

**B.Tech Odd Semester (CBCS) Exam.,
December—2017**

AGRICULTURAL ENGINEERING

(3rd Semester)

Course No. : AECC-04

(Surveying and Levelling)

Full Marks : 50

Pass Marks : 15

Time : 2 hours

Note : 1. Attempt *any five* questions.

2. Begin each answer in a new page.

3. Answer parts of a question at a place.

4. Assume reasonable data wherever required.

5. The figures in the margin indicate full marks for the questions.

1. (a) Write down the difference between the following : 1×4=4

(i) Fore bearing and Back bearing

(ii) Whole-circle bearing and Reduced bearing

(iii) True bearing and Magnetic bearing

(iv) Radiation and Intersection

(b) The following consecutive readings were taken with a levelling instruments at intervals of 20 m :

2·375 m, 1·730 m, 0·615 m, 3·450 m,
2·835 m, 2·070 m, 1·835 m, 0·985 m,
0·435 m, 1·630 m, 2·255 m, 3·630 m

The instrument was shifted after fourth and eighth readings. The last reading was taken on a BM of RL 110·200 m. Find the RLs of all the points by Rise-and-Fall method. 6

2. (a) What is a three-point problem? Describe how it is solved by Bessel's method. 5

(b) A closed traverse is conducted with five stations *A, B, C, D* and *E* taken in anticlockwise in the form of a regular pentagon. If the FB of *AB* is 30° , find the FB of the other sides. 5

3. (a) Describe with a neat sketch how plane table traversing is done. 5

(3)

- (b) The following are the fore bearings and back bearings of the sides of a closed traverse :

Side	FB	BB
AB	150 15	330 15
BC	20 30	200 30
CD	295 45	115 45
DE	218 0	38 0
EA	120 30	300 30

Calculate the interior angles of the traverse. 5

4. (a) What does the term 'sensitiveness' mean in context of a bubble? Give an expression for determination of sensitiveness. 2+2=4
- (b) Write down the advantages and disadvantages of plane table surveying. 3+3=6
5. (a) Write short notes on the following : 1×5=5
- (i) Plane table
 - (ii) Alidade
 - (iii) Trough compass
 - (iv) U-fork
 - (v) Prismatic compass

(4)

- (b) Write the suitable permanent adjustment of level during operation. How is it done? 5
6. (a) Describe a dumpy level with all the components along with a sketch. 5
- (b) Define local attraction and explain the effects and correction principle for the traversed survey. 5
7. (a) Find the angle between the lines AB and BC, if their respective bearing is (i) 40 20 , 150 30 ; (ii) N50 20 E, S19 30 E and (iii) 30 45 , 140 15 . 2×3=6
- (b) Find out the back bearings whose fore bearings are given (i) 40 15 , (ii) 220 30 , (iii) N30 45 E and (iv) S60 30 W. 4
8. (a) What are the benchmarks? Write their types and uses. 5
- (b) Describe the different kinds of chain commonly used in surveying and state special advantages of each. 5
