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Seat
No.   **[4757]-1004**

S.E. (Civil) (First Semester) EXAMINATION, 2015

SURVEYING

(2012 PATTERN)

Time : Two Hours   **Maximum Marks : 50**

N.B. :— (*i*)   Neat diagrams must be drawn wherever necessary.

(*ii*)   Figures to the right indicate full marks.

(*iii*)   Use of logarithmic tables, slide rule, Mollier charts, electronic pocket calculator and steam tables is allowed.

(*iv*)   Assume suitable data, if necessary.

1.   (*a*)   What are the types of error in plane tabling ? How are they minimized ?   [6]

(*b*)   The following reciprocal levels were taken with one level :   [6]

Instrument at	Reading on		Remarks
	A	**B**	
A	1.884	2.896	Distance between A & B
B	0.537	1.894	= 900 m
			R.L. of A = 300 m

Determine :

(*i*)   The true difference in elevation between A & B.

(*ii*)   The reduced level of B.

(*iii*) The error in the collimation adjustment of the level.

P.T.O.

Or

2. (*a*) State the uses and characteristics of contour lines. [4]

(*b*) Find the distance to the visible horizon from the top of a light-house 60 m high. [2]

(*c*) Determine the Fore bearing and back bearing of all the lines in a regular closed (pentagon) from the following direction : [6]

(*i*) Traversing was done in clockwise direction.

(*ii*) Local attraction was not suspected at any station.

(*iii*) Fore bearing of line CD of the closed traverse ABCDEA was observed to be 35° 30'. Draw rough sketch of the traverse.

3. (*a*) What is meant by theodolite traversing ? State various methods of theodolite traversing. [6]

(*b*) Tabulate the data required for setting out the circular curve by the deflection angle method using the following data : [6]

(*i*) Chainage of intersection point = 1580 m

(*ii*) Deflection angle = 35°

(*iii*) Degree of curve = 5°

(*iv*) Peg interval = 30 m.

4. (*a*) State various obstacles in setting out curves. Explain the procedure of setting out simple curve when point of intersection is inaccessible. [6]

(*b*) Two stations A and B are fixed on either side of a wood. The following traverse is run from A to B along the side of the wood : [6]

Line	Latitude	Departure
AC	+290.8 m	+327.5 m
CD	−229.2 m	+623.2 m
DB	−516.6 m	+267.8 m

Determine the length and bearing of AB and DA.

5. (*a*) Enlist the fundamental axes of a transit theodolite and desribe how will you make the trunnion axis perpendicular to the vertical axis. [5]

(*b*) A tacheometer with anallatic lense having the value of constant 100 was used and the following observations were made on staff held vertical : [8]

Instrument Station	H.I. in Meter	Vertical Angle	Staff At	Staff Reading in m
P	1.80	2°40'	M	1.25, 1.93, 2.56
		−4°40'	Q	1.45, 1.85, 2.30

R.L. of station M is 50 m. Calculate the R.L. of P & Q, distance PQ and gradient.

6. (*a*) Explain the test and adjustment for making the line of collimation right angle to the horizontal axis. [5]

(*b*) Draw the sketches of different stadio lines. [4]

(*c*) Determine reduced level of horizontal line of sight from given data. Assume multiply constant 100 with anallatic lens : [4]

Instrument Station	Staff Station	Vertical Angle	Stadio Reading	Remark
A	B	8°20'	0.990, 1.555, 2.120	R.L. of B 100.00 m

7. (*a*) Explain distance and angle measurement with total station. [6]

(*b*) Explain the method of transfer of centre line in long tunnels. [7]

Or

8. (*a*) What is total station ? State the classification based on range of total station. [7]

(*b*) Define gradient. What is the importance of gradient while laying sewer pipe ? How is it decided ? [6]