

B.Tech II Year I Semester (R09) Supplementary Examinations June 2017

**SURVEYING**  
(Civil Engineering)

Time: 3 hours

Max. Marks: 70

Answer any FIVE questions  
All questions carry equal marks

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- 1 (a) Explain surveying. What are its objectives and give its importance in civil engineering?  
(b) Define closing error. Explain the graphical method of adjusting the closing error.
- 2 (a) Describe the process of ranging and chaining a line between two points which are not intervisible because of intervening hillock.  
(b) Find the corrected bearings of following traverse taken from a compass survey:

Line	F.B	B.B
AB	N55°00'E	S54°00'W
BC	S68°00'E	N66°30'W
CD	S24°00'W	N24°00'E
DE	S77°00'W	N75°30'E
EA	N64°00'W	S63°30'E

- 3 (a) Explain different methods of leveling mentioning the situations where each method is preferred to.  
(b) The following consecutive readings were taken with a level and 3 meter leveling staff on continuously sloping ground at a common interval of 20 m: 0.602; 1.234; 1.860; 2.574; 0.238; 0.914; 01.936; 2.872; 0.568; 1.824; 2.722. The reduced level of first point was 192.122 m. Calculate the reduced levels of the points by rise and fall method and also the gradient of the line joining the first and last point.

- 4 (a) The following perpendicular offsets were taken from a chain line to an irregular boundary:

Chainage (m)	0	10	25	42	60	75
Offsets (m)	15.5	26.2	31.8	25.6	29.0	31.5

Calculate the area between the chain line, the boundary and the end offsets.

- (b) How do you determine the: (i) Capacity of a reservoir. (ii) The earth work for a borrow pit.
- 5 (a) Differentiate between:  
(i) Latitude and departure.  
(ii) Transit and Bowditch rule.  
(b) Define what you understood by a Gales table. How are its calculations made?
- 6 (a) Obtain the fundamental formula of stadia tacheometry and tangential tacheometry.  
(b) A tower known to be 40 m above water level is observed from the opposite side of a tank, the angle of elevation being 45°. The angle of depression to the reflection of the same point is 55°. Find the distance from the instrument to the tower.
- 7 (a) Given the intersection angle of a two degree curve is 110°, compute the various elements of a simple curve.  
(b) Calculate the ordinates from the long chord at 7.5 m interval to set out a simple circular curve of 20°. The length of long chord is 90 m.
- 8 (a) Describe the salient features of a total station and explain how the angles are measured using total station.  
(b) Discuss critically how geodetic survey is accurate than plane survey in several types of surveys.