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

(An Autonomous Institution affiliated to VTU, Belgaum)

Third Semester, B.E. - Civil Engineering

Semester End Examination; Dec. - 2014

Surveying -I

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. Explain the Basic principles of surveying. 8

b. What is ranging of a survey time? Explain the method of indirect or reciprocal ranging with a neat sketch. 6

c. List the different types of chains and tapes used in chain surveying. 6

2 a. Write a note on classification of survey. 6

b. Write a short note on EDM device with principle. 6

c. A line was an measured with a steel tape which was exactly 30mt at 18ºC and a pull of 50 N and the measured length was 459.24 m. Temperature during measurement was 28ºC and the pull applied was 100 N.The tape was uniformly supported during the measurement. Find the true length of the line if the cross – sectional area of the tape was 0.02 cm^2, The coefficient expansion /ºC = 0.0000117 and the modules of elasticity = $21x10^6$ N/cm^2 8

UNIT - II

3 a. What are the conditions to be fulfilled by survey lines and survey stations? 6

b. With the conventional symbols for the following cultivated land. Buildings, waterfalls, tunnels, bridge, dam, electrical and telephone line. 8

c. Define Baseline, check line and tie line. 6

4 a. Explain how will you continue chaining past the following obstacles:
i) Pond ii) River iii) Building. 6

b. There is an obstacle in the form of a pond on the main chain line AB. The points C and D were taken on the opposite sides of the pond. On the left of CD, the line CE was laid out 100 m in length and a second line, CF, 80 m long was laid out on the right of CD such that E, D and F are in the same st line. ED and DF were measured and found to be 60 m and 56 m respectively. Find out the obstructed length CD. 8

c. The following perpendicular offsets were taken at 10 m intervals from a survey line to an irregular boundary line.
3.25, 5.60, 4.20, 6.65, 8.75, 6.20, 3.25, 4.20, 5.65 calculate the area enclosed between the survey line, the irregular boundary line, and the first and last offsets, by the application of
i) Trupezoidal rule ii) Simpsons rule. 6

Contd.....2

UNIT - III

5 a. Distinguish between: i) Magnetic meridian and true meridian ii) WCB and QB iii) Isogonic and Agonic lines iv) closed and open transverse — 10

b. The following bearings were observed with a primitive compass. Calculate the interior angles apply check. — 10

Line	AB	BC	CD	DE	EA
Fore Bearing	60º30′	122º0′	46º0′	205º30′	300 º0′

6 a. Explain the fundamental parts and Axis of transit theodolite. — 10

i) Back sight ii) Fore sight iii) Reduced level iv) change point v) Bench mark

b. Explain measurement of horizontal angle by repetition and reiteration method. — 10

UNIT - IV

7 a. Explain the following terms with respect to leveling: — 10

i) Back sight ii) Fore sight iii) Reduced level iv) change point v) Bench mark

b. The following readings are observed successively with a leveling instrument. The instrument was shifted after 5^{th} and 11^{th} readings.

0.585, 1.010, 1.735, 3.295, 3.765, 0.350, 1.300, 1.795, 2.575, 3.375, 3.895, 1.735, 0.635 and 1.605. Rule out a page of level book and determine the RL of various points, if RL of the first point is 136.440 m using rise and fall method. — 10

8 a. Explain the temporary adjustments of a dumpy level. — 8

b. Following readings are taken with a dumpy level and 4mt leveling staff on a continuously sloping ground at 30mt intervals.

0.680 ,1.455, 1.855, 2.330, 2.330, 2.885, 3.380, 1.055, 1.860, 2.265, 3.540 , 0.835, 0.945, 1.530 and 2.250 — 12

Enter the above readings in a level book. Determine the gradient between the first and last point and apply usual check.

UNIT - V

9 a. Define contour and explain the various characteristics of contour with neat sketches. — 10

b. Discuss in detail methods of direct and indirect contouring and briefly explain interpolation technique. — 10

10a. State the advantages and disadvantages of plane table surveying. — 10

b. State three-point problem and explain with neat sketches how it is solved by graphical method. — 10

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