Registration No. : | | | | | | | | | | |

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B. Tech

PECI 5303

Fifth Semester Regular Examination – 2014

SURVEYING - II

BRANCH : CIVIL

QUESTION CODE : H 189

Full Marks – 70

Time : 3 Hours

*Answer Question No. **1** which is compulsory and any **five** from the rest.*
The figures in the right-hand margin indicate marks.

1. Answer the following questions : 2 ×10

(a) When do you conduct tangential tacheometry ?

(b) List the errors in tacheometry surveying.

(c) What is the relationship between degree and radius of a curve ? Sketch a valley curve.

(d) Enumerate various functions of a transition curve.

(e) Explain the term 'strength of a figure' as applied to triangulation.

(f) What do you mean by 'conditioned quantity' ?

(g) What fundamental quantities can be measured by a total station ?

(h) What do you mean by tilt and tip in photogrammetry ?

(i) Name a few commercially available EDMs.

(j) What are various elements of a simple curve ?

P.T.O.

2 The following data (Table 1) were obtained in a tacheometric survey. The staff was held vertically. Multiplying constant = 100 and the additive constant = 0. Height of axis at instrument station P was 1.50 m and the RL of P was 100.00 m. 10

Table 1

Instrument at	Staff at	WCB	Vertical angle	Staff readings (m)		
P	Q	12° 25'	0° 0'	1.88	2.25	2.62
	R	60° 45'	15° 10'	1.83	2.15	2.47

Determine the distance QR and the difference in elevation between Q and R.

3 Two roads having a deviation angle of 45° at apex point V are to be joined by a 200 m radius circular curve. If the chainage of apex point is 1839.2 m, calculate necessary data to set the curve by ; 10

(i) Ordinates from long chord at 10 m interval.

(ii) Method of bisection to get every eighth point on curve

(iii) Radial and perpendicular offsets from every full station of 30 m long tangent

(iv) Offsets from chord produced.

4 (a) Two triangulation stations A and B are 60 km apart and the elevation of A is 240 m and that of ground at B is 280 m. Find the minimum height of a signal required at B so that the line of sight may not pass near the ground than 2.0 m. Assume elevation of intervening ground as uniform 200 m. 5

(b) Directions are observed from a satellite station S, 250 m from station C, with the following results:

Angle A = 0° 0' 0", angle B = 71° 54' 32" and angle C = 296° 12' 02".

The approximate lengths of AC and BC are respectively 27036 m and 35642 m. Calculate the angle ACB. 5

5 (a) The relationship between the angles A, B and C is given by A = 3B + 2C. Angle B is measured as 15° 10' 20" and angle C as 25° 20' 20". The probable error in measurement of B is ± 0.2" while in the measurement in C it is ± 0.4". Compute the probable value of A. 5

(b) The following are the direct measurement of a base line : 5

3678.32 m, 3678. 38 m, 3678.09 m, 3678.29 m, 3678.26 m, 3678.98 m.

Find the most probable value of the length of the base line and its probable error.

6 Explain the principle of photogrammetry and stereo-photogrammetry. Explain how an aerial photogrammetric survey is planned and carried out. What are the practical uses of aerial photogrammetry ? 10

7 (a) The following measurements were made for three stations A, B and C using a total station. AB = 15.865 m, BC = 21.625 m and AC = 37.485 m. Determine value of zero error of the instrument. 5

(b) Explain the procedure of setting out a building by the method of circumscribing rectangle. 5

8 Write brief notes on any five : 2 × 5

(a) Radial offsets

(b) Reduction diagrams

(c) The GRADE

(d) Advantages of EDM

(e) Geotronic unicorn

(f) Conditioned quantity

(g) Base extension

(h) Weisbach triangle.