UNIVERSITY OF SWAZILAND

DEPARTMENT OF GEOGRAPHY, ENVIRONMENTAL SCIENCE AND PLANNING

FINAL EXAMINATION, DECEMBER 2017

B.A., BSc., BASS, B.Ed.

TITLE OF PAPER: ELEMENTARY SURVEYING & CARTOGRAPHY

COURSE NUMBER: GEP211

TIME ALLOWED: THREE (3) HOURS

INSTRUCTIONS:

1. ANSWER THREE QUESTIONS
2. QUESTION 1 IS COMPULSORY
3. IILUSTRATE YOUR ANSWERS WITH EXAMPLES AND CLEARLY DRAWN DIAGRAMS WHERE APPROPRIATE

ALLOACATION OF MARKS: QUESTION 1 (COMPULSORY) CARRIES 40 MARKS, WHILE THE REST CARRY 30 MARKS EACH

THIS PAPER SHOULD NOT BE OPENED UNTIL PERMISSION IS GRANTED BY THE INVIGILATOR

GEP211: ELEMENTARY SURVEYING & CARTOGRAPHY – DECEMBER 2017

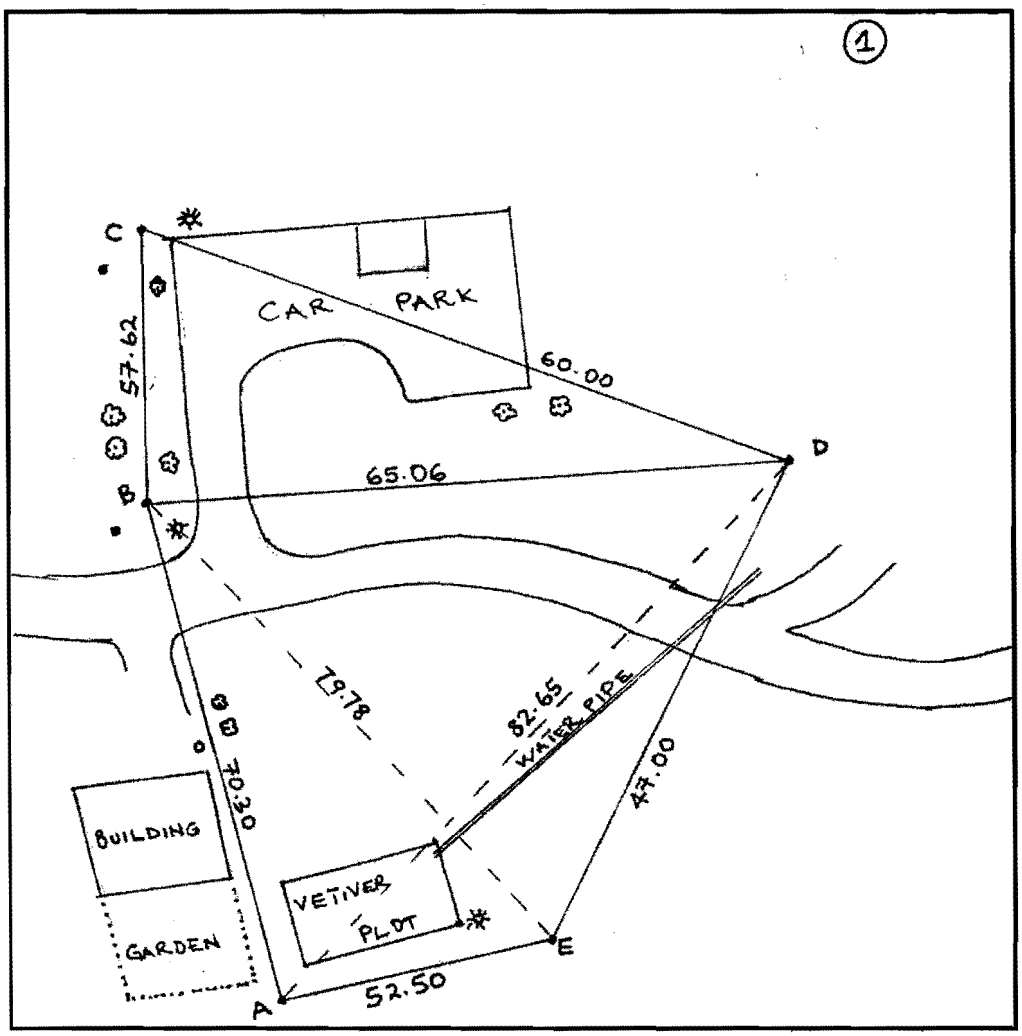
SECTION A: COMPULSORY

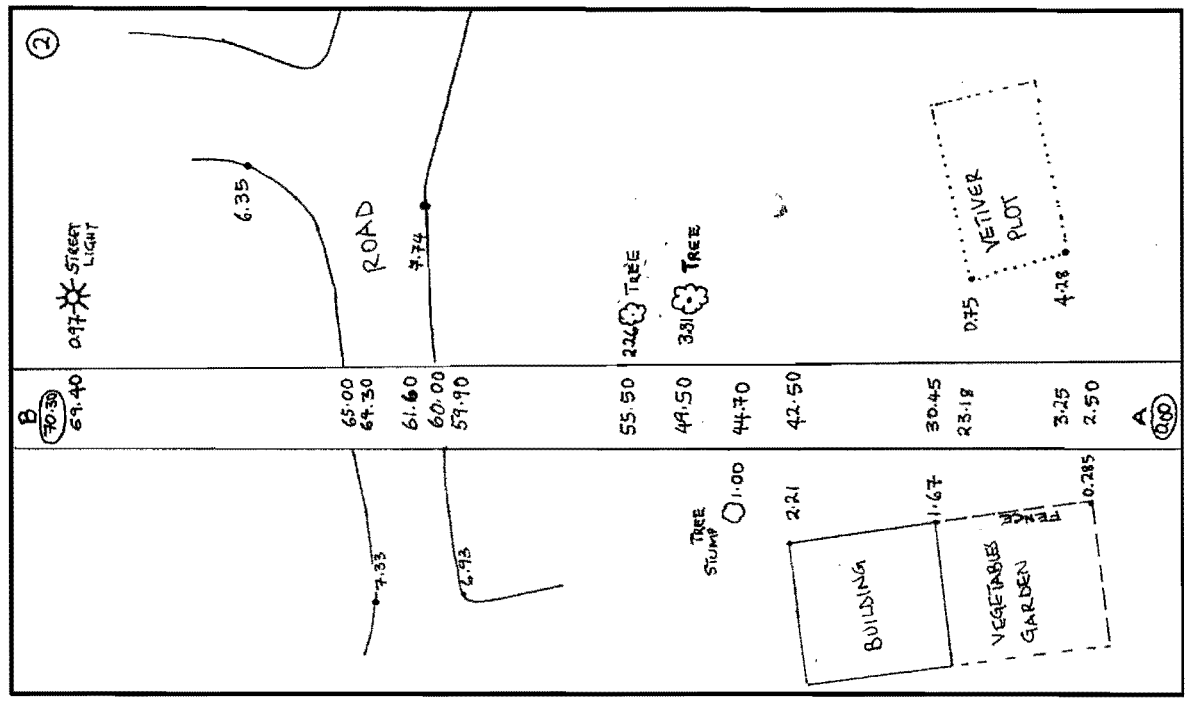
QUESTION 1

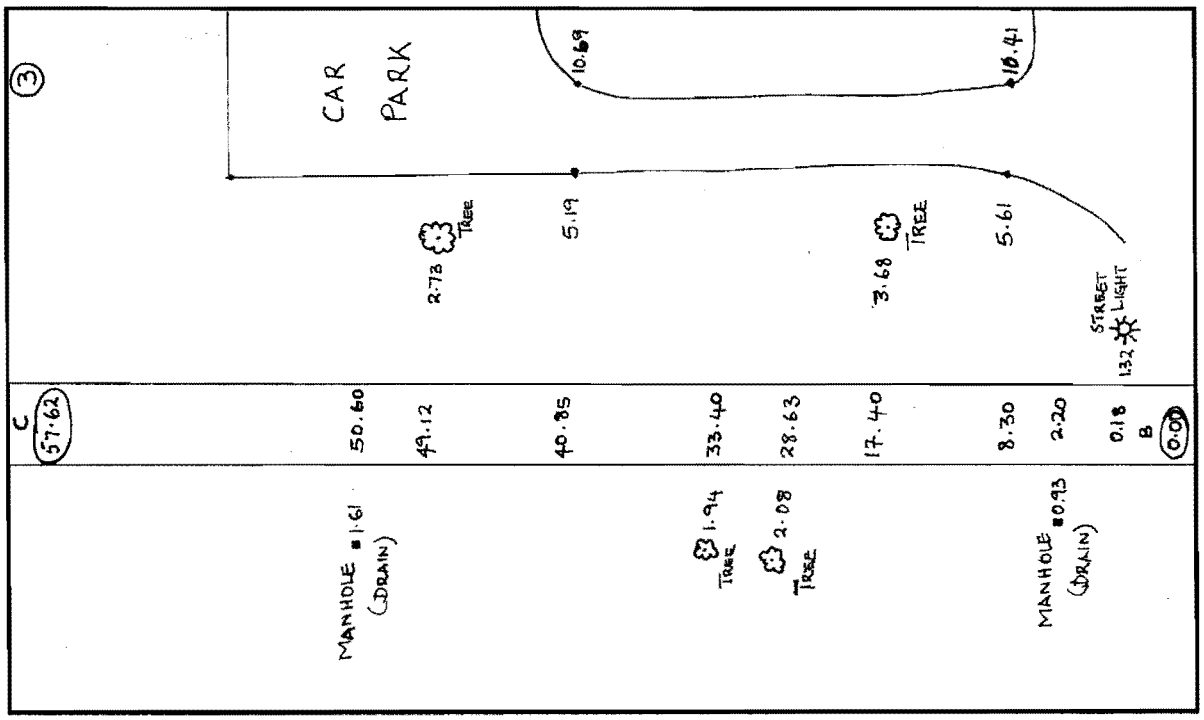
a) A chain survey has been undertaken around the GEP Department Vetiver plot, UNISWA, Kwaluseni Campus. Plot the set of chain book sheets data below for the survey at a scale of 1:1000 on the provided plain A4 paper sheet.

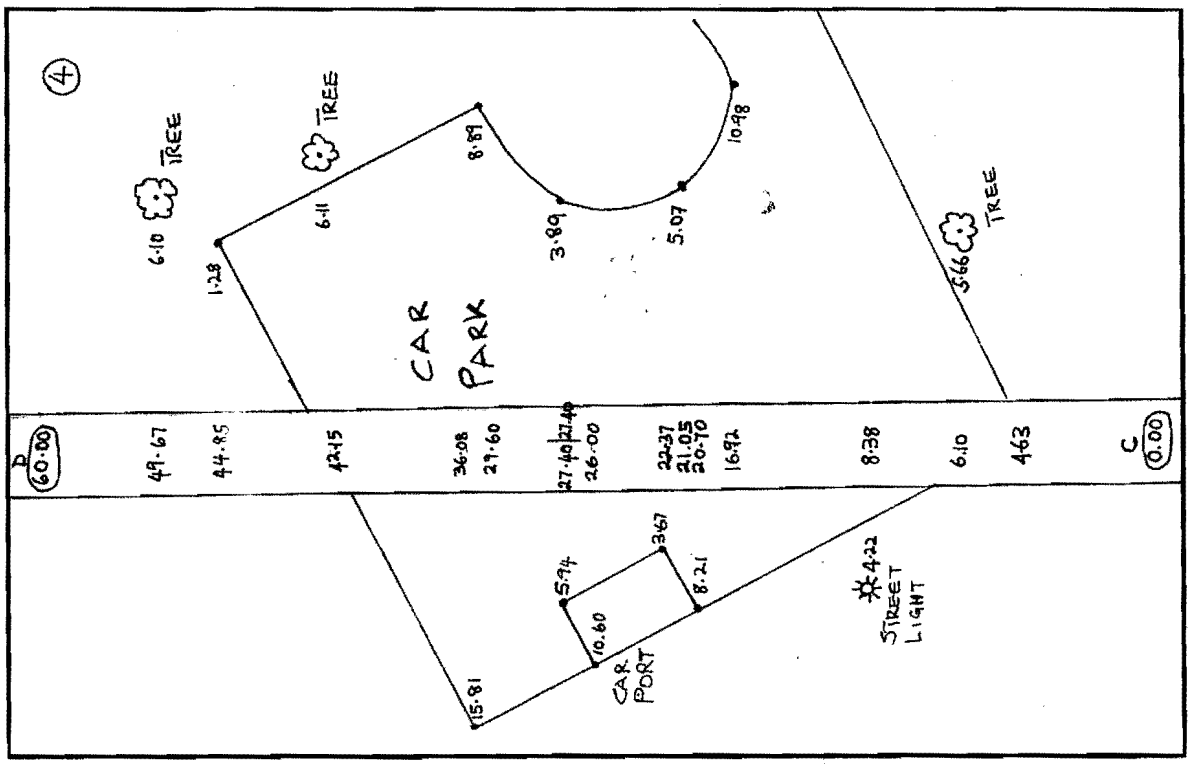
Note: Measurements were taken in metres, and the magnetic bearing of AB is 180°

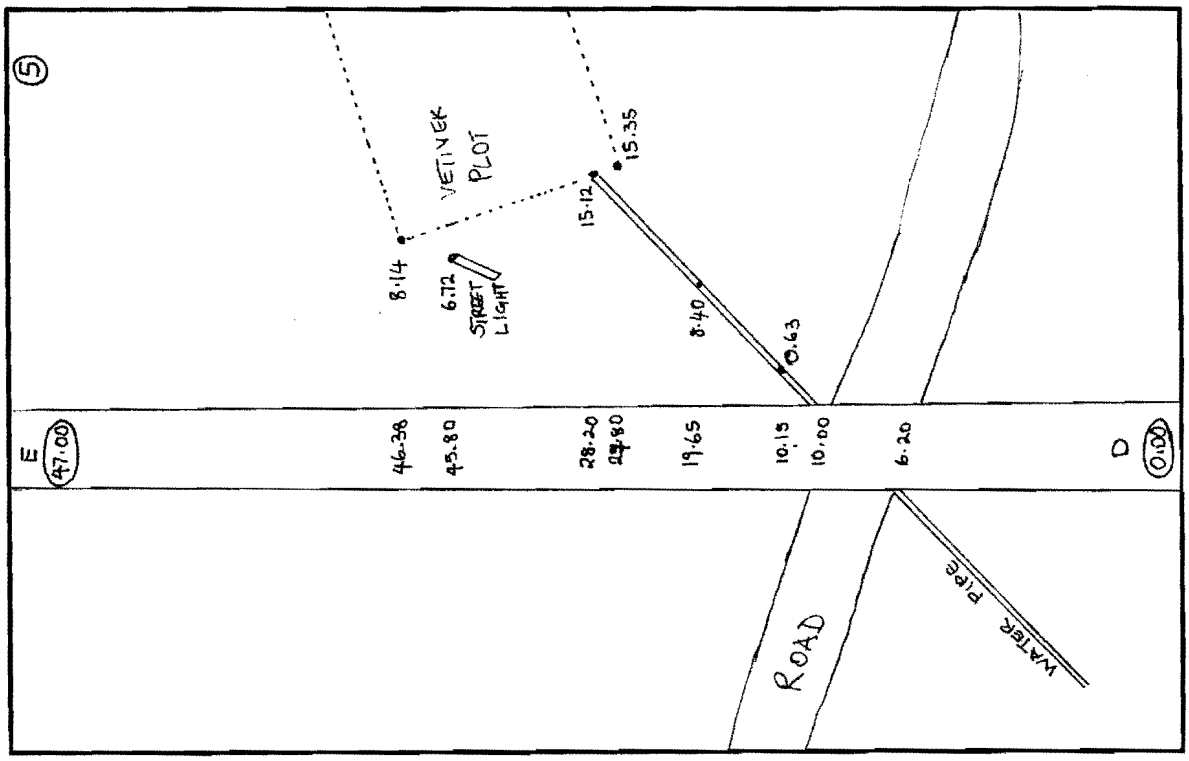
(30 marks)

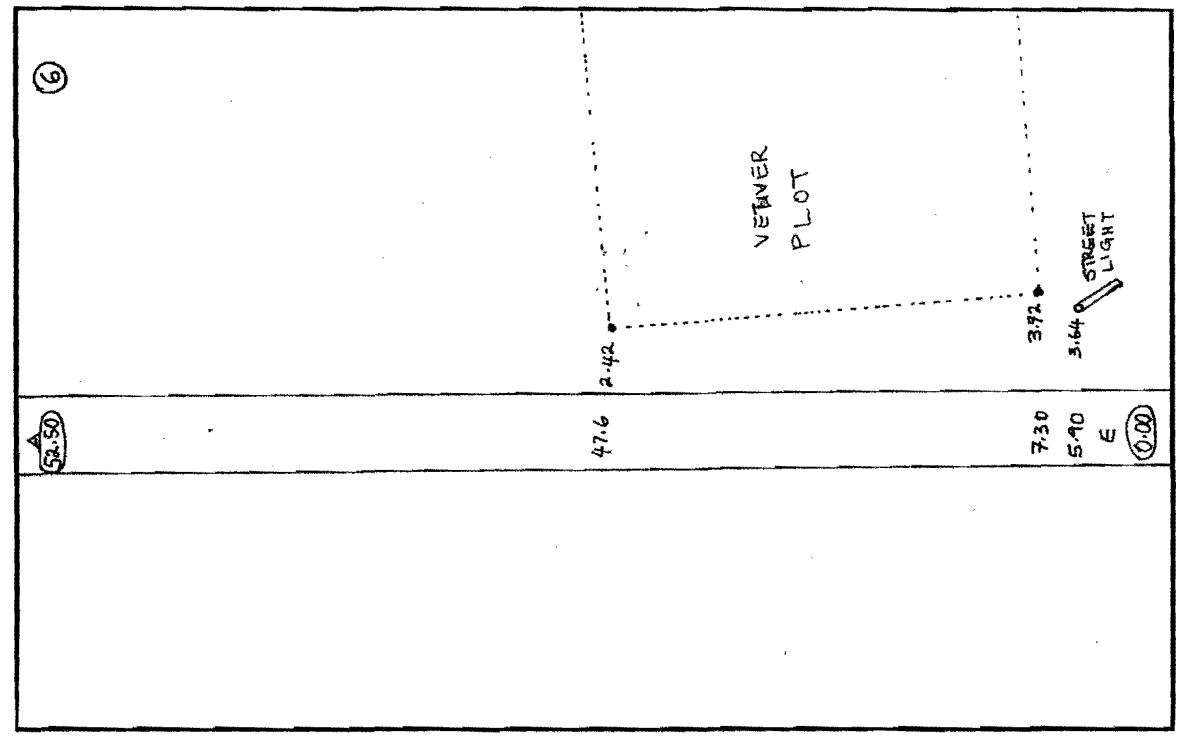


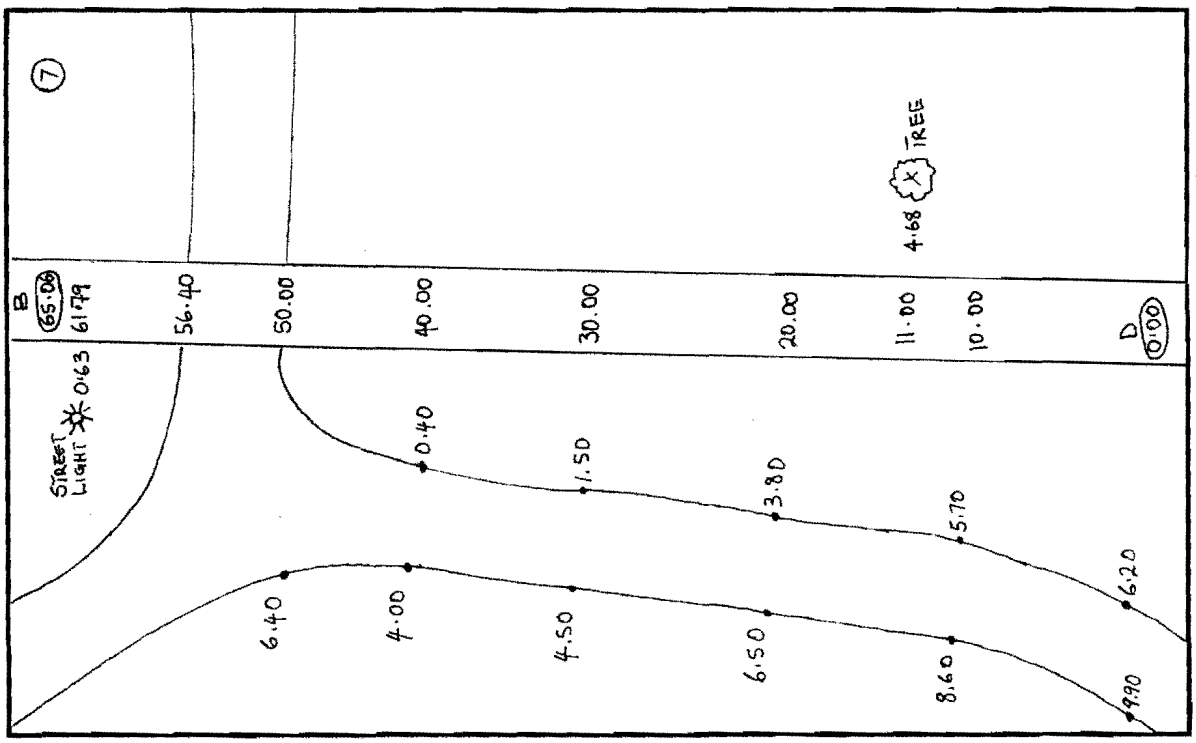

2
B
70.38
69.40
STREET LIGHT
0.97
6.35
ROAD
7.74
65.00
64.30
61.60
60.00
59.90
55.50
TREE
22.4
TREE
33.1
49.50
44.70
42.50
30.45
23.18
3.25
2.50
A
0.00
0.75
VETIVER PLOT
4.28
7.33
2.93
TREE STUMP
1.00
2.21
1.67
0.285
BUILDING
VEGETABLES GARDEN


3
C
57.62
CAR PARK
10.69
10.41
2.78
TREE
5.19
3.68
TREE
5.61
STREET LIGHT
1.32
50.60
49.12
40.85
33.40
28.63
17.40
8.30
2.20
0.18
B
0.00
MANHOLE 1.61
(DRAIN)
1.94
TREE
2.08
TREE
MANHOLE 0.93
(DRAIN)


4
TREE
TREE
TREE
CAR PARK
CAR PORT
STREET LIGHT
D
C
60.00
0.00
49.67
44.85
42.15
36.08
27.60
27.40
27.40
26.00
22.37
21.05
20.70
16.92
8.38
6.10
4.63
6.10
1.28
6.11
8.89
3.89
5.07
10.98
5.66
5.94
3.67
8.21
10.60
15.81
4.22


5
VETIVER PLOT
STREET LIGHT
ROAD
WATER PIPE
E
D
47.00
0.00
46.38
45.80
28.20
28.80
19.65
10.15
10.00
6.20
8.14
6.72
15.12
15.35
8.40
0.63


6
52.50
47.6
2.42
VETANER
PLOT
7.30
3.72
5.90
3.64
STREET
LIGHT
E
0.00


7
B
65.00
61.79
56.40
50.00
40.00
30.00
20.00
11.00
10.00
D
0.00
STREET
LIGHT
0.63
0.40
1.50
3.80
5.70
6.20
9.90
6.40
4.00
4.50
6.50
8.60
4.68
TREE

b) On a map of scale 1: 50 000, a water resevoir was found to be 85.39 cm^2 using a 1 cm^2 grid. Calculate the actual area of the dam in;

i) Square metres (5 marks)

ii) Hectares (1 mark)

c) A plot of land was surveyed using a tape measure 49.952 m long, and the area computed was 23475 m^2. What was the true area of the plot in hectares?

(4 marks)

(40 Marks)

SECTION B: ANSWER ANY TWO QUESTIONS

QUESTION 2

a) With the aid of illustrations, discuss the three classes of map projection systems.

(15 marks)

b) Using examples, explain the following classes of symbols;

(i) Point-emphasising symbols (5 marks)

(ii) Line-emphasising symbols (5 marks)

(iii) Area-emphasising symbols (5 marks)

(30 Marks)

QUESTION 3

a) Describe the survey process, highlighting the three (3) stages involved. (10 marks)

b) Describe how the Electromagnetic Distance Measurement instrument is used to measure distance between two features. (10 marks)

c) Describe the two principal divisions or classifications of surveying, highlighting how they differ from each other. (10 marks)

(30 Marks)

QUESTION 4

Using examples and illustrations, explain how any five visual variables can be used in making graphic elements appear more or less distinctive and prominent in map production.

(30 Marks)

QUESTION 5

a) i) Describe how you would calibrate a bicycle wheel before using it to take measurements during a field survey. (15 marks)

ii) Assuming that on calibrating the wheel, you found that it was 0.74 m. If you measured a distance between two bus stations, and found it to be 420 revolutions, what is the distance in ***kilometres*** between the two stations? (8 marks)

b) i) What is pacing? (2 marks)

ii) A surveyor marked 50m on the ground, and then paced it seven times, getting the following paces; 134, 135, 134, 134, 137, 136 and 137. Determine the pace factor of the surveyor. (5 marks)

(30 Marks)