



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; June - 2017

Surveying - II

Time: 3 hrs

Max. Marks: 100

Note: i) Answer **FIVE** full questions, selecting **ONE** full question from each unit.
ii) Missing data may suitably be assumed.

UNIT - I

- 1 a. What is closing error? How closing error adjusted graphically? 6
- b. Explain the concept of Latitude and Departure. 6
- c. A traverse ABCD was to be run due to an obstruction between 'A' and 'B' station. It was not possible to measure the length and direction of the line AB. The following data is given

Line	Length	RB
AD	44.5	N 50°20' E
DC	67.0	S 69°45' E
CB	61.3	S 30°10' E
BA	?	?

8

Determine length and direction of line BA.

- 2 a. What is the arithmetic checks applied for closed and open traverse? 10
- b. The following bearings 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'

10

At what station do you suspect local attraction? Determine correct magnetic bearing, if declination was 5°10'E. What are True bearings?

UNIT - II

- 3 a. Derive an expression for horizontal distance, vertical distance and elevation of the elevated by single plane. 8
- b. From the ends of a base line 150 m long. Two points P and Q were observed with theodolite and following angles were observed :

$$|PAB| = 95^\circ, |PBA| = 40^\circ, |QBA| = 78^\circ, |QAB| = 50^\circ, |PAQ| = 45^\circ$$

12

V. Angle from A to top of P = 23° from A to top of Q = 19°

BM = 152.00, Staff reading on BM = 1.600 m,

Find horizontal distance PQ and also find gradient between PQ.

- 4 a. What is Tacheometry? Mention its uses, and derive Tacheometric distance formula. 8
- b. A fixed hair Tacheometer fitted with analytic lens was set up at a station D. The following observations are taken :

Station	Station Bearing	S Reading m	Vertical angle
A	340°30'	0.800, 1.855, 2.910	6°30'
B	70°30'	0.660, 2.200, 3.740	4°20'

12

Calculate the gradient from A to B.

UNIT - III

- 5 a. Derive the equation for setting out of simple curving by, 10
- i) Offset from long chord ii) \perp^y offset from tangent.
- b. Two straights of Tangent meet at a chainage of 3450 m, a right handed simple curve of 250 m radius joins them. The deflection angles between two Tangent 50°. Tabulate the necessary data to layout the curve by Rankine method of deflection angles. Take the chord interval as 20 m. 10
- 6 a. Calculate the necessary data for setting out compound curve from the following data : 12
- Total deflection Angle $\Delta = 60^\circ 30'$, $R_S = 200$ m, $R_L = 300$ m, Deflection Angle between rear and common Tangent $\Delta_1 = 25^\circ 30'$, chainage of PI = 60 chains +45 links. Assume missing data.
- b. What is Transition and Vertical curve? Mention its uses, with sketch mention its parts. 8

UNIT - IV

- 7 a. Explain segments and working principle of GPS. 10
- b. Write a note on methods of GPS surveying. 10
- 8 a. What is GIS? Explain the components of GIS. 10
- b. Define Remote sensing and explain Area of application. 10

UNIT - V

- 9 a. What is meant by total station? Enumerate the components of total stations. 10
- b. List advantage of total stations over conventional method of survey. 5
- c. Write a note on uses of total station. 5
- 10 a. Differentiate between Terrestrial photogrammetry and Aerial photogrammetry. 8
- b. Explain in detail the various types of photographs. 6
- c. Write a note on photo theodolite. 6

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