FACULTY OF ENGINEERING
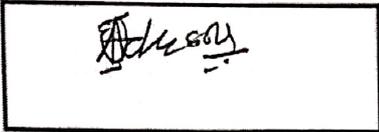## DEPARTMENT OF CIVIL ENGINEERING
FIRST SEMESTER EXAMINATION (MARCH 2018)
2017/2018 ACADEMIC SESSION

HOD'S SIGNATURE

Instructions:

1) Answer 4 questions. Questions 1 and 2 are compulsory
2) Time Allowed: 2hrs 30mins
3) SEVERE PENALTIES APPLY FOR MISCONDUCT, CHEATING, POSSESSION OF UNAUTHORIZED MATERIALS DURING EXAMINATION

Course Title: Engineering Surveying and Photogrammetry II

Course Code: CVE 413

Elizade University, Ilara-Mokin
Department of Civil Engineering.

First Semester 2017/2018 Examination

CVE 413: Engineering Surveying and Photogrammetry II
Instruction: Answer 4 questions. Questions 1 and 2 are compulsory.
Time allowed: 2hrs 30mins

Question 1 (30 marks)

a) Explain the following as used in engineering surveying:
    i.   Reconnaissance
    ii. Preliminary survey
    iii. Location survey
    iv. Contour
    v.   Contour interval (5marks)

b) List the factors for deciding contour interval and explain two of them.(8marks)

c) Itemise the characteristics of contour lines. (5marks).

d) State and briefly describe the methods of contouring. (7marks)

e) Determine a contour interval on a map on a scale 1:50,000. (5marks)

Question 2 (30 marks)

a) Define Area and state the units of area that are commonly used. (4marks)

b) State the methods used in calculating areas of portions of land. (4marks)

c) Show that the formula for calculating area in Trapezoidal Rule is given by:

$$Area = \left(\frac{d}{2}\right)\left(O_1 + O_n + 2\left(O_2 ----- + O_{n-1}\right)\right)$$

Where; d = common difference and $O_1, O_2, O_{n-1}, ...O_n$ = offsets

Using the formula you just derived in (c), calculate: the area when the offsets(in metres) are as given thus: 2, 3, 5, 6, 8, 9, 6 and 3.

    i.   the common difference(d) to be taken as 4m. (6 marks)
    ii. the area using Simpson's formula. (6 marks)

    iii. the volume when the thickness is 1.2m.(6 marks)

d) Compare your answers in (i) and (ii) and state which is more accurate and why you think so. (4marks)

Question 3 (20 marks)

a. Briefly describe the relationship between surveying and setting out of works. (4marks).

b. List the two methods of setting out of buildings. (4marks).

c. Briefly describe how to set out a rectangular building of length 15m and breadth 8m (external dimensions) using 3, 4, 5 method and using tri-square. State how to check the correctness of what you have just done. (8marks)..

d. What is the usefulness of profile boards in setting out operation? (4marks).

Question 4 (20marks)

a. List the types of projects where the earthwork volumes are of paramount importance. (4 marks).

b. Itemise three methods by which earthwork volume may be computed. (3 marks).

c. Figure Q4 is a level section in a fill along a road section where: b = formation or subgrade width, h = centre of fil, d1, d2 = side width of half breadth h1, h2 = height of fill at the edge points of embankment, S:1 = side slope.

    i. Show that the area of the embankment section is h(b+sh). (4marks)..

    ii. If b=10.3m, S=2, h=1.5m and there are four sections of equal area along this road with 20m as
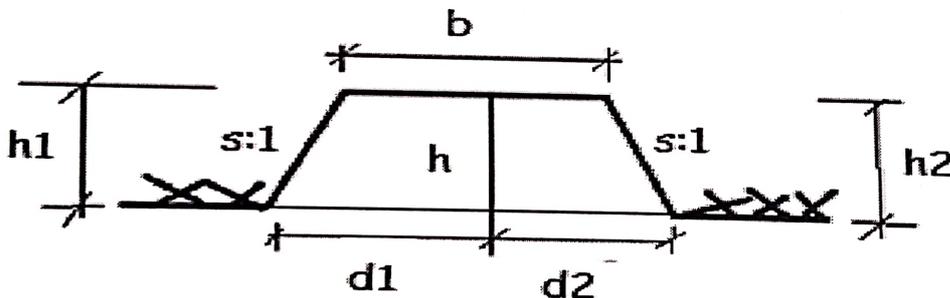

Figure Q4: Level Section of an embankment

Compute:

i. the area of the sections. (4 marks).

ii. the volume of the section in fill using Trapezoidal method. (5 marks).

Question 5 (20 marks)

a. Differentiate between Trapezoidal, Simpson and average ordinate Methods.(3 marks)

b. State four formulae that can be used for calculating the area of geometrical figures. (4 marks).

c. Calculate the area of a triangle with sides 64.7m, 85.2m with the included angle of 60degrees and the area of a trapezium with 4.3m and 6.1m as the parallel sides and 2.1 m as the perpendicular distance between the parallel sides. (6 marks).

d. The following perpendicular offsets were taken at 10m intervals from a survey line AB to an irregular boundary line 2, 3, 5, 6, 8, 9, 6 and 3metres. Calculate the area in m^2 enclosed between the survey line, the irregular boundary, the first and the last offsets using the average ordinate method. (7 marks).

O.S.A (2018)