



KC-8053

B. E. II (Sem. III) (Civil) Examination

November / December – 2012

**Surveying
(New Syllabus)**

Time : 3 Hours]

[Total Marks : 100

Instructions :

(1)

नीचे दृष्टावेक निशानीवाणी विगतो उत्तरवही पर अवश्य कर्तवी. Fillup strictly the details of signs on your answer book.	Seat No. :
Name of the Examination :	<input type="text"/>
← B. E. 2 (Sem. 3) (Civil)	<input type="text"/>
Name of the Subject :	<input type="text"/>
← Surveying (New)	<input type="text"/>
← Subject Code No. : <input type="text" value="8"/> <input type="text" value="0"/> <input type="text" value="5"/> <input type="text" value="3"/> ← Section No. (1, 2,.....) : <input type="text" value="Nil"/>	<input type="text"/>
	Student's Signature

- (2) Figures to the **right** indicate full marks.
- (3) Draw neat and labelled sketch wherever **necessary**.
- (4) Assume suitable data if **necessary** and mention it clearly.
- (5) Use of non programmable calculator is permitted.
- 1 (a) Explain the following terms : (any **five**) 10
- (i) Plane Tabling
 - (ii) Temporary adjustments of theodolite
 - (iii) Hydrographic survey
 - (iv) Echo-sounder
 - (v) Soundings.
- (b) Answer the following : (any **three**) 15
- (i) Enlist purposes of hydrographic survey
 - (ii) Advantages and disadvantages of plane tabling.
 - (iii) Explain in detail balancing of traverse.
 - (iv) Explain in detail reiteration method of plane tabling.
- (c) Explain the following with a neat diagram : (any **two**) 10
- (i) Orientation in plane table survey.
 - (ii) Any one instrument for taking sounding.
 - (iii) Closing error in case of closed traverse.

2 Solve the following : (any two)

15

- (i) ABCD is a closed traverse in which length of DA has not been measured. Find the length and complete the traverse :

Line	Length(m)	Bearing
AB	235.10	338° 20'
BC	317.40	82° 22'
CD	215.00	167° 00'
DA	?	259° 40'

- (ii) The lengths and bearings of the lines of a closed traverse are given below in table. Calculate the latitudes and departures of the lines and assign proper signs to them :

Line	AB	BC	CD	DA
Length(m)	156.6	178.1	234.7	203.2
Bearing	78° 42'	152° 30'	251° 20'	3° 43'

- (iii) A traverse survey was conducted and the data obtained is given below. Find the magnitude and direction and closing error if any :

Line	AB	BC	CD	DA
Length(m)	156.4	178.3	234.9	202.5
Bearing	78° 42'	152° 30'	251° 20'	356° 12'

3 Attempt any **three** :

15

- (a) Derive the equation for relation between Degree and Radius of a circular curve.
- (b) Show the elements of lemniscate curve with a neat sketch.
- (c) Derive the equation for RL of top of an object when base of the object accessible. The object may be vertical or inclined.
- (d) How the area can be calculated from coordinates of stations ?
- (e) Explain trapezoidal rule of volume calculation.

- 4 Write short notes on any five : 20
- (a) Vertical curves
 - (b) Hands off velocity
 - (c) Digital Planimeter
 - (d) Axis signal correction
 - (e) Sources of error in curve computations
 - (f) Simpson's one third rule of area calculation
 - (g) Boning Rod and Travelling Rod.

- 5 (a) The following observations were made on a hilltop to ascertain its elevation. The height of the target F was 5 m : 8

Instrument station	Staff readings on B.M.	Vertical angle on target at hill top	R.L. of B.M. (m)
O ₂	2.550	18°6'	345.58
O ₁	1.670	28°42'	345.58

The instrument stations were 100 m apart and were in line with F.

OR

- (a) The following perpendicular offsets were taken from a chain line to an irregular boundary : 8

Chainage (m)	0	30	60	90	120	150	180	210
Offset lengths(m)	0	2.65	3.8	3.75	4.65	3.6	5.0	5.8

Calculate the area between the chain line and the irregular boundary by :

- (i) Average ordinate rule
 - (ii) Mid ordinate rule.
- (b) Write the procedure of setting out of : 7
- (i) Pipelines and Sewers
 - (ii) Culverts.