

**R09****Code No: 09A30104****JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY, HYDERABAD****B.Tech II Year I Semester Examinations, May/June-2013****Surveying****(Common to CE, PE)****Time: 3 hours****Max. Marks: 75****Answer any five questions  
All questions carry equal marks**

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- 1.a) Explain the principle of chain surveying. Write the conditions in which it is suitable and unsuitable.
- b) Enumerate the different methods of plane table surveying. Describe one of them in detail with a neat sketch. [15]
- 2.a) P and Q lie on the opposite banks of a river A. The line PA, perpendicular to PQ, is erected and measured to be 100 m. B is found on the line QP produced such that QAB is a right angle. PB is measured and found to be 25 m. Determine the width of the river PQ.
- b) What is a meridian? Differentiate between true and magnetic meridian. [15]
- 3.a) The following consecutive readings were taken with a levelling instrument at intervals of 20 m. 2.375, 1.730, 0.615, 3.450, 2.835, 2.070, 1.835, 0.985, 0.435, 1.630, 2.255 and 3.630 m. The instrument was shifted after the fourth and eighth readings. The last reading was taken on BM of RL 110.2 m. Find the RL's of all the points.
- b) Explain the characteristics of contour lines with neat sketches. [15]
- 4.a) The following perpendicular offsets were taken at 10 m intervals from a chain line to an irregular boundary line as follows 3.10, 4.20, 5.35, 6.45, 7.15, 8.25, 7.95, and 5.20 m. Find the area of an irregular boundary by Simpson's method.
- b) Explain the method of computation of a capacity of a reservoir. [15]
- 5.a) What are face left and face right observations in theodolite surveying? Explain the temporary adjustments of a transit theodolite.
- b) An instrument was setup at A and the angle of elevation of the top of a tower BC was  $26^{\circ} 15'$ . The horizontal distance AB, B being the foot of the tower, was 715 m. Determine the RL of the top of the tower if the staff reading held on a station P of RL 100.00 was 2.455 m with the telescope horizontal. [15]
- 6.a) Derive an expression for the horizontal distance of a vertical staff from a tacheometer if the line of sight of the telescope is horizontal.
- b) The following are the distances of the staff position from the instrument and the corresponding staff intervals. Calculate the tacheometric constants. [15]
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|-------|-------|-------|-------|-------|
| D (m) | 20    | 50    | 100   | 120   |
| s (m) | 0.195 | 0.495 | 0.997 | 1.197 |
- 7.a) What are the methods of setting out simple curves? Explain any one method with a neat sketch.

- b) Two tangents AB and BC intersect at a point B at chainage 150.5 m. calculate the necessary data for setting out a circular curve of radius 100 m and deflection angle  $30^{\circ}$  by the method of offsets from the long chord. [15]
- 8.a) Define Geographic Information system. Describe briefly the raster and vector data structures.
- b) What are the three segments of GPS? Explain their functions briefly. [15]

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