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BICE-002

B.Tech. CIVIL ENGINEERING (BTCLEVI)

Term-End Examination

00456

June, 2016

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) What are the basic principles of surveying ? Explain with sketches wherever required. *4*

(b) Discuss briefly various phases of survey work. *4*

(c) A chain was tested before starting the survey work and was found to be exactly 20 m. At the end of the survey work 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 cm^2. Find the true area of the field in sq. metres. *6*

2. (a) Explain with a neat sketch the working of a prismatic compass. *4*

(b) What is local attraction ? How is it detected ? *4*

(c) Explain how closing error in compass survey is adjusted by Bowditch method. *6*

3. (a) Describe the resection method of plane table surveying. *6*

(b) What are the errors in plane table surveying ? *4*

(c) What are the advantages and disadvantages of plane table surveying ? *4*

4. (a) Explain reciprocal levelling. *4*

(b) The following consecutive readings are taken with a dumpy level and a 4 m levelling staff, along a continuously sloping line AB at a common interval of 20 m :

0·385, 1·030, 1·925, 2·825, 0·625, 2·005, 3·110.

The RL of the first point was 200.00 m. Enter the readings in a level book and calculate the RLs of each point by rise and fall method and calculate the gradient of the line joining the first and the last points. *10*

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

(b) Explain as to how you will measure horizontal angle by the method of repetition. *8*

6. (a) What are the different sources of errors in theodolite survey ? Explain. *4*

(b) What are the effects of curvature of the Earth and refraction on the accuracy of levelling ? Derive an expression for the corrections due to both the effects. *10*

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

(a) Benchmark

(b) Reduced Level

(c) Centering

(d) Line of Collimation

(e) Geodetic Surveying

(f) Indirect Ranging