Total No. of Questions—**12**] [Total No. of Printed Pages—**8**

Seat No.	

[4262]-108

S.E. (Civil) (II Sem.) EXAMINATION, 2012

SURVEYING

(2008 PATTERN)

Time : Three Hours **Maximum Marks : 100**

N.B. **:—** (*i*) Answer *three* questions from Section I and *three* questions from Section II.

(*ii*) Answers to the two Sections should be written in separate answer-books.

(*iii*) Neat diagrams must be drawn wherever necessary.

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

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

SECTION I

1. (*a*) Define the following with sketches : [6]

(*i*) Fore-bearing

(*ii*) Declination

(*iii*) W.C.B.

P.T.O.

(*b*) Draw the sectional view of prismatic compass and show any *four* components. [6]

(*c*) Describe the errors in plane table surveying. [6]

Or

2. (*a*) The following bearings were observed on a closed compass traverse. Calculate the interior angles and correct them for observed errors, taking bearing of BC as correct. Also find corrected bearings of remaining sides of the traverse. [6]

Line	**FB**	**BB**
AB	191° 15'	10° 15'
BC	120° 45'	300° 45'
CD	349° 5'	169° 00'
DE	339° 35'	160° 40'
EA	296° 00'	115° 00'

(*b*) Explain the following accessories used in plane table surveying with sketches : [6]

(*i*) Spirit level

(*ii*) Trough compass.

(*c*) Explain the following : [6]

(*i*) Bearing

(*ii*) Dip of the needle

(*iii*) Orientation

(*iv*) Local attraction.

3. (*a*) Define the following : [6]

(*i*) Mean sea level

(*ii*) Datum

(*iii*) Elevation

(*iv*) Reduced level

(*v*) Bench mark

(*vi*) Contour interval.

(*b*) Write short notes on : [4]

(*i*) Compensator

(*ii*) V-shaped contour.

(*c*) The following consecutive readings were taken with a level and 4 m leveling staff on a continuously sloping ground at a common interval of 20 m., 0.250, on point P, 0.900, 2.000, 3.000, 0.500, 1.250 and 2.250 on Q. RL of point P was 100.00 m. Rule out a level page, apply usual check and find gradient of PQ. [6]

Or

4. (*a*) In a two peg method of a dumpy level the following readings were taken :

Level at	**Readings on**		**Remarks**
	P	Q	O is exactly midway between P and Q. Distance between P and Q is 80.00 m.
O	2.550	2.250	
A	2.435	2.010	

Find the staff readings on Q, so that the line of collimation should be horizontal, when the instrument was at P. [6]

(*b*) Define contour. Explain the uses of contour maps. [6]

(*c*) Write short notes on : [4]

(*i*) Rise and fall method

(*ii*) Auto level.

5. (*a*) Explain the following terms : [6]

(*i*) Transiting

(*ii*) Face left

(*iii*) Vertical Axis

(*iv*) Swinging the telescope.

(*b*) State different methods of measurement of horizontal angle. Explain reiteration method in detail. [6]

(*c*) Write short notes on : [4]

(*i*) Closing error

(*ii*) Bowditch's rule.

Or

6. (*a*) In a closed traverse carried out with a transit Vernier Theodolite, the following is the part of a Gale's traverse table. Compute length and reduced bearing of a linear error of closure. [6]

Line	**Length (m)**	**RB**
AB	28.20	N 15° 16' 15" E
BC	21.25	N 23° 10' 20" W
CD	29.80	N 82° 15' 41" W
DE	34.10	S 14° 16' 21" W
EA	42.90	S 65° 19' 55" W

(*b*) Explain the following technical terms : [6]

(*i*) Plunging

(*ii*) Telescope inverted

(*iii*) Latitude

(*iv*) Departure.

(*c*) Describe the Gale's traverse table. [4]

SECTION II

7. (*a*) State the advantages of Tacheometric survey. [6]

(*b*) Describe plate level test. [6]

(*c*) The following observations are made on a vertically held staff with a tacheometer fitted with an anallactic lens. The multiplying constant of the instrument was 100.

Staff station	**Vertical angle**	**Staff intercept**	**Axial hair readings**
P	+8° 36'	2.350	2.105
Q	+6° 6'	2.055	1.895

Compute the length of PQ and RL of Q, that of P being 321.50 m. [6]

Or

8. (*a*) State the permanent adjustment of a transit. Explain adjustment of the horizontal axis. [6]

(*b*) Determine the gradient from a point A to B from the following observations made with a tacheometer fitted with an anallactic lens. The constant of the instrument was 100 and the staff was held vertically. [6]

Inst. Station	**Staff station**	**Bearing**	**Vertical Angle**	**Staff readings**
0	P	134°	+10° 32'	1.360 1.915 2.470
	Q	224°	+5° 6'	1.065 1.885 2.705

(*c*) Write a short not on radial survey. [6]

9. (*a*) Describe compound circular curve with sketch. [4]

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

(*i*) Deflection angle

(*ii*) Long chord

(*iii*) Apex distance.

(*c*) Describe the step by step procedure of setting out a simple circular curve by Rankines method of deflection angle. [6]

Or

10. (*a*) What is transition curve ? Explain superelevation. [6]

(*b*) Two straight's meet at an angle of 136°. Radius of the curve is 300 m. Calculate the elements of simple circular curve. [6]

(*c*) State linear methods of curve ranging. Draw neat and labelled sketch of transition curve. [4]

11. (*a*) Explain setting out of a building with sketch. [6]

(*b*) Explain horizontal and vertical control required in construction survey. [6]

(*c*) Explain step by step procedure of determination of horizontal distance by EDM. [4]

Or

12. (*a*) Explain step by step procedure of setting out building with total station. [6]

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

(*c*) What is ETS ? State the uses of it. [4]