

**B.TECH. CIVIL ENGINEERING (BTCLEVI)****Term-End Examination****December, 2013****BICE-002 : SURVEYING**

Time : 3 hours

Maximum Marks : 70

*Note : Attempt any five questions. Assume missing data if any, use of scientific calculator is permitted.*

1. (a) Explain the importance of surveying in civil engineering projects. Discuss the phases of survey work in brief. 7
- (b) What is meant by chain surveying ? Explain the principle on which it is based. 7
2. (a) Discuss the sources of cumulative errors in chaining or taping a distance. 7
- (b) A tape was exactly 30 m long at 20°C when placed on the flat under a pull of 75 N. A survey line was measured with this tape under a pull of 120 N and found to be 810 m. The average temperature during the measurement was 30°C. If the tape was supported in spans of one tape length each time, determine the corrected length of the tape. The cross sectional area of the tape is 4 mm<sup>2</sup>. The unit weight of the material of the tape is  $7.8 \times 10^{-5}$  N/mm<sup>3</sup>. The modulus of elasticity of the material of the tape is  $2.1 \times 10^5$  N/mm<sup>2</sup>. The coefficient of linear expansion of the material of the tape is  $11.7 \times 10^{-6}/^{\circ}\text{C}$ . 7

3. (a) Describe the construction of a prismatic compass with a neat sketch. What are the functions of its different part ? 7
- (b) The following are the bearings of a closed traverse using a prismatic compass. Compute the included angles and the deflection angles. 7

Line	AB	BC	CD	DE	EF	FA
Bearing	37°30'	92°00'	151°30'	220°15'	283°00'	330°15'

4. (a) Define levelling. Explain the temporary adjustments of a dumpy level. 6
- (b) The following consecutive readings were taken with a dumpy level : 3.864, 3.346, 2.932, 1.952, 0.854, 3.796, 2.639, 1.542, 1.934 , 0.864, 0.665. The level was shifted after the fifth and eighth readings. The first readings was taken on a benchmark of RL 15°, 25°. Calculate the reduced levels of the change points, and the difference of level between the first and last points. 8
5. (a) Enumerate the various methods of plane tabling. Discuss the method of radiation and intersection in detail. 10
- (b) Discuss the advantages and disadvantages of plane table survey. 4
6. (a) Define Transiting , with reference to Theodolite . 4

- (b) The following are the particulars of a traverse run in the counter clockwise direction. 10

Line	Length (M)	Bearing
AB	145.8	342°24'
BC	517.2	14°35'
CD	315.9	137°20'

Calculate the length of the closing line DA, and the angle CDA.

7. Write a short note on *any four* of the following :
- (a) Line ranger 4x3.5=14
  - (b) Bench Mark
  - (c) Neat sketch of a page of the field book
  - (d) Well conditioned triangle
  - (e) Magnetic Declination
  - (f) Latitude and Departure in Survey
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