ELIZADE UNIVERSITY, ILARA-MOKIN
DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING
CVE 413 : ENGINEERING SURVEYING AND PHOTOGRAMMETRY
EXAMINATION FOR FIRST SEMESTER 2019/2020 SESSION
Instructions: Answer **four questions** in all, **Questions 2 and 3** are compulsory,

Time Allowed: 3 Hrs

3 units

Question 1. - 20 marks

a) What do you understand as indirect method of contouring? Explain briefly method of squares or grid under the indirect method of contouring. **(8 marks)**

b) List the steps to take in order to determine the contour interval in any contour map when the index contour is given in the map. Use diagram where necessary. **(5 marks)**

c) Study the contour map in **Figure Q1** and identify seven (7) contour features present. Identify the features at points with label 1 to 5 as well as two (2) other additional points or areas. **(7 marks)**
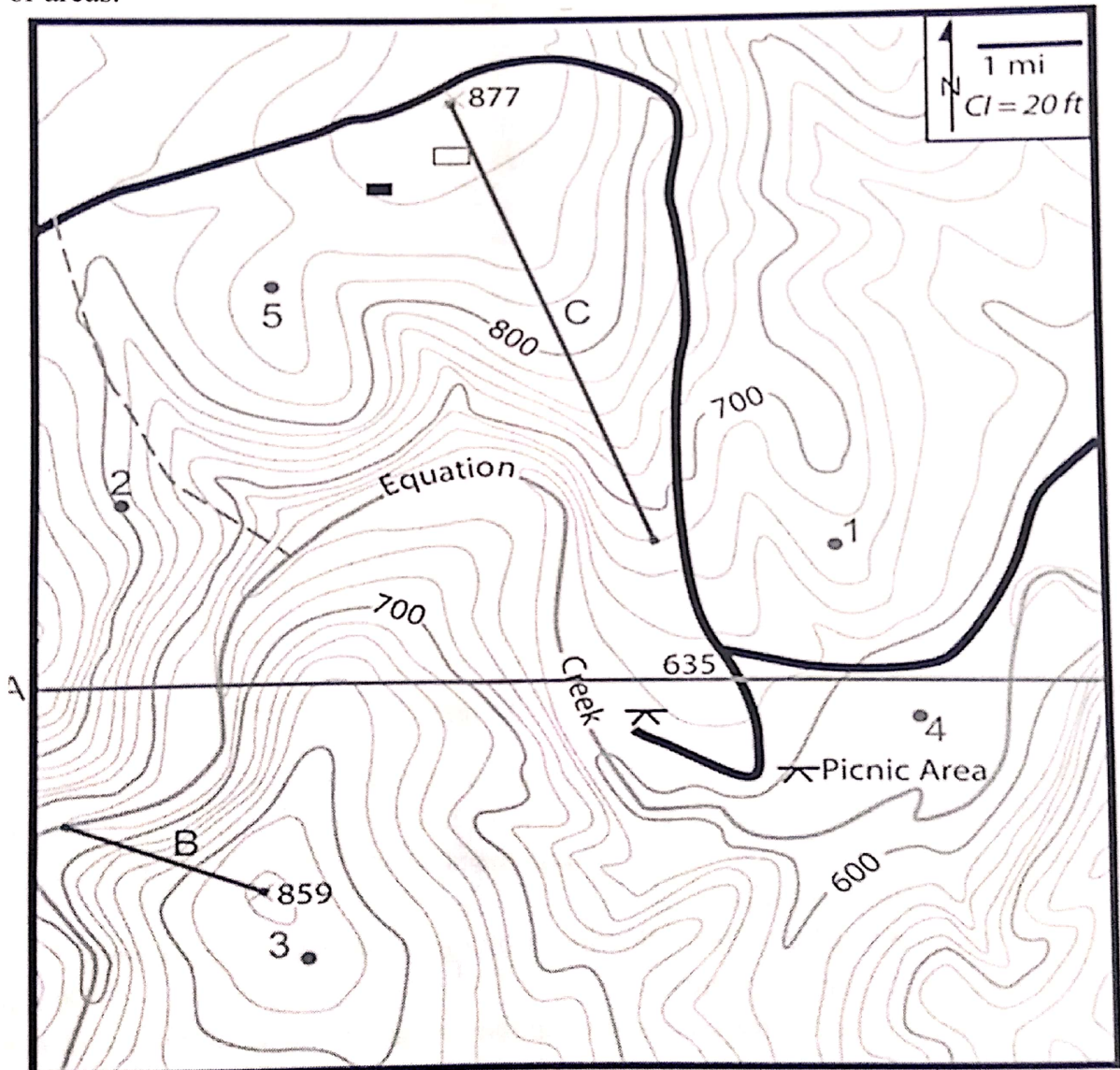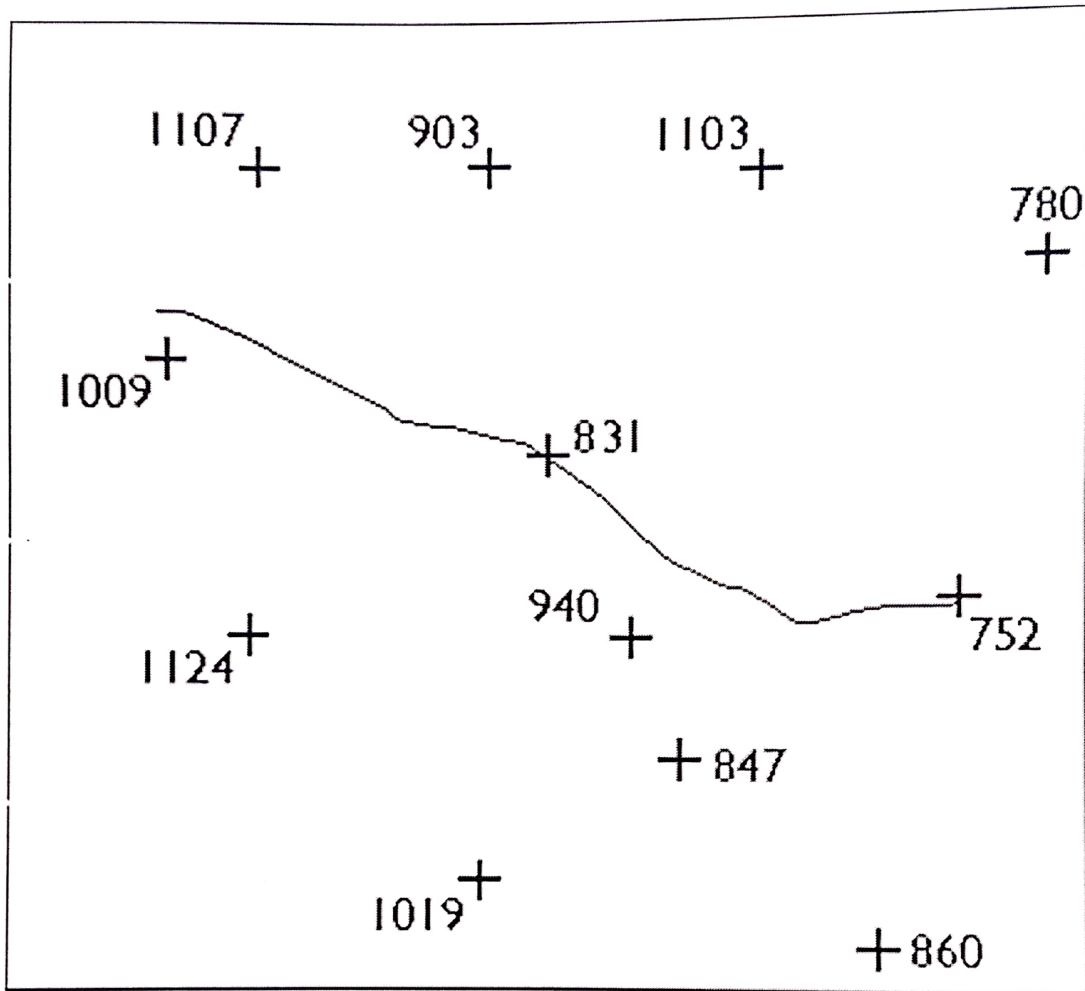

Figure Q1: Contour maps with different features

Question 2. – 20 marks

Figure Q2 shows the spot elevations in metres of a place, with the use of interpolation by arithmetic calculation, draw the contour map of the area.

Contour Interval = 50

Figure Q2: Spot elevations in meters

Question 3. - 40 marks

a) With the aid of diagram explain the following under contouring a) hill, b) valley, c) ridge, d) saddle, e) depression, f) spur, g) vertical cliff, h) overhanging cliff.   (16 marks)

b) Using the topographic map in Figure Q3 and the answer sheet provided in this question, answer the following questions

    (i) Give the elevation of the following point (give the elevation as a range)
       a, b, c, d, e, f, g, h, i, j and k   (8 marks)

    (ii) Which direction is the river shown in the topographic map flowing   (2 marks)

    (iii) Construct the profile along line AA^{1} and BB^{1} in the sheet provided   (10 marks)

(iv) Calculate the gradient of the hill slope between d and g on the topographic map
   in m/km   (2 marks)
(v) What is the actual horizontal distance between point d and f   (2marks)

i)   a................................, b................................, c................................
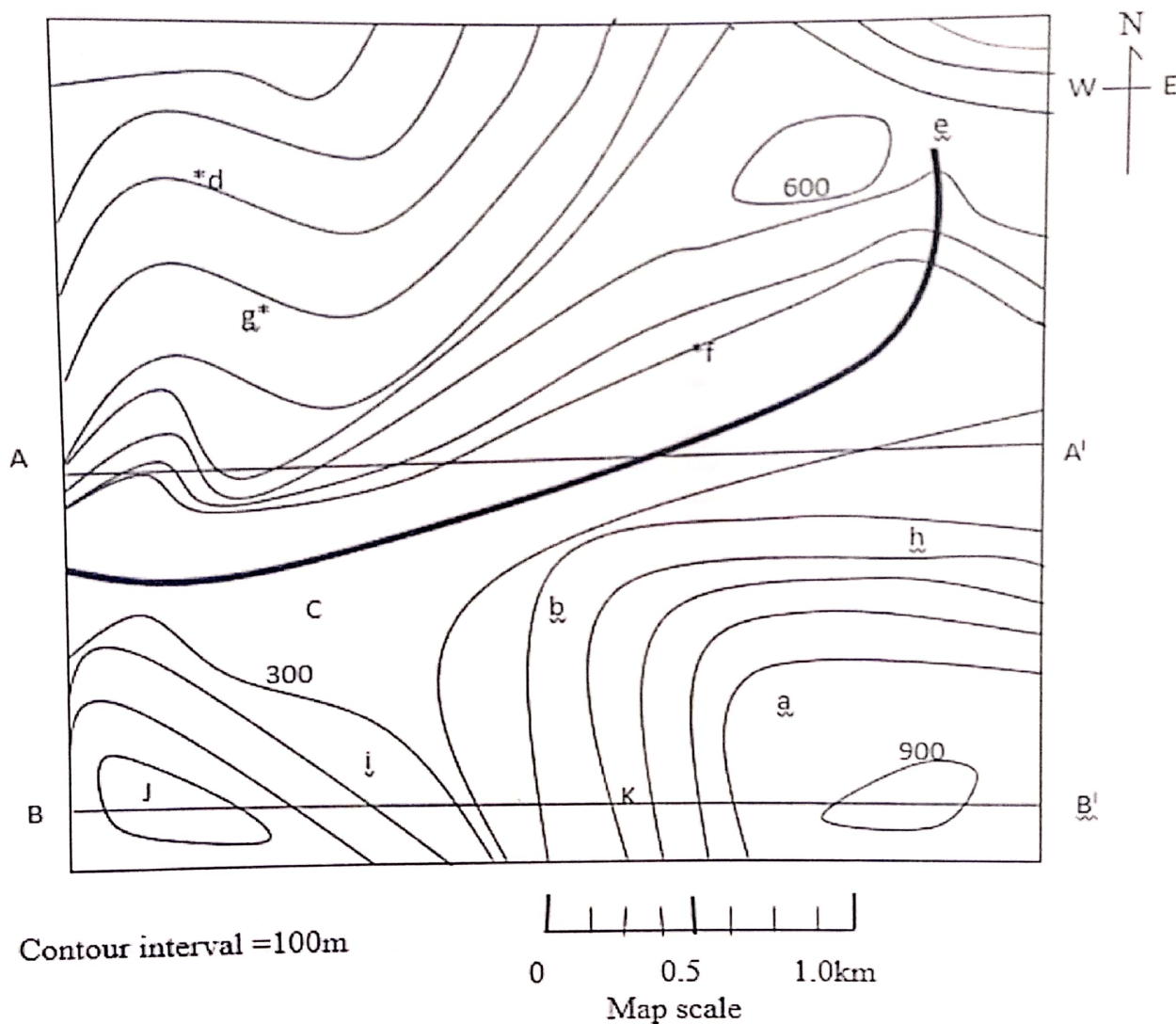   d................................, e................................, f................................
      g................................, h................................, l................................
      j................................, k................................

ii)   ....

Contour interval =100m

0   0.5   1.0km
           Map scale

Figure Q3: Topographic map to Question 3b

iii) ....m/km

iv) ....km

Question 4. - 20 marks

a. Compute the volume of earthworks involved in constructing a farm pond of the following sizes; size at bottom 10 x 5m, side slope 1:3, depth of pond 5m, work out the cost of earth work also if it costs ₦ 150 per m^3. **(8 marks)**

b. Compute the volume of the contour elevation given in **Table Q4** using trapezoidal and prismoidal methods. **(12 marks)**

Table Q4: Contour elevations and their corresponding areas

Contour (m)	Area (A$_1$)	Previous Area (A$_2$)
5	1.35	0
10	3.33	1.35
15	4.16	3.33
20	6.38	4.16
25	8.25	6.38
30	10.93	8.25
35	11.55	10.93
40	14.31	11.55
45	16.12	14.31
50	17.83	16.12

Question 5. – 20 marks

a. Define what you understand as setting out in Civil Engineering? **(3 marks)**

b. List all the equipment that you need to set out a building. State also their uses alongside with them. **(5 marks)**

c. Assuming you are a site Engineer on a new building project and all the drawings (Architectural, Structural, Electrical and Mechanical) were handed over to you. This is to enable you execute the project effectively well. Enumerate how you will carry out the setting out of the building from inception to the excavation of the foundation trenches. Hint: Use the knowledge of your site visits, field practical work and class discussion. **(12 marks)**

Question 6. – 20 marks

a) What is Photogrammetry? **(2 marks)**

b) Mention the elements of photogrammetry that you know. Explain any two of them **(7 marks)**

c) Distinguish between terrestrial photogrammetry and aerial photogrammetry. **(2 marks)**

d) Enumerates 3 uses of photogrammetry that you know. **(3 marks)**

e) Mention 3 sources of error in photogrammetry equipment that you know and how they can be avoided. **(6 marks)**