

Seat No.	
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[4262]-108

SE. (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	2.550	2.250	O is exactly midway between P and Q.
A	2.435	2.010	Distance between P and Q is 80.00 m.

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 note 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 Rankine's 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]