B.E. (Full Time) DEGREE END SEMESTER EXAMINATIONS, SEPTEMBER/OCTOBER 2013

AGRICULTURAL AND IRRIGATION ENGINEERING BRANCH

THIRD SEMESTER - (REGULATIONS 2008)

AI 9201 – SURVEYING

Time: 3 Hours   Maximum Marks: 100

INSTRUCTIONS:
1. Answer ALL questions under Part-A and B respectively
2. Assume suitable data wherever necessary
3. Draw neat sketches wherever desirable

PART - A (10 x 2 = 20 Marks)

1. Define surveying and also mention the conventional symbol for Agriculture land..

2. What is well conditioned triangle? Why is it required?

3. The magnetic bearing of a line AB is S 38° 30' W. Calculate the true bearing

   if the magnetic declination is (i) 4° 30' W and (ii) 3° 30' E.

4. Mention the demerits of plane table surveying over the other methods of surveying.

5. Bring out the temporary adjustment of a Tilting level.

6. What considerations would you have while selecting the contour interval?

7. Distinguish between Vernier and Micro-optic theodolite.

8. Mention the various reasons for the closing error in theodolite traversing.

9. How will you designate the simple circular curve?

10. What are vertical curves? Mention its uses also.

PART - B (5x16 = 80Marks)

11.a.i. Explain the working of a line ranger.   (4)

   ii. Bring out the step by step procedures involved in chain traversing while preparing the plan
   of a building.   (12)

P.T.O.

12.a.i. Explain the Bowditch rule for adjusting a compass traverse. (6)

ii. The following bearings were observed in case of a closed traverse.
At what stations, local attraction is suspected? Also compute the correct bearings.

LINE	Fore Bearing	Back Bearing
AB	S 40°30' W	N 41°15' E
BC	S 80°45' W	N 79°30' E
CD	N 19°30' E	S 20°00' W
DA	S 80°00' E	N 80°00' W

(10)

(OR)

12.b. What is three point problem? How is it solved by trial & Error and Bessel's method? (16)

13.a. The following staff readings were observed successively with a level,
the instrument was shifted after fifth and eleventh readings.
0.585, 1.010, 1.735, 3.295, 3.775, 0.350, 1.300, 1.795, 2.575, 3.375, 3.895, 1.735,
0.635 and 1.605metres
Enter the above readings in a page of a level field book and calculate the reduced levels
of points by rise and fall method if the first reading was taken with a staff held on a
Bench Mark of 136.440m. (16)

(OR)

13.b. In a proposed Hydro-electric project, a storage reservoir was required to provide a storage
of 4.5million m³between the lowest drawdown(LDD) and the top water level(TWL).
The area contained within the stated contours and upstream face of the dam was as follows.

Contour(m)	100	95	90	85	80	75	70	65
Area (ha)	30	25	23	17	15	13	7	2

If LDD was to be 68cm, calculate the TWL for
(i) Full storage capacity,
(ii) 60%full storage capacity.
(Use end area method for calculating volumes) (16)

P.T.O.

14.a. To determine the elevation of the top of a flag post, the following observations were taken.

Instrument station	Reading on Bench Mark	Angle of elevation	Remarks
A	1.265m	10°48'	Reduced Level
B	1.085m	07°12'	of BM = 200.000m

Station A and B and the top of a flag post are in the same vertical plane.
Find the elevation of the top of a flag post if the distance between A and B is 50m. (16)

(OR)

14. b.i. Explain the Gale's traverse table used for computing the co-ordinates in theodolite traversing. (6)

ii. In a closed traverse ABCDE, the bearing of the line AB was measured as 150° 30'.

The included angles were measured with Theodolite as under

LA = 130° 00' ; LB = 90° 00' ; LC = 125° 30' ; LD = 135° 30' ; LE = 59° 00'

Calculate the bearing of all other lines and also check it. (10)

15. a. If you are an engineer incharge of waterways, bring out the step by step procedures involved in carrying out the project. (16)

(OR)

15.b Tabulate the data needed to set out a circular curve of radius 500m to connect two straights having a deflection angle of 18° 24'. The chainage of intersection of tangents is 465m. Adopt peg interval of 20m. Use the method of deflection distances with offsets from chords produced. (16)