UNIVERSITY OF JOHANNESBURG

DEPARTMENT OF CONSTRUCTION MANAGEMENT AND QUANTITY SURVEYING

SUBJECT : **SITE SURVEYING 1B**

CODE : **SUCCOB1**

DATE : 06 JANUARY 2020

DURATION : 180 MINUTES

WEIGHT : 40 : 60

TOTAL MARKS : 100

ASSESSOR : MS Z MDLULI

MODERATOR : MR KS PHOGOLE

NUMBER OF PAGES : 3 PAGES

INSTRUCTIONS TO STUDENTS

1. ONLY ONE POCKET CALCULATOR PER CANDIDATE MAY BE ALLOWED.
2. NUMBER QUESTIONS CLEARLY.
3. SHOW ALL CHECKS.
4. ANSWER TO THREE DECIMAL PLACES UNLESS SPECIFIED OTHERWISE.

QUESTION 1 (25 Marks)

1.1. Write the formula that can be used to calculate the surface area of the following shapes:

a. Cylinder
b. Cone
c. Sphere

1.2. Soil from a construction site is to be removed and dumped elsewhere by means of a conveyor belt and the top is flattened to form a conical frustum. From the following measurements, calculate the volume of sand dumped.

Top area = 78 540m2
Height of dump = 10m
Angle of repose = 38^0

1.3. A base line was measure with a steel tape which was standardised at 15°C and was found to be 200.000 meters. If the COE is 0.000012 and the temperature during the measurement was 29°C, what is the correct length of the base line?

QUESTION 2 (40 Marks)

Two new survey stations, C and D, are to be added to a site boundary from two known stations, A and B.

The new station, C, lies to the south of the line A-B
The new station, D, lies to the north of the line A-B

Co-ordinates of A:	1 301.349	;	451.641
Co-ordinates of B:	1 537.715	;	451.641
Angle ABC :	65:32:30		
Angle BAC :	51:59:32		
HD from A to D:	727.178m		
HD from B to D:	683.412m		

2.1. Calculate the co-ordinates of the new stations. (30)

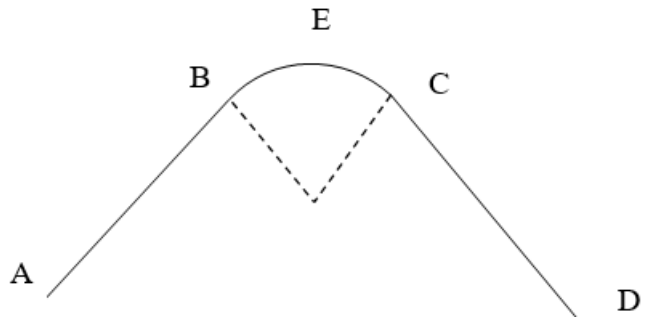
2.2. On the graph paper provided, plot A, B, C and D using a scale of 1:5000 (10)

QUESTION 3 (20 Marks)

Calculate the grade between peg A and G.

Station	Horizontal distance	B.S.	I.S.	F.S.	Elevation
A	0m from A	1,237			
B	23m from A		0,475		
C	52m from A		2,110		
D	78m from A	0,725		1,123	
E	32m from D		0,983		
F	59m from D		0,015		100,824
G	80m from D			2,132	

QUESTION 4 (15 Marks)



AB and CD are two roads straights that must be linked by a circular curve BEC.

Given:

Direction AB = 344:00:00

CD = 28:00:00

Length of curve BEC must be 300m

Calculate

4.1. The radius of the curve.

4.2. Length of the chord BC.

TOTAL MARKS = 100