

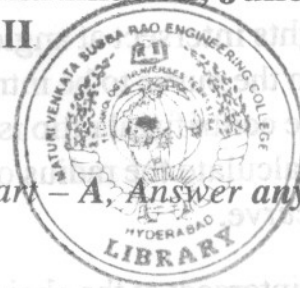


**FACULTY OF ENGINEERING**  
**B.E. 2/4 (Civil) II Semester (Main) Examination, June 2010**  
**SURVEYING – II**

Time: 3 Hours]

[Max. Marks: 75

*Note : Answer all questions from Part – A, Answer any five questions from Part – B.*

**PART – A****(25 Marks)**

1. Differentiate between Telescope direct and Telescope inverted. 2
2. Enumerate the permanent adjustments of a transit. 3
3. Derive the relation between the radius and degree of a curve for 30m. chord. 3
4. Sketch a compound curve and a reverse curve. 2
5. Define the shift of a circular curve. 2
6. How would you select a suitable peg interval for a curve ? 3
7. What is the principle of tangential tacheometry ? 2
8. How the tacheometric alidade differs from plain alidade ? 3
9. What are the applications of total station instrument ? 3
10. Differentiate between latitude and departure. 2

**PART – B****(5×10=50 Marks)**

11. a) What is the basic difference between a Vernier theodolite and a micro-optic theodolite ? What do you mean by transit ? 3
- b) Describe the procedure of measuring horizontal angles by repetition method. What are its merits ? 7
12. In order to find the elevation of top Q of a signal, observations were made from two instrument stations A and B which are in line with the signal. The stations A and B are 80 m apart. The vertical angles of Q as observed at A =  $30^{\circ} 45'$  and as observed at B =  $16^{\circ} 10'$ . The staff reading on the B.M. of elevation 178.450 m was 2.850 m when the instrument was at A and 3.850 m when the instrument was at B. Find the elevations of top and foot of the signal if the height of signal above its base is 5 m. 10

13. a) What are the basic criteria for the design of a transition curve ? Derive an expression for super-elevation. 5
- b) Two straights intersect at angle of  $140^\circ$ . The maximum allowable speed of vehicles on the curve to be introduced between the straights is 100 kmph. If the permissible centrifugal ratio is 0.25 and the rate of change of acceleration is  $0.3 \text{ m/s}^3$ , calculate the radius of the circular curve and the length of the transition curve. 5
14. Two tangents intersect at the chainage of 1190.0 m, the deflection angle being  $36^\circ$ . Calculate all the data necessary for setting out a curve with a radius of 300 m. by deflection angle method. Tabulate the results. The peg interval is 30 m. 10
15. a) What is the principle and use of subtense bar ? 3
- b) Describe various methods of locating soundings in hydrographic surveying. 7
16. a) Derive expressions for the horizontal distance and vertical intercept in stadia tacheometry for depressed line of sight, when the staff is vertical. 4
- b) A tacheometer, fitted with an anallactic lens and having the multiplying constant of 100, was set up at R which is an intermediate point on a traverse course AB. The following readings were taken with staff held vertically.

Staff station	Bearing	Vertical angle	Intercept	Axial hair reading
A	$40^\circ 35'$	$- 4^\circ 24'$	2.21	1.99
B	$22^\circ 35'$	$- 5^\circ 12'$	2.02	1.90

Calculate the length of AB and the level difference between A and B. 6

17. Write short notes on any two of the following : 10
- a) Refraction and curvature correction.
- b) Trigonometrical levelling.
- c) Beaman stadia arc.