Total No. of Questions—**8**] [Total No. of Printed Pages—**4+1**

Seat No.	

[4657]-504

S.E. (Civil) (First Semester) EXAMINATION, 2014

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*) Explain the following technical terms with sketches : [6]

(*i*) Oblique offset

(*ii*) Swivel joint

(*iii*) True meridian

(*iv*) Base line.

P.T.O.

(*b*) The following notes refer to reciprocal levels. Find R.L. of B. [6]

Instrument at	Staff reading on		Remarks
	A	B	
A	1.755	3.155	Distance AB = 500.00 m
B	1.155	2.915	RL of A = 1000.00 m

Or

2. (*a*) Explain the following with sketches :

(*i*) Lifting lever

(*ii*) U-fork with plumb-bob

(*iii*) WCB

(*iv*) Eye ranging. [6]

(*b*) While carrying out the permanent adjustment of a dumpy level by two peg method, the following observations were made :

Inst. At	Reading on C	Reading on D	Remark
E midpoint of CD	2.000	3.000	CD = 100 m; CF = 120 m;
F	1.500	2.75	DF = 20 m;

Check whether the instrument needs adjustment or not and whether the line of collimation is inclined upwards or downwards. What should be the correct reading at C if the instrument is to be adjusted at F ? [6]

3. (*a*) Write short notes on : [6]

(*i*) Direction angle method

(*ii*) Error of closure in Theodolite traversing.

(*b*) A simple circular curve is to be set out by offsets from chord produced. The curve has the following details :

(*i*) Radius of the curve 600 m

(*ii*) Deflection angle of the curve 29°

(*iii*) Chainage of intersection point 2900 m

(*iv*) Peg interval 30 m.

Tabulate the data necessary to set out the curve. [6]

Or

4. (*a*) Write short notes on : [6]

(*i*) Balancing the traverse

(*ii*) Prolonging a line.

(*b*) Draw neat sketch and write equations for the following in terms of radius of curve (R) and deflection angle (ϕ) : [6]

(*i*) Long chord

(*ii*) Versed sine

(*iii*) Apex distance.

5. (*a*) Describe the methods of determination of tacheometric constants. [7]

(*b*) Explain permanent adjustment of the horizontal axis. [6]

Or

6. (*a*) The following observations are made on a vertically held staff with a tacheometer fitted with a anallactic lens. The multiplying constant of the instrument was 100. Compute the length of AB and RL of B : [7]

Inst. at	**H.I**	**Bearing**	**Staff station**	**Vertical angle**	**Hair readings** (m)	**Remarks**
BM	1.50	30°	A	–5° 30'	1,000, 1.110, 1.250	R.L.of BM 200.00 m
		120°	B	+10° 00'	0.950, 1.150, 1.260	

(*b*) State permanent adjustments of Theodolite. Explain any *one* in detail. [6]

7. (*a*) Explain step by step procedure of setting out building with total station. [7]

(*b*) Describe setting out tunnel centre line on surface. [6]

Or

8. (*a*) Write the working principle of total station. Explain the features of total station. [7]

(*b*) Write a short note on Route Survey. [6]