

AGRICULTURE & IRRIGATION ENGINEERING

THIRD SEMESTER – (REGULATIONS 2008)

AI 9201 – 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. A 30m steel tape measured 30.015m when standardized fully supported under a 70N pull at a temperature of $20^\circ C$. The tape weighed 0.9Kg (9N) and had a cross sectional area of 0.028cm^2 . Co-efficient of expansion = 1.15×10^{-5} . What is the true length of the measured distance AB for the following condition?

Measured Distance AB	= 114.095 m
Averaged Temperature	= $12^\circ C$
Means of Support	= Suspended
Tension	= 100 N

(16 Marks)

12. (a) The following are staff readings taken in order on a particular scheme the back sight being underlined. 0.813, 2.170, 2.908, 2.630, 3.133, 3.752, 3.277, 1.899, 2.390, 2.810, 1.542, 1.274, 0.643. The readings were taken on a **BM 39.563m**.

Enter the readings in level book form. Check the entries and Find the Reduced level of the points. (16 Marks)

(OR)

(b) The following bearings were taken in running a compass traverse. At what stations do you suspect local attraction? Find the correct bearings of the lines and also compute the included angles.

Line	FB	BB
AB	80° 10'	259° 0'
BC	120° 20'	310° 50'
CD	170° 50'	350° 50'
DE	230° 10'	49° 30'
EA	310° 20'	130° 15'

(16 marks)

13.(a)(i) Define Contour and Contour Interval. List the characteristics of Contour. (6 marks)

(ii) The following give the values in feet of the offsets taken from a chain line to an irregular boundary:

Distance	0	50	100	150	200	250	300	350	400
Offset	10.6	15.4	20.2	18.7	16.4	20.8	22.4	19.3	17.6

Calculate the area in Sq. yards included between the chain line, the irregular boundary and the first and the last offset by Simpson's rule. (10 marks)

(OR)

13. (b) Explain about the Volume Estimation of earth work (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

(OR)

(b) The measured lengths and bearings of the sides of a closed traverse are tabulated below: Calculate the lengths of DE and EA which could not be measured.

Line	Length	Bearings
AB	500	98° 30'
BC	620	30° 20'
CD	468	298° 30'
DE	L1	230°
EA	L2	150° 10'

(16 marks)

15. (a) List the methods of setting out simple curves and explain (16 marks)

(OR)

(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)