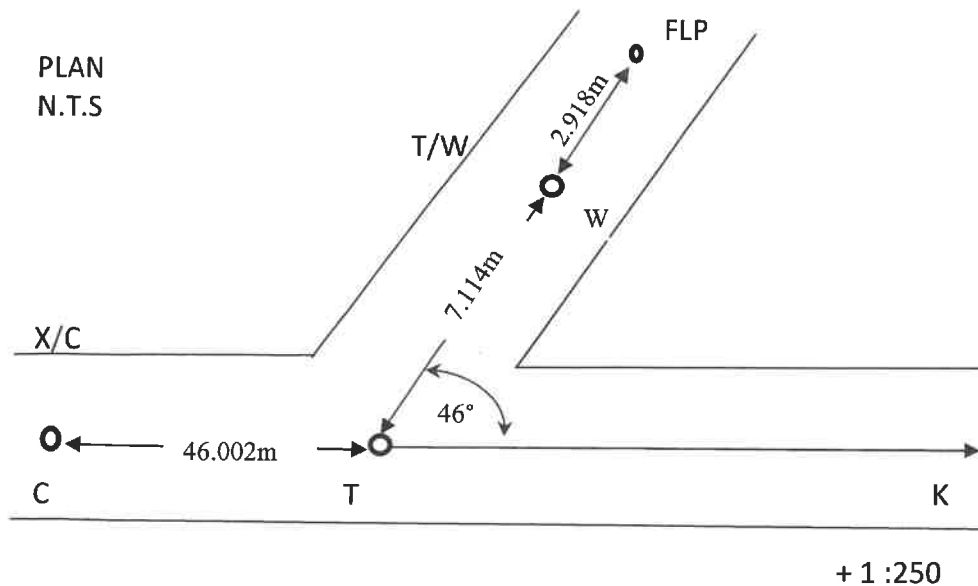
[29]

QUESTION 3

A survey peg W and its FLP were installed in a travelling way for direction and grading purposes. The gradient from peg W to FLP = $+35^\circ$, while the elevation difference from peg W to FLP is $+0.849\text{m}$.

C-T-K is a straight line.

Given the following information and sketch below:



Direction C to T = $117:47:47$

SD T to W = 9.426m

IH @ T = 1.087m

TH @ W = 0.300m

Pt	Y(m)	X(m)	Z(m)
[T]	+997.109	-78.721	-120.140

Calculate:

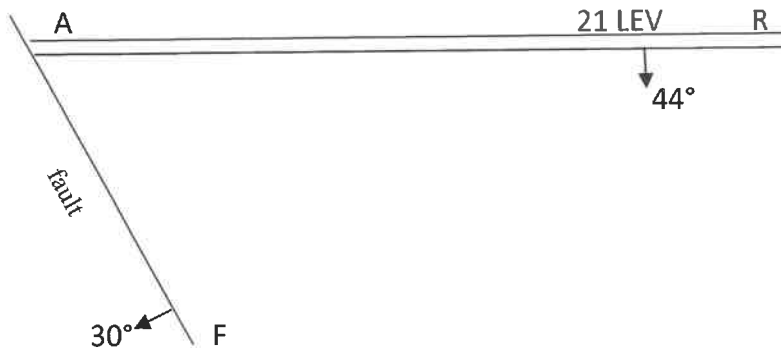
3.1 The co-ordinates of peg W.

3.2 Calculate the chain length at the FLP.

[20]

QUESTION 4

The sketch below shows a reef drive which has intersected a fault at point A.



Given the following information:

Direction of strike of reef, A to R = 269°

Direction of strike of fault, F to A = $160:30:40$

Calculate:

4.1 The direction of the reef/fault line of intersection.

(11)

4.2 The dip of the line of intersection.

(4)

[15]

QUESTION 5

Point K has been used to observe three known beacons G, H and J.

Given the following information:

Horizontal clockwise angle G-K-H = 1 = $86:24:20$

Horizontal clockwise angle H-K-J = 2 = $121:56:30$

	Y (m)	X(m)
[G]	-689.270	+808.370
[H]	-1 734.060	+859.240
[J]	-1 001.320	+2 261.810

Direction G to H = $272:47:15$

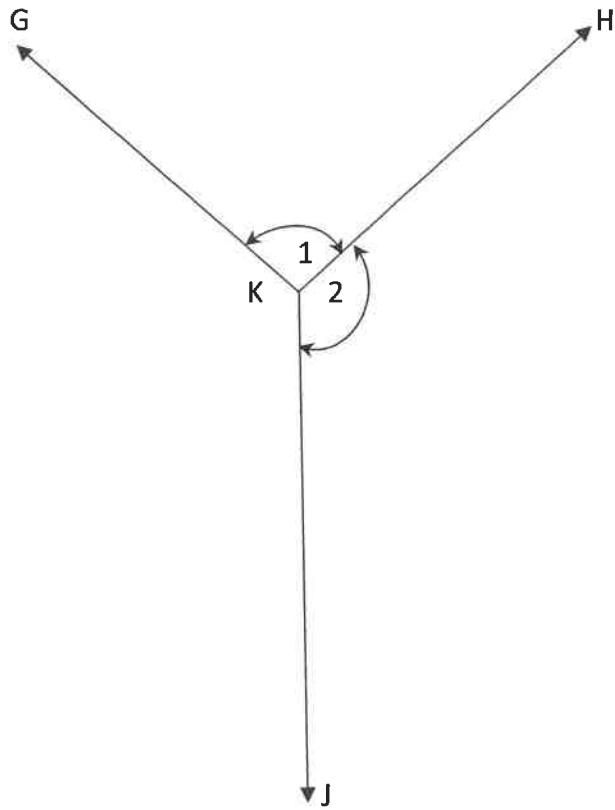
HD G to H = 1 046.028m

Calculate the co-ordinates of point K.

NB. The circle must go through G, K and H.

P.T.O to see sketch.

N.T.S



[26]

TOTAL [100]

QUESTION 2

Surname & Initials.....

Student number.....

[illegible]

QUESTION 2(spare)

Surname & Initials.....

Student number.....

[illegible]