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BAR-056

BACHELOR OF ARCHITECTURE (B.Arch.)

Term-End Examination

00393 **December, 2018**

BAR-056 : TOPOGRAPHIC SYSTEMS

Time : 3 hours *Maximum Marks : 70*

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

1. (a) Fill in the blanks with the most appropriate answer : *7×1=7*

(i) The ratio of the distance between any two points on the map to the corresponding distance on the ground is _____ of the map.

(ii) In _____ surveying, the effect of Earth's curvature is taken into consideration.

(iii) _____ is a heavy spherical or conical ball of metal and is used to transfer points on ground by suspending it with the help of a strong thread.

(iv) Magnetic declination =

('True bearing' – '_____ bearing').

(v) If the observed fore bearing of line AB is 42° 34', then its back bearing is _____ .

(vi) The staff reading taken at a point of known or predetermined elevation (e.g. a benchmark) is termed as _____ sight.

(vii) Turning the telescope of a theodolite in a horizontal plane is called _____ the telescope.

(b) For the given statements, write *True* or *False* : $7 \times 1 = 7$

(i) If the inclination of offset line to chain line is anything other than 90°, the offset is termed as oblique offset.

(ii) Observational errors are caused by imperfections in instruments.

(iii) In whole circle bearing, bearing of a line ranges from 0° to 360°.

(iv) The position at which both foresight and backsight readings are taken before shifting of level instrument is called shifting point.

(v) Plane table survey is most suitable for small-scale maps.

(vi) Theodolite can be used to measure horizontal angles as well as vertical angles.

(vii) Total station refers to sum of all stations surveyed.

2. (a) Classify surveying based on purpose. 7

(b) Enumerate different types of corrections applied to measurements using chain or tape. Give details of any one of these. 7

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

(i) N 68° 32′ E

(ii) S 54° 32′ W

(b) Fore bearings (FB) of the lines are given below. Find their back bearings. *2+2=4*

(i) FB of AB = 42° 34′

(ii) FB of CD = 204° 29′

(c) Find the angle between lines OA and OB if their bearings are 37° 10′ and 316° 28′ respectively. *4*

4. Readings taken during a levelling exercise are given below :

2·432, 3·446, 3·013, 2·006, 0·847, 2·689, 2·784, 1·667, 0·974, 0·832 and 0·168.

The instrument was shifted after the 5^{th} and 8^{th} readings. Enter the above readings in the field-book format and find RLs of different points if RL of starting station is 200·0 m. *14*

5. (a) What are the various adjustments of a plane table ? 7

(b) Discuss the characteristics of contours. Also give neat sketches. 7

6. (a) Define the following terms with reference to a transit theodolite : 8

(i) Transiting

(ii) Swinging the telescope

(iii) Telescope inverted

(iv) Changing face

(b) Discuss the advantages and disadvantages of plane table survey. 6

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

(a) Sources of Error in Theodolite Survey

(b) Prismatic Compass

(c) Rise and Fall Method

(d) Line Ranger

(e) Instruments used in Chaining

(f) Two-Point Problem
