



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

*(An Autonomous Institution affiliated to VTU, Belgaum)*

**Fourth Semester, B.E. - Civil Engineering  
Semester End Examination; June/July - 2015  
Surveying - II**

Time: 3 hrs

Max. Marks: 100

- Note:** i) Answer **FIVE** full questions, selecting **ONE** full question from each **Unit**.  
ii) Assume suitable missing data if any.

**UNIT - I**

1. a. Briefly explain transit rule and Bowditch’s graphical method of adjustment of traverse. 6  
 b. What are the omitted measurements? How are they calculated? 6  
 c. The following bearings were obtained for a closed traverse ABCDEA. Calculate the interior angles and apply the necessary check. 8

Line	AB	BC	CD	DE	EA
Fane Bearing	60°30’	122°0’	46°0’	205°30’	300°0’

- 2 a. What is Local Attraction? How it is detected and eliminated. 6  
 b. The following fore and back bearings were observed in traversing with a compass in a place where local attraction was suspected.

Line	Fore Bearing	Back Bearing
AB	38°30’	219°15’
BC	100°45’	278°30’
CD	25°45’	207°15’
DE	325°15’	145°15’

Find the correlated Fore bearing, Back bearing and the Fore bearing of each of the lines given that the magnetic declination was 10° W

**UNIT - II**

- 3 a. Derive the expression for the horizontal distance, vertical distance and the elevation of an elevated object by double plane method. 8  
 b. To determine the elevation of the top of the flag staff , the following observations were made

Instrument Station	Reading on BM	Angle of Elevation	Remarks
A	1.266	10°28’	RL of BM = 248.362 m
B	1.222	7°12’	

Stations ‘A’ and ‘B’ and the top of the aerial pole are in the same vertical plane. Find the Elevation of the top of flag staff, if the distance between ‘A’ and ‘B’ is 50 m.

- 4 a. Derive the expressions for distance and Elevation of foot of the staff, when the staff is held vertical and the line of sight is in inclined upward. 10
- b. Determine the gradient from a point 'A' to a point 'B' from the following observations made with a tachometer fitted with an Analytic lens. The constant of the instrument was 100 and the staff was held vertically. 10

Instrument Station	Staff Point	Bearing	Vertical Angle	Staff Readings		
P	A	134 <sup>0</sup>	+10 <sup>0</sup> 32'	1.360	1.915	2.470
	B	224 <sup>0</sup>	+5 <sup>0</sup> 6'	1.065	1.885	2.705

**UNIT - III**

- 5 a. Derive the expression for ordinates from long chord and Radial offsets. 8
- b. Two tangents intersect at a chain age of 1200 m and the deflection angle being 40°. Calculate the data necessary required to set out a simple curve by Rankine's method. The degree of curve is 10° and 20 m chain is used. 12
6. a. With a neat sketch, Explain the various elements of a compound curve. Derive the relations by calculating the chain ages of tangent points. 10
- b. A Compound curve consisting of two simple circular curves of radii, 350 m and 500 m is to be laid out between two straights T<sub>1</sub>I and IT<sub>2</sub>. PQ is the common tangent, at the point of compound curvature, D. The angles IPQ and IQP are respectively 55<sup>0</sup> and 25°. Sketch and calculate the tangent lengths T<sub>1</sub>I and IT<sub>2</sub>. 10

**UNIT - IV**

- 7a. What are the segments of GPS? Describe them briefly. 10
- b. Describe sources of Error in GPS. What is meant by selective availability? 10
- 8a. Define GIS, and its components, flow diagram of working of GIS. 10
- b. Define remote sensing. Explain the working principle and area application. 10

**UNIT - V**

- 9a. What are the advantages and disadvantages of total station and explain its components. 10
- b. Explain the measurement of distance using phase difference in total station. 10
- 10a. Explain the basic concept of terrestrial photogrammetry and aerial photogrammetry. 10
- b. Explain types of photographs and geometry of aerial photographs. 10

\* \* \* \* \*