

B.Tech. CIVIL ENGINEERING (BTCLEVI)**Term-End Examination****June, 2017**

00477

BICE-002 : SURVEYING*Time : 3 hours**Maximum Marks : 70*

Note : Attempt any **five** questions. All questions carry equal marks. Assume missing data, if any. Use of scientific calculator is permitted.

1. (a) Write the principles of surveying in detail. 4
- (b) Briefly explain the sources of errors in surveying. 4
- (c) Explain the method of reciprocal ranging. 6
2. (a) A chain was tested before starting the survey and was found to be exactly 20 m. At the end of the survey it was tested again and was found to be 20.12 m. Area of the plan of the field drawn to a scale of 1 cm = 6 m was 50.4 cm². Find the true area of the field in sq. metres. 8

- (b) Calculate the sag correction for a 30 m steel tape under a pull of 100 N in three equal spans of 10 m each. Unit weight of steel is 78.6 kN/m^3 . Area of cross-section of the tape is 8 mm^2 . 6
3. (a) Explain how the closing error in compass survey is adjusted by Bowditch's method. 7
- (b) Differentiate between prismatic compass and surveyor's compass. 7
4. (a) Define the following terms used in levelling : 6
- (i) Benchmark
- (ii) Elevation
- (iii) Change point
- (b) What are the effects of curvature and refraction in levelling ? Find the correction due to each and combined correction too. 8
5. (a) List the equipments used in plane table survey. $3\frac{1}{2}$
- (b) Define the following terms used in plane table surveying : $3 \times 3\frac{1}{2} = 10\frac{1}{2}$
- (i) Radiation
- (ii) Intersection
- (iii) Orientation

6. (a) Define the following terms : 4×2=8

(i) Vertical Axis

(ii) Trunnion Axis

(iii) Line of Collimation

(iv) Swinging of Telescope

(b) Explain the temporary adjustment of a transit theodolite. 6

7. Write short notes on any **four** of the following : $4 \times 3 \frac{1}{2} = 14$

(a) Loose Needle Method in Theodolite Surveying

(b) Differential Levelling

(c) Plumbing Fork

(d) Local Attraction

(e) Types of Chains

(f) Ranging Rods
