* U F - 6 1 4 1 *

UF-6141

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

May / June – 2012

Surveying - I

(Old Syllabus)

Time : **3** Hours] [Total Marks : **100**

Instructions :

(1)

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fillup strictly the details of ☛ signs on your answer book.

Name of the Examination :

☛ **B. E. 2 (Sem - 3) (Civil)**

Name of the Subject :

☛ **Surveying - 1 (Old)**

☛ Subject Code No. : **6 1 4 1** ☛ Section No. (1, 2,.....) : **Nil**

Seat No. :

Student's Signature

(2) Figures to the right indicate full marks.

(3) Assume suitable data wherever necessary.

(4) Draw neat sketch wherever applicable.

(5) Use of non programmable calculator is permitted.

1 (a) Fill in the blanks : **5**

(i) Balancing of traverse is done according to the _____ rule.

(ii) The working edge of the alidade is known as _____

(iii) Inaccessible points may be located by the _____

(iv) The branch of surveying which deals with the measurement of bodies of water is called _____ surveying.

(v) The measurement of depth below the water surface is called_____.

2 Attempt any two : **15**

(i) Explain the procedure to measure horizontal angle with repetition method.

(ii) Describe the procedure of setting up the plane table over a station.

(iii) What are the errors that may occur during plane tabling ?

(iv) What is hydrography ? What are its purposes ?

3 (a) Attempt any two : **12**

(i) Following readings were taken for a closed traverse PQRST. find out the missing quantities

Line	Length(m)	Bearing (θ)
PQ	194.1	85°30'
QR	201.2	15°00'
RS	165.4	285°30'
ST	172.6	185°30'
TP	(?)	(?)

(ii) ABCD is a closed traverse in which the length of DA has not been measured. The rest of the field record is as follows :

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

(iii) The record of a closed traverse is given below with two distances missing.

Line	Length (m)	Bearing
AB	100.5	N 30°30' E
BC	(?)	S 45°0' E
CD	75.0	S 40°30' W
DE	50.5	S 60°0' W
EA	(?)	N 40°15' W

Calculate the lengths of BC and EA.

(b) Attempt any three : **18**

(i) Eco-sounder

(ii) Lead lines

(iii) Advantages and disadvantasges of plane tabling

(iv) Intersection method

(v) Gale's traverse table

4 Attempt any five : **25**

(a) Explain the elements of simple circular curve along with neat sketch.

(b) Write the process of setting out a building.

(c) Explain reciprocal levelling with neat sketch.

(d) What are the various methods of calculating area from offsets ? Explain any one.

(e) What are the characteristics of a transition curve ?

(f) What are the adjustments of planimeter ? What affects the accuracy of result obtained by Planimeter ?

(g) Explain rise and fall method of levelling.

5 (a) A railway embankment is 12 m wide. The ground is level in a direction transverse to the centre line. Calculate the volume contained in a 100 m length by trapezoidal rule and prismoidal rule, if the side slope is 1.5 : 1. The centre heights at 20 m interval are 3.7 m, 2.6 m, 4.0 m, 3.4 m, 2.8 m, 3.0 m, 2.2 m. 8

OR

(a) The following consecutive readings were taken with a level and a 4.0 m staff of a continuously sloping ground at a common interval of 30 m. 8

0.78, 1.535, 1.955, 2.430, 2.985, 3.48, 1.155, 1.96, 2.365, 3.640, 0.935, 1.045, 1.630 and 2.545

The R.L of the first point 'A' was 180.75 m Rule out a page of a level field book and enter the above readings. Calculate the reduced levels of the points by the collimatron system. Also calculate the gradient of the line joining the first and the last point.

(b) A circular curve has a radius of 200 m and 65° deflection angle what is its degree. Also calculate 8

(i) Length of curve

(ii) Tangent length

(iii) Length of long chord

(iv) Apex distance and

(v) Mid ordinate

6 Write short notes on any three :

(a) Compound curve

(b) Differential levelling

(c) Digital planimeter

(d) Stake and Batter board

(e) Spot levels

(f) Vertical curves