

**UNIVERSITY OF SWAZILAND**

**DEPARTMENT OF GEOGRAPHY, ENVIRONMENTAL SCIENCE AND PLANNING**

**B. ED SEC II, B.SC. II, BA. Hum II, & BA. SOC. SC. II  
FINAL EXAMINATION DECEMBER, 2012**

**B.Sc. II.**

**TITLE OF PAPER** : ELEMENTARY SURVEYING AND CARTOGRAPHY

**COURSE NUMBER** : GEP 213

**TIME ALLOWED** : THREE (3) HOURS

**INSTRUCTIONS** : ANSWER ANY THREE (3) QUESTIONS INCLUDING  
QUESTION ONE (1) WHICH IS COMPULSARY.

**ALLOCATION OF MARKS** : QUESTION ONE CARRIES FOURTY (40) MARKS  
AND THE OTHER QUESTIONS CARRY THIRTY  
(30) MARKS EACH.

**SECTION I: COMPULSORY****QUESTION 1**

- a) What are the three (3) methods of contouring? (6 marks)
- b) Discuss briefly the applications of contouring in geography? (9 marks)
- c) A topographic survey of Neverland, a development site in Terrabethea with dimensions of 60 m x 40 m was conducted by a surveyor named Gustavo in April 1959 (Figure 1) on page 3. This was done in an attempt to provide useful information for planning purposes. To do this a contour plan of the area had to be drawn.
- i. Draw a contour plan of Neverland on Figure 1 using a contour interval of 10 m. The contour plan should have a **border line** and a **title box** with all the technical information that ought to be there. The **grid north** could be assumed for this contour plan. (15 marks)
- ii. The developer was advised to provide storm water drainage for the top left part of the development site. Prove by calculation that this was an accurate recommendation. (10 marks)

**SECTION B: ANSWER ANY TWO QUESTIONS****QUESTION 2**

- a) Describe the difference between a **level line** and a **horizontal line** with the aid of a diagram. (8 marks)
- b) Differentiate between plane surveying and geodetic surveying with particular reference to a level line and horizontal line. (5 marks)
- c) Levelling as a surveying technique is affected by the Earth's curvature and Atmospheric Refraction. Briefly describe how levelling is affected by these two entities. (12 marks)
- d) Name and briefly describe the cartographic technique that compels surveyors to do this correction when operating at geodetic scale. (5 marks)

600 ●

780 ●

● 950

700 ●

750 ●

● 850

680 ●

720 ●

● 830

550 ●

710 ●

● 750

**QUESTION 3**

- a) Name any **three (3)** methods of computing areas from maps other than the Simpson's and Trapezoidal's Rules. **(6 marks)**
- b) i. Define **offset** as used in chain surveying. **(2 marks)**  
 ii. What are the **three (3)** methods of measuring offsets? **(6 marks)**
- c) The chain surveying data on Table 2 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. **(16 marks)**

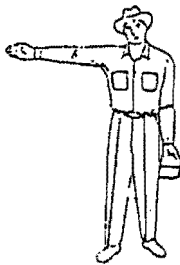
Table 1. Embankment chaining field measurements.

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

**QUESTION 4**

- a) Briefly discuss the role of signals and symbols in surveying and cartography, and comment on their present-day relevance? **(10 marks)**
- b) State the meaning of the signals and symbols shown in Figure 2 as used in land surveying and cartography. **(10 marks)**
- c) Describe the land surveying process stating the three stages involved. In your discussion cite the land surveying techniques where the process could be applicable. **(10 marks)**

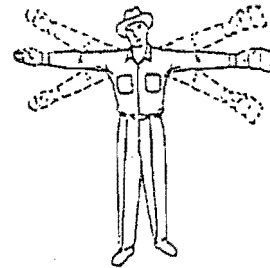
EXAMINATION NUMBER: .....



i. ....



ii. ....



iii. ....



iv. ....



v. ....



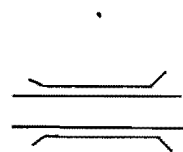
vi. ....



vii. ....



viii. ....



ix. ....



x. ....

Figure 2. Common land surveying and cartographic signals and symbols.

**QUESTION 5**

- a) The map on the following page was drawn by Mfanawenkhosi Thring using a scale of 1:1000 in November, 2010. To do this, he used chain surveying data of Viewfield Industrial Estate in Damberton, England collected by Mr. D.W. Pemberton on 23rd April, 1993.
- i. Complete the map by including all the necessary information that a map should have such as a legend, scale, and title box. **(15 marks)**
  - ii. Which statement of scale was used to produce this map? **(2 marks)**
- b) i. Name the cartographic technique illustrated in the Figure 2. **(3 marks)**

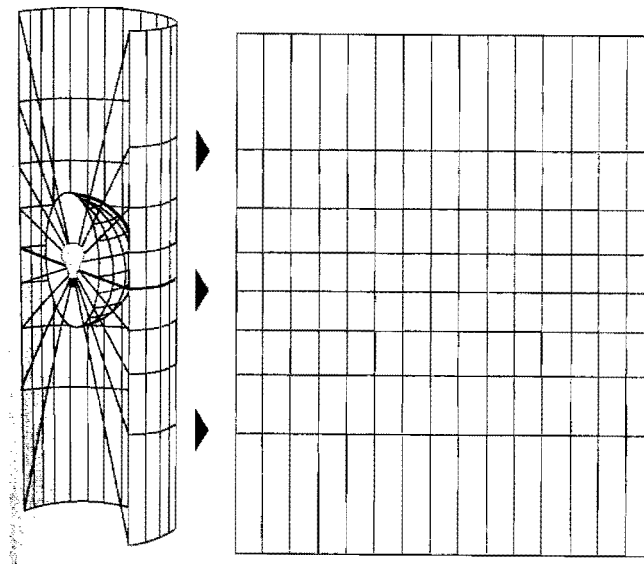


Figure 2. Cartographic map manipulation

- ii. State the **three (3)** categories of this cartographic technique. **(3 marks)**
- iii. Briefly describe the significant of this technique in modern geography. **(7 marks)**

