NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY
FACULTY OF ARCHITECTURE AND QUANITY SURVEYING
BACHELOR OF QUANTITY SURVEYING (HONOURS) DEGREE
PART ONE SUPPLEMENTARY EXAMINATIONS – JULY 2006

ENGINEERING SURVEYING – AQS 1208

TIME: 3 HOURS   **TOTAL MARKS:** 100

INSTRUCTIONS:

Answer any **four** questions.

QUESTION 1

a) Define surveying   (5 marks)

b) List the classes of survey that you have learnt and what is the difference is between
    them.   (5 marks)

c)   A 30m tape was used for measuring the side of a triangle and the measured lengths
     were 68m, 51m and 43m. It was later found that the tape had the first 2 metres
     missing. Calculate the correct area of the triangle.   (8 marks)

d) A circle of radius 10cm was planimetered and a reading of 1,130 revolutions was
    recorded. An irregular figure was traced by the same planimeter and a reading of
    4,732 revolutions was obtained. What is the area of the irregular figure?
                                                                               (7 marks)

QUESTION 2

Calculate the total area of a piece of land shown in fig. 2, using any two methods you
learnt for the irregular bounded area.
                                                                               (25 marks)

QUESTION 3

a) Reduce the following levels by the rise and fall method and calculate the gradient
    from B.M.A to the last point given that the horizontal distance is 90m.
                                                                               (12 marks)

B.S	I.S.	F.S.	R.L.	Remarks
1,749			1004,511	B.M.A
	1,299			Road
	1,377			Road
	1,374			Road
	1,412			Road
	1,449			Road
	1,487			Road
	1,524			Road
		1,999		Bridge

b) Reduce the following levels by the height of collimation method.

(13 marks)

B.S.	I.S.	F.S.	R.L.	Remarks
0,550			1035,030	I.B.M.I.
	0,480			A
	0,420			B
	0,500			C
	1,130			D
	1,570			E
	1,650			F
	1,820			G
	2,490			H
	2,500			I
	2,600			J
	2,610			K
	3,470			L
	2,780			M
	3,400			N
	2,580			O
	2,560			P
		2,400		Q

QUESTION 4

Describe the Zimbabwean Survey coordinate system.   (25 marks)

QUESTION 5

Point L was surveyed by sighting beacons A, B and M as shown in fig. 5.
Given

Mean observed horizontal angles

$MLA = 145^0\,00'\,00''$
$ALB = 85^0\,00'\,00''$
$BLM = 130^0\,00'\,00''$

Coordinates (m)
A + 450,000   +150,000
B + 400,000   -120,000
M + 21,500   + 7,910

Calculate the coordinates of L.   (25 marks)

QUESTION 6

For the triangulation network shown in fig. 6, calculate the coordinates of C and D given.

Horizontal angles

$APC = 53^0\,41'\,55''$
$PAC = 47^0\,21'\,05''$
$CPD = 65^0\,31'\,30''$
$CDP = 60^0\,15'\,20''$

Coordinates(m)

A +9844,180   +16375,000
P +9392,800   +18952,020

                                                                       (25 marks)

END OF EXAMINATION