Seat No.	

[4857]-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*) Explain the following with neat sketches :　　　　　[6]

(1) Bearing

(2) Location sketch

(3) Orientation.

(*b*) The following records refers to an operation involving reciprocal levelling :

Instrument at	Staff reading on		Remarks
	A	**B**	
A	1.155	2.595	Distance AB = 500.00 m
B	0.985	2.415	RL of A = 525.500 m

Find :

(1) The true reduced level of B.

(2) The combined correction for curvature and refraction

(3) The collimation error

(4) Whether the line of collimation is inclined upward or downward. [6]

Or

2. (*a*) In an anticlockwise traverse ABCA, all the three sides were equal in length. The magnetic bearings of the line BC obtained by prismatic compass was 15° 30'. The bearing of sun observed was 184°30' at local noon with the compass. Calculate the magnetic bearing and true bearings of the sides of the traverse. [6]

(*b*) Explain the following with neat sketches : [6]

(1) Reciprocal levelling

(2) V-shaped contour.

3. (*a*) Differentiate between the following pairs : [6]

(1) Telescope normal and Telescope inverted

(2) Transiting and swinging Telescope.

(3) Repetition and Reiteration method of measuring horizontal angles.

(*b*) Two straights AB and BC intersect at a chainage of 4777 m. The angle of intersection is 140°. It is required to set out a 5° simple circular curve to connect the straights. Calculate all data necessary to set out the curve by the method of offsets from the chord produced with an interval of 30 m. [6]

Or

4. (*a*) The following records are obtained in a traverse survey, where the length and bearing of the last line were not recorded. Compute the length and bearing of the line DA : [6]

Line	Length (m)	Bearing
AB	75.50	30°24'
BC	180.50	110°36'
CD	60.25	210°30'
DA	?	?

(*b*) What is a transition curve ? State the various types of transition curve with the help of a neat sketch. Explain briefly its necessity. [6]

5. (*a*) Enlist the fundamental axes of a Transit theodolite and relation between them when Theodolite is in perfect adjustment. [6]

(*b*) The following observations were made on vertically held staff with a Tachometer fitted with an anallactic lens. Find the horizontal distance PQ and level difference between P and Q. Station O is on line PQ : [7]

Instrument Station	Staff Station	Vertical angle	Hair readings (m)	Remarks
O	P	+4° 30'	0.750, 1.10, 1.40	R.L. of point
	Q	+10° 00'	0.60, 0.90, 1.10	P is 150 m

Or

6. (*a*) Explain the test and adjustment for making the axis of the plate level perpendicular to vertical axis in transit theodolite. [6]

(*b*) The ruins of an old fort exist on a hill. It was required to determine the distance of the fort from the road and the height of its roof above the plinth with a tachometer fitted with analytical lens. observations were made on a 4 m staff held vertical on the entrance gate of the fort and on the roof from the road : [7]

Instrument Station	Staff Station	Vertical Angle	Hair Readings (M)	Remarks
Road	Plinth	+10°30'	2.150,2.720, 3.290	R. L of Instrument station is 589.850 m
	Roof	+16°24'	1.850, 2.400,3.040	

7. (*a*) Explain briefly the salient features of total station. [7]

(*b*) Describe the procedure of setting out drainage line. [6]

Or

8. (*a*) Describe how the total station has brought revolution in surveying. [7]

(*b*) Write a short note on construction survey. [6]