

UNIVERSITY OF SWAZILAND
DEPARTMENT OF GEOGRAPHY, ENVIRONMENTAL SCIENCE AND
PLANNING

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SUPPLEMENTARY EXAMINATION, JULY 2016

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

GEP 213: INTRODUCTION TO SURVEYING & CARTOGRAPHY-JULY 2016

SECTION A: COMPULSORY

Question 1

- a) '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)
- b) Explain the stages involved in a surveying process. (10 marks)
- c) A farmer embarked on a project to develop a portion of his farm. He commissioned a surveyor who mapped the data on a map scale of 1: 25 000. The overall portion of the area under development was estimated using a 1 cm² grid as 87.5 cm². Determine the true area of the farm portion under development in;
- (i) square metres (5 marks)
- (ii) hectares (5 marks)

[40 Marks]

SECTION B: ANSWER ANY TWO QUESTIONS

Question 2

- a) Explain the precautions that should be taken into account when handling surveying instruments. (10 marks)
- b) Describe how the optical distance measurement instrument operates. (10 marks)
- c) Given that the calculated area on a map of scale 1:1000 was 3000 cm² and that the lengths were measured using a 30 m chain that was 0.4 m shorter. Calculate:
- (i) the true area on the ground in hectares. (5 marks)
- (ii) the percentage error of the area. (5 marks)

[30 Marks]

Question 3

- a) Discuss the general cartographic rules used for positioning lettering for the following;
- (i) Areal features (6 marks)
 - (ii) Linear features (6 marks)
 - (iii) Place features (6 marks)
- b) Explain the three ways of expressing map scales. (12 marks)
- [30 Marks]**

Question 4

- a) Define the following terms:
- (i) Triangulation (2 marks)
 - (ii) Global Positioning System (2 marks)
 - (iii) Plane table surveying (2 marks)
 - (iv) Tacheometry (2 marks)
 - (v) Area scale (2 marks)
- b) Describe the two methods used in levelling. (20 marks)
- [30 Marks]**

Question 5

- a) A student whose pace factor was 0.4 m/pace walked a 50 m stretch marked on a sloping ground with the following paces 134, 135, 134, 134, 137, 137, 139 and 140. Calculate the resultant error in his pace length for the sloping ground. (15 marks)
- b) Explain how photogrammetric techniques are used in surveying. (15 marks)
- [30 Marks]**