



Reg. No. :

Name :

Fourth Semester B.Tech. Degree Examination, May 2013
(2008 Scheme)
Branch : Civil
08.405 : SURVEYING II

Time : 3 Hours

Max. Marks : 100

Instruction : Answer ***all*** questions from Part A and Part B.

PART – A

- I. a) Compare various triangulation figures mentioning their suitability.
- b) Explain :
 - i) Satellite station
 - ii) Reduction to centre
- c) Define :
 - i) Mean square error
 - ii) Residual error
 - iii) Average error
- d) Differentiate between vertical curve and reverse curve.
- e) Discuss any two methods of setting out simple curve in the field.
- f) Show that the altitude of elevated pole is equal to latitude of the place of observation.
- g) Explain briefly the use of phototheodolite.
- h) Explain the principle of EDM instruments. **(8×5=40 Marks)**

P.T.O.



PART – B
Module – I

- II. a) What are the different types of signals used in triangulation surveys ? 8
- b) The elevations of two triangulation stations A and B, 100 km apart, are 180 m and 450 m respectively. The intervening obstruction situated at C, 75 km from A has an elevation of 259 m. Ascertain if A and B are intervisible. If not, how much B should be raised so that the line of sight must nowhere be less than 3 m above the surface of the ground assuming A as the ground station. 12

OR

- c) How will you determine the most probable values of the observed quantities using the 'method of least squares' ? 8
- d) The following angles were measured at a station O so as to close the horizon.

$$AOB = 87^{\circ} 34' 22'' \text{ wt. } 2$$

$$BOC = 98^{\circ} 42' 18'' \text{ wt. } 3$$

$$COD = 102^{\circ} 26' 09'' \text{ wt. } 4$$

$$DOA = 71^{\circ} 17' 04'' \text{ wt. } 1$$

Find the most probable values of the angles. 12

Module – II

- III. a) List out the elements of simple curve. 8
- b) Along the alignment of a road, it is found in a particular portion that a grade of + 0.5% is followed by one of - 0.7%. The two ends of this portion are to be connected by a parabolic vertical curve. The chainage and RL of the intersection point are 550.00 m and 375.50 m respectively. Calculate the RLs of the points on the curve, taking a peg interval of 20 m. The rate of grade is 0.1% per 20 m. 12

OR



- c) What are the requirements of an ideal transition curve ? 8
- d) Determine the azimuth and altitude of a star from the following data :
 - i) Declination of star = $20^{\circ} 30' N$
 - ii) Hour angle of star = $42^{\circ} 6'$
 - iii) Latitude of the observer = $50^{\circ} N$. 12

Module – III

- IV. a) Derive the parallax equation for determining heights from a pair of vertical photographs. 10
- b) A line AB measures 11.00 cm on a photograph taken with a camera having a focal length of 21.5 cm. The same line measures 3 cm on a map drawn to a scale of $\frac{1}{45000}$. Calculate the flying height of the aircraft, if the average altitude is 350 m. 10

OR

- c) What are the advantages and disadvantages of “Total station” ? 10
 - d) Explain the field procedure of Electronic Distance Measurement. 10
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