

UNIVERSITY OF RUHUNA

THIRD EXAMINATION IN BSc AGRICULTURAL RESOURCE MANAGEMENT AND TECHNOLOGY (PART II)

September – 2020

EN3203: Survey and Leveling

Time: Two hours

Structured and Essay Type

Index Number

--

Answer ALL questions.

Answer to the structured questions in Part A must be given in the spaces provided.

Answers to essay type questions in Part B must be given on the answer books.

All questions carry equal marks.

Only non-programmable calculators are permitted.

Mobile Phones are not allowed

PART A – Structured - Answer All Questions

1. Leveling is very important in agriculture.

(a) List five activities in agriculture that leveling is required.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

(10 Marks)

(b) List the basic instruments/equipment required for direct leveling including their main functions.

Instruments/Equipment	Main function

(15 Marks)

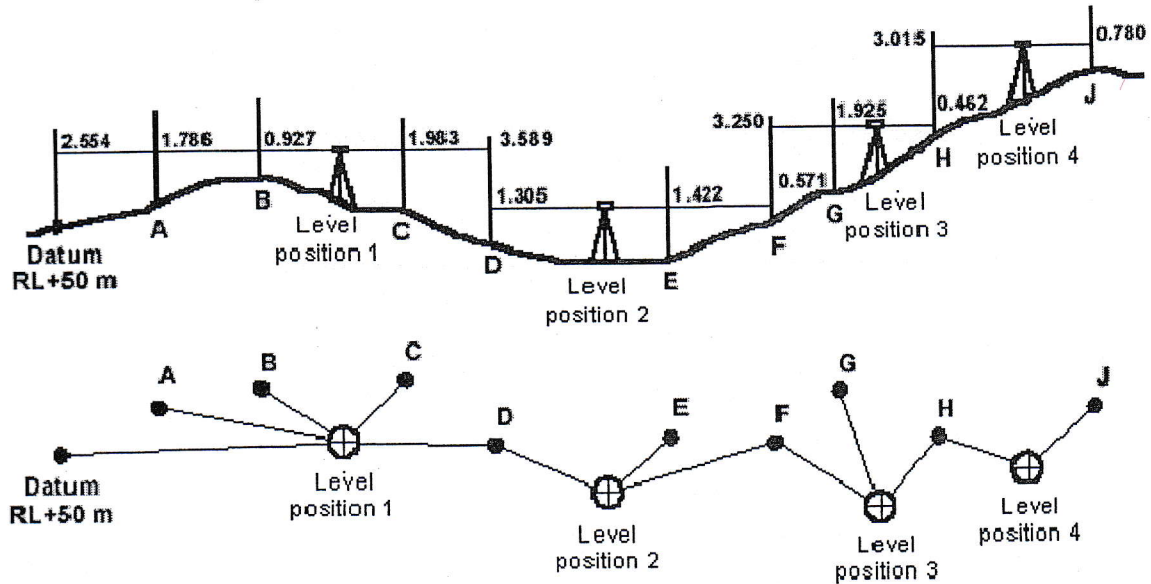


Figure 1

- (e). Complete the rise and fall columns. (15 Marks)
- (f). Determine the reduce levels using rise and fall method and record the date in the respective column. (15 Marks)
- (g). Mark the changing points in the remark column. (05 Marks)
- (h). Do the arithmetic check for evaluating the calculation errors. (15 Marks)
- (i). If the distance between the starting and end points is 52 m, determine the slope between two points as a percentage. (10 Marks)

02.(a) Differentiate the Followings using suitable sketches.

- (i) Plane surveying and Geodetic surveying

(10 Marks)

(ii) Open Compass traverse and close compass traverse

(10 Marks)

(b) The activity during the land surveying is given in figure 2.

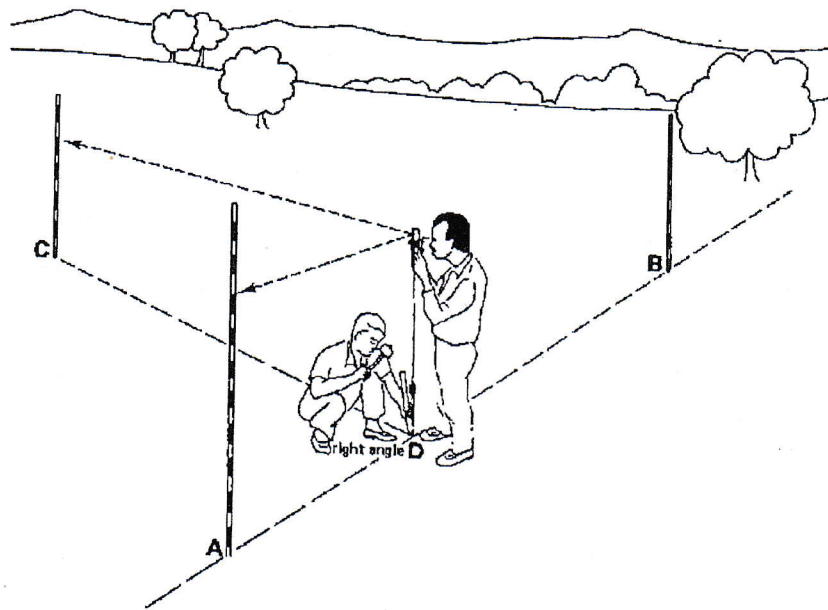


Figure 2

(i) What is/are the alternative method/s you can apply to perform above activity?

.....
.....
.....

(10 Marks)

(ii) Propose any other alternative method to perform the same task without any instruments in your hand

.....
.....
.....

(10 Marks)

(c) A map of a surveyed site was given in figure 3.

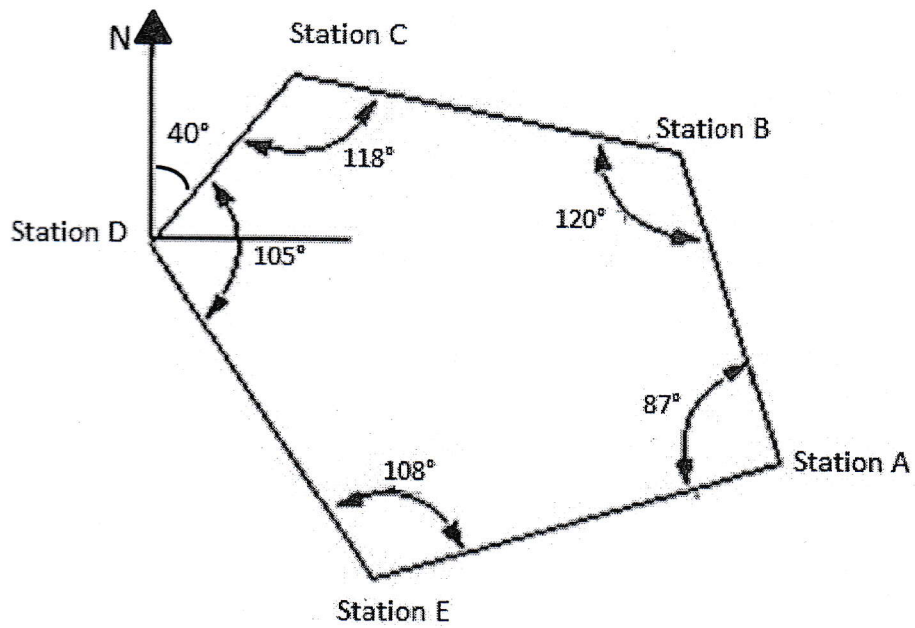


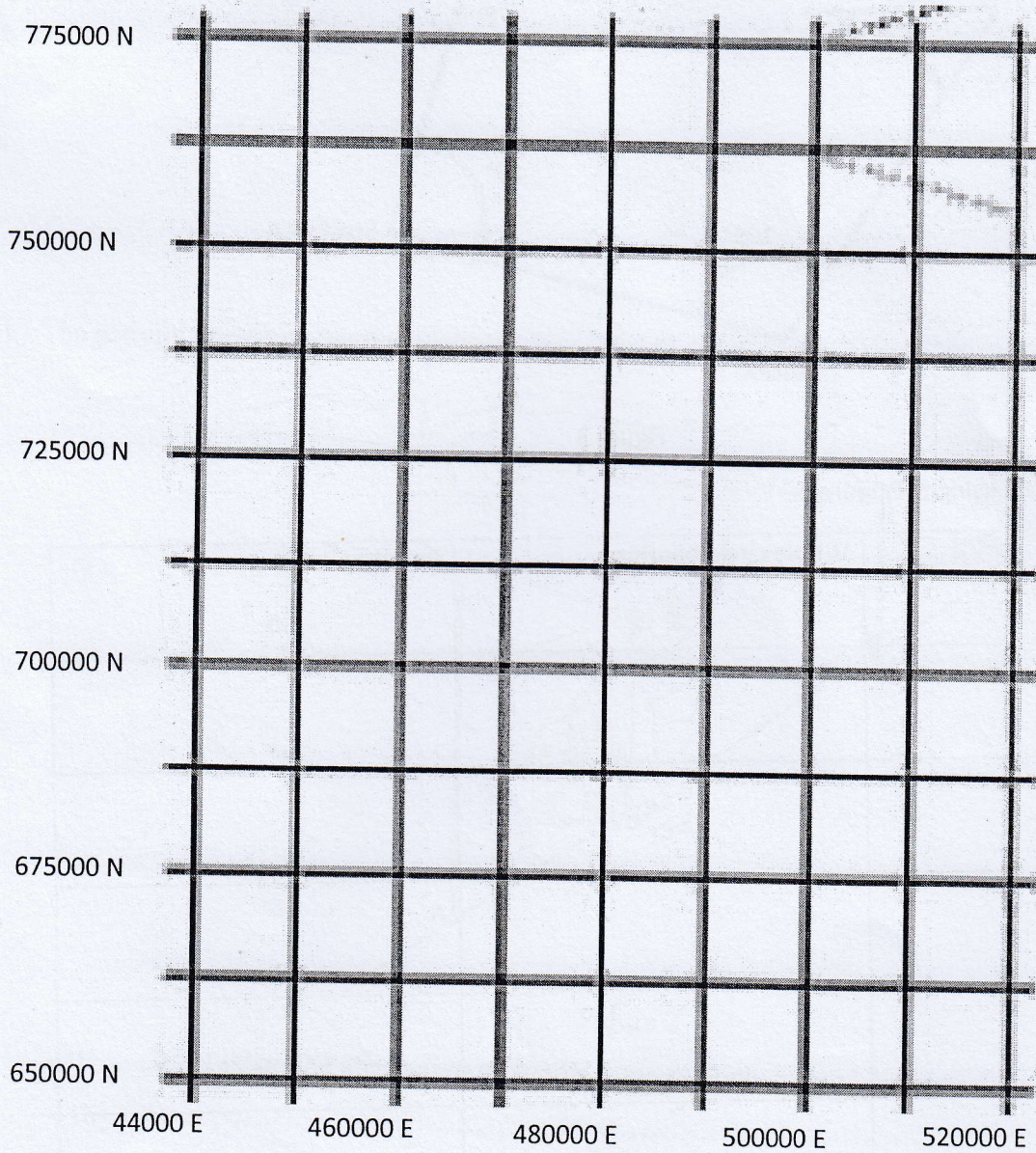
Figure 3

Fill the following table using the figure 1.

Line	Whole circle bearing	Reduced bearing
A-B		
B-C		
C-D		
D-E		
E-A		

(30 Marks)

- (c) Determine the distance between Bandarawela and Matara when the UTM coordinates for Bandarawela are 499796.5E & 754500.5N and the UTM coordinates for Matara are 450193.7E & 657697.7N. Use following grid for calculation.



.....

.....

.....

.....

.....

.....

.....

PART B – Essay - Answer All Questions

01 (a) Contouring is very important in agriculture.

i. What is contouring?

(10 Marks)

ii. How do you use contouring for land conservation? Briefly explain.

(15 Marks)

iii. Briefly explain how do you prepare a contour line on the ground.

(15 Marks)

(b) There are different types of errors you would make when leveling is performed in the field.

i. Briefly explain three main types of errors you can expect when leveling is performed.

ii. How do you avoid those errors in the field?

(30 Marks)

(c) Briefly explain the followings with their purposes.

i. Fly leveling

ii. Check leveling

iii. Inverse leveling

(30 Marks)

02. (a) (i) Describe the distance measuring principles used in land surveying

(20 Marks)

(ii) A farmer wanted to measure the surface area of his paddy field. Suggest a method to complete this task assuming that he doesn't have any other standard land surveying instrument other than a simple compass and a measuring tape. Elaborate your answer with suitable sketch.

(20 Marks)

(b) Propose and elaborate most appropriate land surveying method to be used under the following two conditions including with the list of the instrument and stepwise detail procedure to be followed.

(i) When a farmer required to apply fertilizer to his newly transplanted paddy fields.

(30 Marks)

(ii) When the faculty management required to get the map of academic complex of the faculty of Agriculture, University of Ruhuna

(30 Marks)

@@@@@@@@@@@@@@@@