

BACHELOR OF ARCHITECTURE (B.Arch.)

Term-End Examination

June, 2018

00113

BAR-056 : TOPOGRAPHIC SYSTEMS

Time : 3 hours

Maximum Marks : 70

Note : Question no. 1 is compulsory. Attempt any four more questions from the remaining questions. Use of calculator is permitted.

1. (a) Fill the blanks with the most appropriate answer : 7×1=7
- (i) _____ surveys involve determination and plotting boundary locations of individual land holdings.
 - (ii) If the scale of a map is 1 cm = 10 m then its Representative Fraction (RF) will be _____.
 - (iii) A 20 m chain has _____ links.
 - (iv) If the points on the globe which have same magnetic declination are joined, the imaginary lines so obtained are called _____ lines.
 - (v) The whole circle bearings of two lines OA and OB are 120° and 225° respectively. $\angle AOB$ will be _____.

- (vi) Levelling of theodolite ensures that _____ axis is horizontal.
- (vii) Staff readings taken at different points of interest of unknown elevations from one instrumental set-up between the back sight and fore sight are called _____ sights.
- (b) For the given statements, write *True* or *False* : 7×1=7
- (i) Ranging ensures that measurements are made in a straight path along the survey line.
- (ii) Instrumental errors are introduced because of involvement of human factors in the surveying process.
- (iii) In reduced bearing, the angle is measured with respect to the N-S line towards east or west.
- (iv) A fixed (permanent) reference point of known elevation is known as datum.
- (v) Levelling staff are the persons who conduct the levelling survey.
- (vi) Plane table survey is not suitable for work in wet climates.
- (vii) GIS means 'Geological Information System'.

2. (a) Classify surveying based on the instruments used. 7

(b) What is reciprocal ranging? Discuss its need and procedure, giving suitable example and sketches. 7

3. (a) Convert the following whole circle bearings to reduced bearings : 3+3=6

(i) $156^{\circ} 12'$

(ii) $327^{\circ} 34'$

(b) The fore bearings (FB) of line AB and BC are given below : 4

FB of AB = $108^{\circ} 24'$

FB of BC = $210^{\circ} 18'$

Find the included angle between them.

(c) The fore bearing of line AB is 150° . Included angle between AB and BC is 70° . Find the fore bearing of BC. 4

4. The following staff readings were observed successively with a level :

2.228, 1.606, 0.988, 2.090, 2.864, 1.262,
0.602, 1.982, 1.044, 2.684.

The instrument was moved after the third, sixth and eighth readings. Enter the above readings in a page of a level book and calculate the RLs of the points if RL of the starting point is 232.384 m. 14

5. (a) Describe in brief the temporary adjustments of a theodolite. 7
- (b) What is reciprocal levelling? Explain with a suitable example. 7
6. (a) What are the different methods of orienting the plane table? Describe any one method. 7
- (b) List the different instruments used in plane table survey. Write the purpose of each instrument in plane table survey. 7
7. Write short notes on any *four* of the following : $4 \times 3 \frac{1}{2} = 14$
- (a) Profile Levelling
 - (b) Uses of Contour Maps
 - (c) Obstacles in Chaining
 - (d) Total Station
 - (e) Principles of Surveying
 - (f) Magnetic Declination
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