

7475 Special Techniques in Surveying 2

CAMEROON GENERAL CERTIFICATE OF EDUCATION BOARD

Technical and Vocational Education Examination

JUNE XXXX

ADVANCED LEVEL

Specialty Name (Specialty Code)	SURVEYING - SURV(GTTO)
Subject Title	Special Techniques in Surveying
Paper No.	2
Subject Code No.	7475

Three hours

INSTRUCTIONS TO CANDIDATES



You are reminded of the necessity for good English and orderly presentation in your answers.

You are advised to read carefully through the question paper, before you begin your answers.

Turn Over

PART ONE: KNOWLEDGE AND COMPREHENSION

NB: Answer all questions in this part

I. Define the following words and expressions: (3 marks)

- a) GPS
- b) Geodetic coordinates
- c) Stereo model
- d) Direct stereo effect
- e) Mapping
- f) Map revision

II. Differentiate between geocentric latitude and geodetic latitude (0.5 mark)

- a) List the main methods for establishing national geodetic networks (0.5 mark)
- b) State three reasons, why geodetic networks are establish on the territory of a nation (0.5 mark)

III. a) Distinguish between Binocular vision and stereoscopic vision (0.75 marks)

b) Name the instrument which is used to establish a stereo model? (0.75 marks)

IV. Describe the various methods of representing relief on a map and the nature of contour lines on a level and hilly area. (1.5 marks)

PART TWO: NUMERICAL APPLICATIONS AND ANALYSES

NB: Answer any two of the following questions:

Question one

1. Calculate the three remarkable elements of the following ellipsoid of revolution on WGS84 given that the semi-major axis is at 6378137m and semi-minor axis is at 6356752.31424m. (6.25 marks)

Question two

2. During a photographic mission, an aerial photograph was taken at a scale of 1/24000 with format size of 18cm by 18cm and the longitudinal and lateral overlaps were 60% and 30% respectively. At the time of this mission, the focal length of the photographic camera was 152mm and with an operating speed of the air craft being 180km/h.

Calculate the following elements.

- a) The photographic altitude (1 mark)
- b) The air base of the survey (1 mark)
- c) The distance covered by the 60% overlap (1.25 marks)
- d) The surface area common to a stereo-pair (1 mark)
- e) The interval between exposure (1 mark)
- f) The total number of photographs required to cover that area (1 mark)

Question three

3. On a contour map, two points A and B whose heights were interpolated and obtained as $H_A=16.35\text{m}$, $H_B=17.45\text{m}$.

The horizontal distance separating these two points was measured to be 45m.

Calculate the following:

The gradient between these two points

- a) In percentage (2.25 marks)
 - b) In degrees (2 marks)
 - c) As $\frac{1}{n}$ (Meters/meters) (2 marks)
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