UNIVERSITY OF JOHANNESBURG

PROGRAM	:	**BACHELOR OF ENGINEERING TECHNOLOGY**
SUBJECT	:	**SURVEYING B1**
CODE	:	**SURCIB1**
DATE	:	JANUARY 2020 SSA EXAMINATION (SESSION 1)
DURATION	:	(Y-PAPER) 11:00-13:30
WEIGHT	:	40:60
FULL MARKS	:	100
TOTAL MARKS	:	100

EXAMINER	:	MR. Ali Vessal	SAPSE NO
MODERATOR	:	MR. D.N. Wilson	FILE NO
NUMBER OF PAGES	:	5 PAGES	
INSTRUCTIONS	:	CALCULATORS ARE PERMITTED (ONLY ONE PER STUDENT)	

REQUIREMENTS	:	GRAPH PAPER, DRAWING EQUIPMENT

Surname and Initial …… Student # ……

INSTRUCTIONS TO STUDENTS:

1. ANSWER ALL QUESTIONS.
2. Show all your calculations to get a full mark
3. Return your question paper and all loose sheets with your answer sheets to the examiner

QUESTION 1

A horizontal curve has been surveyed for the following data.

1. Determine the Coordinates of MP. (18)
2. Set up the table for the curve for chainage interval of 20 m. (20)

			PI chainage= 895.700m	R=350m
D			6000	6000
PI			5890	6150
E			5740	6289

Chord #	Chainage	Curve Length	Chord Length	Deflection angle ($\alpha = (90/\pi/R) \times \ell$)	Tangential(Offset) angle	Tangential Chord= 2Rsin(tangential Angle)
BC(PC)						
1						
2						
3						
EC(PT)						

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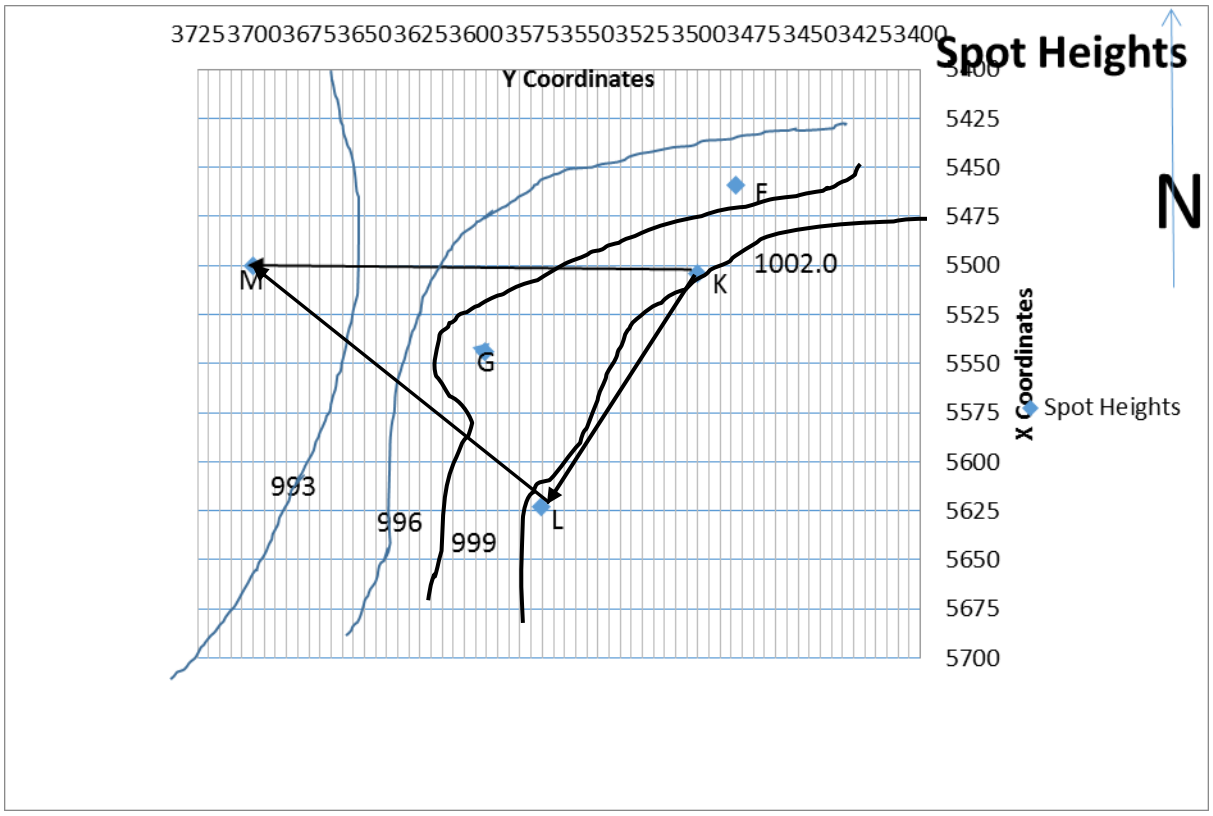
QUESTION 2

Do the following for the figure below(next page).

1. Area of KLM using C (10)
2. Gradient of FG(10)

[20]

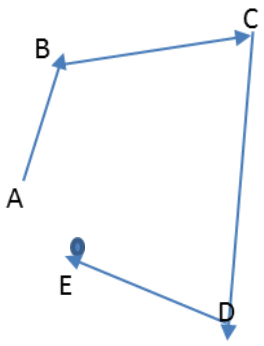


QUESTION 3

Calculate the missing data and coordinates of BCDE of the traverse ABCDEA. (42). Also determine the interior angle of ABCDEA(12).

Course	Distance (m)	Bearing
AB	537.14	217:10:49
BC	1109.301	259:29:49
CD	?	18:56:31
DE	953.829	?
EA	483.669	153.02472

	Y	X
A	5000.00	5000.00



Angle (12) coordinates (30)

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Equations

L (curve length) = R× π× Δ /180

T = R tan (Δ/2)

External Distance = R (Sec Δ/2—1)

LC (Long Chord) or C = 2R sin (Δ/2)

M= R-R× cos Δ/2= R (1-cosΔ/2) Dc= (180×100)/ π/R=5729.578/R

α = (90/ π/R) ×ℓ for each (ℓ) Chord = 2R sin α for each (ℓ)

[TOTAL: 100]