

**BACHELOR OF ARCHITECTURE (B ARCH)****Term-End Examination****December, 2012****BAR-056 : TOPOGRAPHIC SYSTEMS***Time : 3 hours**Maximum Marks : 70**Note : (i) Attempt **any five** questions.**(ii) All questions **carry equal** marks. Use of calculator is **permitted**.*

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1. (a) Explain the basic principles of surveying. 7  
State the name of various instruments used in chain surveying.
- (b) In laying out of a 15 m x 28 m rectangular plot, a 30 m tape is to be used. When uniformly stretched the length of the tape is found to be 30.02 m. What measurements with the tape should plot the correct dimensions? What should the tape measure for the diagonal of the plot? 7
2. (a) Illustrate with neat sketches and define, 7  
Main Station, Tie Station, Base Line, Tie Line, Check Line as used in Chain surveying.

(b) In passing an obstacle in the form of a Pond station A and D, on the main line, were taken on the opposite sides of the pond. On the left of AD, a line AB = 200 m long was laid down and a second line AC = 250 m long was ranged on the right of AD, the points B, D and C being in the same straight line. BD and DC were then chained and found to be 125 m and 150 m respectively. Find the length of AD. 7

3. (a) Differentiate clearly between a prismatic compass and a surveyor's compass. 7

(b) Following observation were recorded in running a closed compass traverse at a place where local attraction was suspected. 7

Line	Fore Bearing	Back Bearing
AB	$124^{\circ} - 30'$	$304^{\circ} - 30'$
BC	$68^{\circ} - 15'$	$246^{\circ} - 00'$
CD	$310^{\circ} - 30'$	$135^{\circ} - 15'$
DA	$200^{\circ} - 15'$	$17^{\circ} - 45'$

At what stations do you suspect local attraction? Find the corrected bearings of the lines and also calculate the included angles.

4. (a) What are the various accessories used in Plane Table Survey? State its advantages and disadvantages. 7

- (b) Discuss in steps how will you measure horizontal angle by Repetition Method by Theodolite. 7
5. (a) Define following terms in context with Theodolite survey : 3x2=6
- (i) Transiting axis of level tube
  - (ii) Vertical Axis
  - (iii) Horizontal Axis
- (b) The following consecutive readings were taken with a level and 5 meter levelling staff on continuously sloping ground at a common interval of : 8
- 20 meters : 0.385 ; 1.030 ; 1.925 ; 2.825 ; 3.730 ; 4.685 ; 0.625 ; 2.005 ; 3.110 ; 4.485. The R.L of the first point was 200.00 m. Rule out a page of level field book and enter the above readings. Calculate the R.L.s of the points by rise and fall method. Also find the gradient of the line joining the first and the last point.
6. (a) Sketch the contour for the following : 6
- (i) Pond
  - (ii) Hill
  - (iii) Valley
- (b) What are the various methods of Plane Table Surveying ? Discuss any two methods in detail with neat sketches. 8

7. (a) Explain errors produced due to curvature and refraction. Prove this error can be omitted by using reciprocal levelling. 7
- (b) Discuss the procedure used for the temporary adjustment of a Dumpy Level. 7
8. Write short notes on *any four* of the following : **3<sup>1</sup>/<sub>2</sub>×4=14**
- (a) Obstacles in Chaining
  - (b) Uses of a Theodolite
  - (c) Uses of contour maps
  - (d) Local attraction
  - (e) Orientation
  - (f) Fundamentals of G.I.S
  - (g) Methods of Contouring
  - (h) Reciprocal ranging
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