Roll No .....

CE-403

B.E. IV Semester

Examination, June 2013

Surveying

Time : Three Hours

Maximum Marks : 70/100

Note: Attempt all questions. All questions carry equal marks. Answer should be precise & to the point only. Assume suitable data if necessary & state them clearly.

1. a) What are the various methods of traversing with the theodolite? Explain in detail traversing by the methods of included angles.

   b) What is trigonometrical leveling? Find the elevation of the top of a lighting conductor from the following data:

Inst. station	Reading on B.M	Angle of elevation	Remarks
P	0.760	$15^{\circ}10'$	R.L. of B.M. = 225
Q	0.975	$8^{\circ}35'$	Distance PQ = 30m

Station P & Q & the top of the lighting conductor are in the same vertical plane.

OR

2. a) The following lengths and bearings were recorded in running a traverse ABCD. Due to the obstructions it was not possible to observe the bearings of lines BC and CD.

Line	Length (m)	Bearing
AB	550	60°
BC	1200	?
CD	880	?
DA	1050	310°

Calculate the missing bearings.

b) What is trigonometrical leveling? Derive the formulas for determining elevation & distance of particular point, when the base of the object is inaccessible for "Instrumental axis at the same & different levels". 10/7

3. a) What is tachometer? A tachometer was set up at a station A & the following readings were obtained on a vertically held staff:

Inst. station	Staff station	Vertical Angle	Staff	Remarks
A	B.M.	-6°30'	2.360, 2.915, 3.470	R.L. of B.M. = 400.00
	B	+11°30'	2.065, 2.885, 3.705	

The constants of the instrument were 100 & 1. Find the horizontal distance from A to B & the reduced level of B.

b) Derive the tachometric equation "D = KS + C" for horizontal sight.

OR

4. a) Outline the tangential method of tachometry & deduce the expression for horizontal & vertical distances
i) When both the observed angles are angles of elevation&
ii) When both the observed angles are angles of depression.

b) What do you understand by the tachometric constants? How are these constants determined in the field?

5. a) Write down the notations & elements of simple circular curve with the help of neat sketch.

b) Two straights PQ and QR intersect at a chainage of 3000m. The angle of intersection is 130°. It is required to set out a 5° simple circular curve to connect the straights. Calculate all the data necessary to set out the curve by the method of offsets from chord produced with an interval of 30m.

OR

6. Write short notes on :
   i) Compound curve,
   ii) Reverse curve,
   iii) Vertical curve &
   iv) Lemniscates curve.

7. a) What is triangulation? Explain the principle of triangulation & discuss its classifications.
   b) Describe various types of corrections that are to be considered for base line measurements.

OR

8. a) What do you understand by baseline? What are the methods for the measurement of baseline?
   b) The elevations of two triangulation stations A & B 120km apart are 200m & 1000 above m.s.l. The elevations of two peaks C & D on the profiles between them are, respectively, 290m & 540m. The distance AC = 50 km & AD = 80km. Design a suitable signal required at B, so that it is visible from the ground station "A".

9. a) What do you understand by the term "Sounding" used in hydrographic survey? Discuss any two methods for taking soundness.
   b) Write complete note on aerial photographs.

OR

10. a) Explain the basic requirements & procedural steps in the hydrographic survey. What are the different instruments used in the hydrographic survey?
    b) What do you understand by "Remote Sensing"? Discuss its applications.

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