



P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belagavi)

Fourth Semester, B.E. - Civil Engineering Semester End Examination; May/June - 2018 Surveying - II

Time: 3 hrs

Max. Marks: 100

Note: i) Answer **FIVE** full questions, selecting **ONE** full question from each unit.

ii) Assume missing data, if any, suitably.

UNIT - I

- 1 a. With a neat sketch, explain concept of Latitude and Departure. 6
- b. What is the arithmetic checks applied for closed and open traverse? 6
- c. Following are the length and bearing of a closed traverse ABCDEA :

Line	Length	Bearing
AB	1150	65°30'
BC	680	30°0'
CD	X	X
DE	960	345°
EA	640	205°

8

Find the omitted measurement of the line CD.

- 2 a. What is closing error? How closing error is adjusted graphically? 8
- b. Following bearing were observed in running a closed traverse :

Line	AB	BC	CD	DE	EA
FB	75°5'	115°20'	165°35'	224°50'	44°5'
BB	254°20'	296°35'	345°35'	304°50'	125°5'

12

At what station local attraction occurs? Determine correct magnetic bearing, if declination was 5°10'E, what is true bearing?

UNIT - II

- 3 a. Derive equation for horizontal distance and elevation of an object for single plane observation. When the instrument axes are at different level? 10
- b. The following observation were made on a hill top to ascertain its elevation with height of target above the hill is 3.8 m :

I. Station	Staff reading on BM	Angle of Elevation to target
A	1.830	26°36'
B	3.150	16°48'

10

RL of BM was 400 m. The two instrument stations are 120 m apart and one is in line with target.

- 4 a. Derive an equation for horizontal distance by tachometric observations for horizontal line of sight and staff held vertically. Also deduce for inclined line of sights and staff held vertically. 10
- b. Determine the gradient between the points A and B from the following tachometric observation with analytic lens and staff held vertically 10

Inst. Station	S. Station	Bearing	Vertical angle	Staff Reading
P	A	134°	+10°32'	1.360,1.915,2.470
	B	224°	+5°6'	1.065,1.885,2.705

UNIT - III

- 5 a. Derive the equation for setting out of simple curve by, 10
 - i) Offset from long chord
 - ii) Radial offset from tangent
- b. Two tangents intersects at a chainage of 1190 m. The deflection angle being 36° at the point of intersection of two tangents. Calculate all the necessary data for setting out a simple curve by Rankine’s method. Assume curve is right handed radius = 300 m. Take the unit chord length = 30 m. 10
- 6 a. Calculate the necessary data for setting out compound curve from following data : 12

$\Delta = 60^\circ 30'$, $R_S = 200$ m, $R_L = 300$ m, deflection angle $\Delta_1 = 25^\circ 30'$,
 PI chainage = 60 chain+45 links. Assume missing data suitably.
- b. What is transition and vertical curve? Mention its uses with a neat sketch. Mention its parts. 8

UNIT - IV

- 7 a. What are the segments of GPS? Describe them briefly. 10
- b. Explain hand held GPS and Differential GPS. 10
- 8 a. Explain the working principle of GIS with flow diagram. 8
- b. With a neat sketch, explain components of GIS. 8
- c. Mention area of applications of remote sensing. 4

UNIT - V

- 9 a. Compare the total station survey with conventional survey. Mention salient features of total station. 10
- b. Explain working principles of total station and explain how the coordinates of a point is calculated? 10
- 10 a. Explain the basic concepts of terrestrial photogrammetry and aerial photogrammetry. 10
- b. Explain types of photograph and photo theolodolite. 10

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