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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 - 2016

Surveying - II

Time: 3 hrs

Max. Marks: 100

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

ii) Missing data if any, may suitably assumed.

UNIT - I

- 1 a. Explain Transit rule and Bowditch's graphical method of adjustment of traverse. 6
- b. What are omitted measurements? Explain briefly how they are calculated. 6
- c. Determine the values of included angles in the closed traverse ABCD conducted in the clockwise direction given the following fore bearings of their respective lines,

Line	.....	F.B.							
AB	.....	40°							8
BC	.....	70°	Apply the check						
CD	.....	210°							
DA	.....	280°							

- 2 a. What is local attraction? How it is detected and eliminated? 10

b The following bearings were obtained with a compass,

Line	.....	F.B.	.....	B.B.					
AB	.....	74°0'	.....	254°0'					
BC	.....	91°0'	.....	271°0'					
CD	.....	166°0'	.....	343°0'					10
DE	.....	177°0'	.....	0°0'					
EA	.....	189°0'	.....	9°0'					

Where do you suspect Local attraction? Find the corrected bearings.

UNIT - II

- 3 a. Derive the expression for horizontal distance, vertical height and the elevation of inaccessible object by single plane method. 10

- b. In order to ascertain the elevation of top(Q) of the signal on a hill, observations were made from two instrument stations P and R at a horizontal distance of 100 m apart, the stations P and R being in line with Q. The angle of elevation of Q at P and R were 28°42' and 18 ° 6' respectively. The staff reading upon the B.M. of elevation 287.280 m were respectively 2.870 m and 3.750 m. When the instrument was at P and R, the telescope being horizontal. Determine the elevation of the foot of the signal if the height of the signal above its base is 3 m. 10

- 4 a. Explain the methods of determining the constants of tacheometer in the field. 10
- b. Determine the gradient from point A to point B from the following observations made with tacheometer fitted with an anallactic lens. The constants of the instrument was 100 and the staff was held vertically. 10

Instrument station	Staff point	Bearing	Vertical Angle	Staff readings
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. Explain the method of setting out simple curve by offsets from chord by offsets from chord produced method with a sketch. 10
- b Two tangents intersect at chainage 59+60, the deflection angle being 50°30'. Calculate the necessary data for setting out a curve of 15 chains radius to connect the two tangents if it is intended to set out the curve by offsets from chords. Take peg interval equal to 100 links, length of chain being equal to 20 m (100 links). 10
- 6 a. With a neat sketch explain the various elements of a compound curve. Derive the relation for calculating the chainage of tangent points 10
- b. Two straights AB and BC are intersected by a line D₁D₂. The angle BD₁D₂ and BD₂D₁ are 40°30' and 36°24' respectively. The radius of the first arc is 600 m and that of the second arc is 800 m. If the chainage of intersection point B is 824.10 m, find the chainages of tangent points and the point of compound curvature. 10

UNIT - IV

- 7 a. Briefly explain how electronic magnetic energy used for remote sensing. 10
- b. Briefly explain the various types of sensors used for remote sensing in India. 10
- 8 a. Define GIS. Briefly explain the working of GIS with the aid of flow diagram. 10
- b. What are the segments of GPS? Briefly describe the sources of errors in GPS. 10

UNIT - V

- 9 a. What is total station? List the advantages and disadvantages of total station. 10
- b. Describe with a neat sketch a Photo - Theodulite. 10
- 10a. Define the following terms : 10
- i) Air base
 - ii) Tilt displacement
 - iii) Principal point
 - iv) Isocentre
 - v) Isometric parallel.
- b. Explain the measurement of distance using phase difference in the total station. 10