



**UNIVERSITY OF SWAZILAND  
FINAL EXAMINATION PAPER**

**PROGRAMME: BSC AGRIC II (LWM)**

**COURSE CODE: LUM 204 (NEW PROGRAMME)**

**TITLE OF PAPER: LAND SURVEYING**

**TIME ALLOWED: TWO (2) HOURS**

**INSTRUCTIONS: ANSWER QUESTION ONE AND ANY TWO  
OTHER QUESTIONS.**

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GRANTED BY THE CHIEF INVIGILATOR**

**SECTION I: COMPULSARY****QUESTION ONE**

- A) Briefly discuss the role of signals and symbols in surveying. [10 marks]
- B) State the meaning of the signals and symbols shown in Figure 1.1 as used in surveying. [20 marks]
- C) Briefly describe the land surveying process. [10 marks]

**SECTION B: ANSWER ANY TWO QUESTIONS****QUESTION TWO**

- A) Name any three (3) methods of computing areas from maps other than the Simpson's and Trapezoidal's Rules. [6 marks]
- B) The following chain surveying data were recorded in the field when chaining and measuring off-sets of a proposed road or track from a near-by embankment. Compute the area between the road and the embankment using both Simpson's and Trapezoidal rules. [24 marks]

**Table 1.1. Embankment chaining field data.**

Station	A	B	C	D	E	F	G	H	I	J	K	L
Chainage (m)	0	15	30	45	60	75	90	105	120	135	150	165
Offset (m)	6.3	4.2	3.8	2.1	8.2	9.3	6.7	4.6	3.2	1.2	0.2	1.0

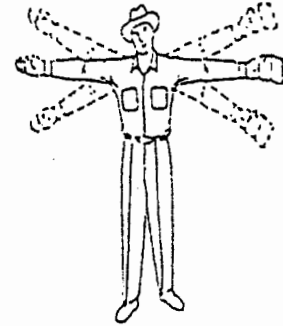
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i. ....



ii. ....



iii. ....



iv. ....



v. ....



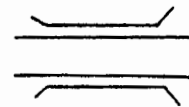
vi. ....



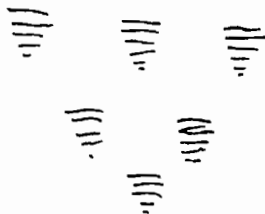
vii. ....



viii. ....



ix. ....



x. ....

Figure 1.1 Common surveying signals and symbols

**QUESTION THREE**

- A) State the instruments or techniques that are used in direct distance measurements as well as in optical distance measurements. **[5 marks]**
- B) Describe how the electromagnetic distance measurement instruments operate. **[10 marks]**
- C) Discuss the role of Surveying as an elementary course which will lay a strong foundation for other courses to be taken later as well as its applications in your future professional lives in Land and Water Management. **[15 marks]**

**QUESTION FOUR**

- A) What are the three types of a surveyor's level? **[6 marks]**
- B) Name the two methods that are used for booking levelling data. **[4 marks]**
- C) Name any three methods that can be used for slope measurement. **[6 marks]**
- D) A land use planner was given a contour map or plan showing an area proposed for use as a botanical garden by the Manzini City Council. The map was drawn on a scale of 1:1000. The land use planner was asked to determine the general slope of the area in order to facilitate decision making an planning. While doing this, she discovered that one of the major slope breaks occurred between contour lines 29.0 m and 34.0 m, whose distance was 10 cm apart.
- i. Calculate the percentage slope for this slope break. **[9 marks]**
- ii In your opinion state if this slope would be suitable for the establishment of a botanical garden and give your reason why it is suitable. **[5 marks]**