

B.E./B.Tech(Full Time) DEGREE END SEMESTER EXAMINATIONS, April / May 2011

AGRICULTURE AND IRRIGATION ENGINEERING

THIRD SEMESTER – (REGULATIONS 2004)

AI 271 – SURVEYING

Time: 3 hrs

Max Marks: 100

Answer ALL Questions

Part – A (10 x 2 = 20 Marks)

1. What is hypotenusal allowance in chain surveying?
2. Define Reciprocal Ranging?
3. Differentiate Prismatic Compass and Surveyor's Compass
4. Define Isogonic and Agonic line
5. Why both verniers are read in theodolite?
6. The magnetic bearing of line as observed by the prismatic compass at a survey station is found to be 272° . If the local attraction at this station is known to be $5^\circ E$ and the declination is 15° west, what is the true bearing of the line?
7. How will you identify the terrain from contour map?
8. Write the assumptions of Simpson's one-third rule for area calculation
9. Calculate the length, Tangent length and Mid ordinate distance of a simple curve with radius R and deflection angle Δ .
10. What is closing error and how can it be eliminated.

Part – B (5 x 16 = 80 Marks)

11. The following staff readings were observed successively with level, the instrument having been moved forward after the second, fourth and eighth readings: 0.875, 1.235, 2.310, 1.385, 2.930, 3.125, 4.125, 0.120, 1.875, 2.030, 3.765. The first reading was taken with the staff held upon a benchmark of elevation 132.135. Enter the readings in level book- form and reduce the levels by both height of collimation and Rise and fall method. Find also the difference in level between the first and the last points. (16 Marks)
12. (a) The following are bearings taken on a closed traverse in clockwise direction.

Line	FB	BB
AB	$124^\circ 30'$	$304^\circ 30'$
BC	$68^\circ 15'$	$246^\circ 0'$
CD	$310^\circ 30'$	$135^\circ 15'$
DA	$200^\circ 15'$	$17^\circ 45'$

Compute the interior angles and correct them for Local Attraction. (16 marks)

OR

12 (b) Explain about the instruments and accessories required for Plane Table surveying with sketches (16 marks)

13 (a) i) Discuss Reciprocal Levelling. (4 marks)

ii) What are the different tape corrections and how are they applied? Explain any two such corrections. (6 marks)

iii) A survey line **BAC** crosses a river **A** and **C** being near to the banks, but on either side of the river. **A** is perpendicular to **AD**, 50m is out at **A**. If the bearings of **AD** and **DC** are $38^{\circ}45'$ and $278^{\circ}45'$ respectively and the chainage at **A** is 860m. Find the chainage. (6 marks)

(OR)

13. (b) (i) Explain the uses of contour maps

(ii) Discuss various methods of interpolating the contours (16 marks)

14. (a) Calculate the heights and distances of the following cases

(i) Base of the object accessible

(ii) Base of the object inaccessible (16 marks)

(OR)

14 (b) A closed traverse was conducted round an obstacle and the following observations were made. Work out the missing quantities;

Line	Length in m	Azimuth
AB	-	$33^{\circ}45'$
BC	300	$86^{\circ}23'$
CD	-	$169^{\circ}23'$
DE	450	$243^{\circ}54'$
EA	268	$317^{\circ}30'$

(16 marks)

15. (a) Explain about Modern Surveying Instruments and its principles

(16 marks)

(OR)

15. (b) Two Tangents intersect at the chainage 1190 m, the deflection angle being 36° . Calculate all the data necessary for setting out a curve with a radius of 300 m by deflection angle method. The peg interval is 30 m. (16 marks)