

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

**FINAL EXAMINATION, DECEMBER 2011**

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

**TITLE OF PAPER: INTRODUCTION TO ELEMENTARY  
SURVEYING & CARTOGRAPHY**

**COURSE NUMBER: GEP 213**

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

**INSTRUCTIONS:**

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

**ALLOCATION 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**

**GEP 213: INTRO. TO SURVEYING & CARTOGRAPHY – DECEMBER 2011**

**SECTION A: COMPULSORY**

**Question 1**

- a) Define map projection. (2 marks)
- b) Globes are said to portray the ideal nature of the earth. Discuss the inherent problems of globes which justify the wide use of map projections to produce conventional maps. (20 marks)
- c) Outline the four conditions that an ideal distortion-free map must satisfy. (8 marks)
- d) An area identified for a town development project on a map of scale 1:50 000 was estimated using a  $1\text{cm}^2$  grid as  $24.5\text{cm}^2$ . What is the true area of the development site in:
- (i) Square metres (7 marks)
  - (ii) Hectares? (3 marks)
- [40 Marks]

**SECTION B: ANSWER ANY TWO QUESTIONS**

**Question 2**

- a) One of the errors during taping is using a non-standard tape. In order to get the correct length, it is necessary to do some corrections. The length of a line measured with a 30m tape was found to be 423.375m. Upon comparing the tape to a standard, it was found to be 0.009m shorter under the same conditions of support, tension and temperature as existed during the undertaking of the line measurements. What is the actual length of the line? (15 marks)
- b) Apart from the error introduced by using non-standard tape, briefly describe three kinds and/or causes of systematic errors during taping. (15 marks)
- [30 Marks]

**Question 3**

- a) Briefly explain the following classes of symbols
- (i) Point-emphasising symbols
  - (ii) Line-emphasising symbols
- (10 marks)
- b) The basic graphic elements can be made to appear more or less distinctive and prominent by employing visual variables. Explain four primary visual variables. (20 marks)
- [30 Marks]

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**Question 4**

- a) Briefly describe the two principal divisions or classifications of surveying, highlighting how they differ from one another. (15 marks)
- b) Describe the surveying process, clearly stating the three stages involved in it. (15 marks)
- [30 Marks]**

**Question 5**

- a) 'Modern cartography is a complex discipline with data sources ranging from ground surveys to aerial surveys by remote sensing where aeroplanes and satellites are employed. Moreover, the need for more accurate maps coupled by growth in knowledge and cartographic technology has led to better tools, machines and material'. Discuss. (20 marks)
- b) Define the following terms:
- (i) Geoid (2 marks)
  - (ii) Datum (2 marks)
  - (iii) Benchmark (2 marks)
  - (iv) Legibility (2 marks)
  - (v) Area scale (2 marks)
- [30 Marks]**