

073106T4LAS LAND SURVEY AND MAPPING LEVEL 6 LSM/OS/LS/CC/05/6

Apply Principles of Cartography

November/December 2025



TVET CURRICULUM DEVELOPMENT, ASSESSMENT AND CERTIFICATION COUNCIL (TVET CDACC)

WRITTEN ASSESSMENT

Time: 3 HOURS

INSTRUCTIONS TO CANDIDATE

1. Marks for each question are indicated in the brackets.
2. The paper consists of **TWO** sections: **A** and **B**.
3. Attempt **ALL** the questions in section A and any **THREE** questions in section B.
4. Candidates are provided with a separate answer booklet
5. **DO NOT** write on this question paper.

This paper consists of FIVE (5) printed pages.

Candidates should check the question paper to ascertain that all pages are printed as indicated and that no questions are missing.

SECTION A:(40 MARKS)

Answer ALL the questions in this section.

1. With reference to cartographic communication, explain FOUR benefits of text in mapping.

(4 Marks)

2. A racing motorist travelling at 100 km/h covers a straight horizontal length of road between two points A and B in 12 minutes. If the distance between A and B is 8 cm on a map, determine the scale of the map. (4 Marks)
3. Scales can be represented in different ways on maps and plans. State THREE methods of showing scales on maps and plans, giving one example in each case. (3 Marks)
4. The choice of map scale is influenced by technical and practical considerations. Outline FOUR factors that influence the choice of map scale. (4 Marks)
5. In cartography, the choice of drawing surface affects the quality and durability of drafted maps. Outline FOUR factors governing the selection of a drawing surface. (4 Marks)
6. Several models have been used in cartography to approximate the shape of the earth. Explain the following models that have attempted to describe the shape of the earth: (4 Marks)
 - a. Geoid;
 - b. Ellipsoid.
7. Maps serve different purposes depending on their content and design. Outline TWO differences between general reference maps and special purpose maps. (4 Marks)
8. Deed plans in Kenya are prepared for different land administration purposes. Explain the following types of deed plans. (4 Marks)
 - a. New Grant Deed Plan;
 - b. Extension of Lease Deed Plan;
 - c. Change of User Deed Plan;
 - d. Easement Deed Plan.
9. Thematic or special-purpose maps are designed to represent the distribution of specific phenomena. Explain the following types of special-purpose maps. (3 Marks)
 - a. Dot density maps;
 - b. Choropleth maps;
 - c. Proportional symbol maps.
10. A rectangular grid is a network of perpendicular lines (northings and eastings) drawn on a map or plan. Outline THREE uses of a rectangular grid in mapping. (3 Marks)
11. When producing maps at smaller scales, generalization is often applied to reduce detail while retaining essential information. State THREE tasks carried out in the map generalization process. (3 Marks)

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SECTION B:(60 MARKS)

Answer any THREE Questions in This Section.

12. Map projections are fundamental in representing the curved surface of the earth on a plane.
 - a. Explain THREE factors that influence the choice of a map projection. (6 Marks)
 - b. Outline TWO characteristics of conformal projections. (2 Marks)
 - c. Universal Transverse Mercator (UTM) is widely used in Kenya. Explain THREE reasons for its popularity. (6 Marks)
 - d. Describe THREE classes of projections based on the developable surface, giving one example for each. (6 Marks)
13. Symbols and visual variables are key tools in cartographic communication.
 - a. Describe FOUR classes of symbols used in cartography, giving an example of each. (12 Marks)
 - b. With the aid of relevant examples, explain FOUR visual variables suitable for representing quantitative data. (8 Marks)
14. Cartographers use various methods to depict terrain on maps for planning and analysis purposes.
 - a. Describe FIVE methods of relief representation. (10 Marks)
 - b. **Figure 1** illustrates an extract from a map

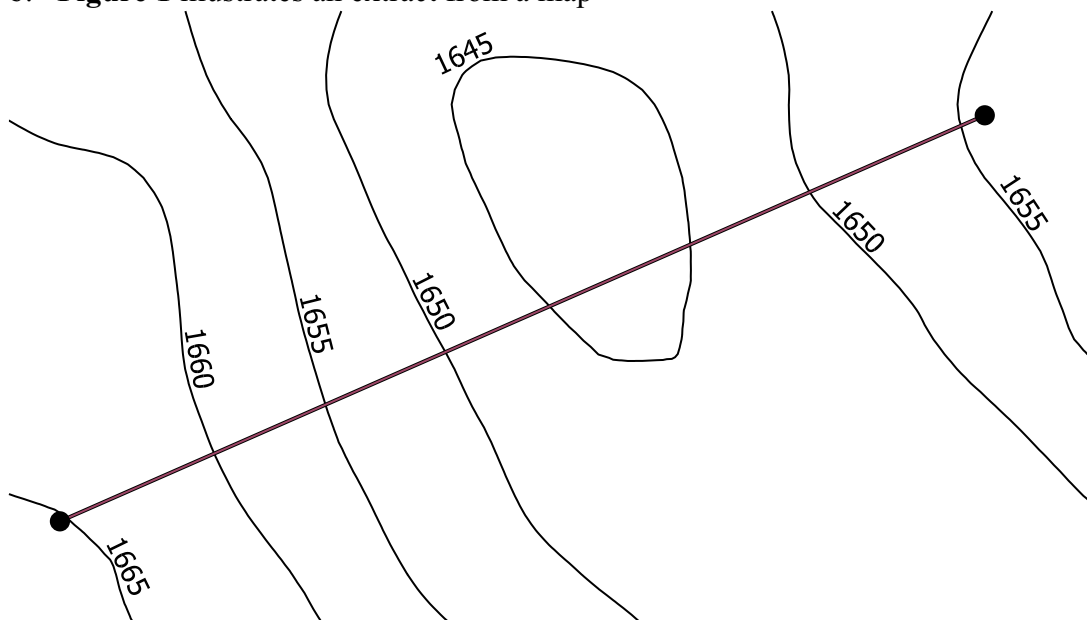


Figure 1

- i. Plot a longitudinal profile between points A and B which are 320 m apart. (7 Marks)
- ii. Estimate the gradient between the two points. (3 Marks)

15. A well-prepared map must include key elements to guide interpretation and use.

- a. With the aid of a sketch, illustrate and label any SIX essential elements of a map.

(8 Marks)

- b. Explain the importance of the SIX map elements you sketched in part (a).

(12 Marks)

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