MASENO UNIVERSITY

UNIVERSITY EXAMINATIONS 2015/2016

FIRST YEAR FIRST SEMESTER EXAMINATIONS FOR THE DEGREE OF BACHELOR OF SCIENCE IN EARTH SCIENCE WITH INFORMATION TECHNOLOGY

MAIN CAMPUS

NGA 103: SURVEYING I

Date: 8th January, 2016

Time: 8.30 - 10.30 am

INSTRUCTIONS:

- Answer question ONE and any other TWO questions.
- Sketch maps and diagrams should be used whenever appropriate.

NGA 103: SURVEYING 1

1. (a) A distance 1500m was measured with a 30m tape. It was latter realised that the tape was 20mm longer. Determine the true length of the line measured.

4 marks

(b) Distinguish between cumulative and compensating errors.

6 marks

(c) Explain the difference between plane survey and geodetic survey.

8 marks

(d) Examine the procedure for setting up a dumpy level.

12 marks

2. (a) The following staff readings were observed with a level. The instrument was shifted after the second and the fifth readings: 0.675, 1.230, 0.750, 2.225, 1.935, 1.835, and 3.220. The first reading was taken with the staff held on benchmark of reduced level (RL) 100.00m. Determine the RL for all the points using the plane of collimation method.

14 marks

(b) A slope distance of 165.360m was measured from A to B whose elevations were 447.401m and 445.389m above datum respectively. Find the horizontal length of line AB if the height of the electromagnetic distance measuring device and reflector were 1.417m and 1.615m above their respective stations.

6 marks

3. (a) The following data was taken from the left bank of a river

Distance (m)	0	10	20	30	40	50	60	70
Depth (m)	1.0	2.3	3.0	2.7	2.4	3.0	2.2	1.1

(i) Determine the cross-sectional area of the river channel

8 marks

(ii) Draw to scale the profile of this channel

6 marks

(b) Examine the uses of the pins and the line ranger.

6 marks

4. (a) Discuss survey methods used to measure lights on sloping grounds.

14 marks

(b) Examine the advantages of a total station.

6 marks

5. (a) The following bearings were taken during a compass traverse

Line	Fore bearing	Back bearing
AB	129°30'	309°30'
BC	73°15'	251°00'
CD	315°30'	140°15'
DA	205°15'	22°45'

Determine the correct bearings and the included angles of the lines.

14 marks

(b) Examine the role of hydrographic surveys.

6 marks

6. (a) Examine FIVE procedures used to establish right angled off-sets.

10 marks

(b) Explain the variations observed in magnetic declination.

10 marks