* K C - 6 1 4 1 *

KC-6141

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

November / December – 2012

Surveying - I

(Old Syllabus)

Time : 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 Fill in the blanks **5**

(1) The independent co-ordinates of all points in a Gale's traverse table are in _____ quadrant.
(2) The north line of a map is marked on the _____.
(3) The plane table map cannot be plotted, to a different scale, as there is no _____.
(4) The branch of surveying which deals with the measurement of bodies of water is called _____ surveying.
(5) If θ the RB of a line of length 'L' then latitude of a line is given by_____.

2 Attempt any **three** : **15**

(1) List the fundamental axis of theodolite and give relations between them.
(2) Give advantages and disadvantages of plane table survey.
(3) Explain errors in plane table survey.
(4) What is hydrographic surveying ? Explain the objectives of hydrographic surveying.

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

(1) The length and bearing of a closed traverse ABCDA are as under

Line	**Length (m)**	**Bearing**
AB	320	51°
BC	280	324°
CD	400	242°
DA	360	132°

Calculate latitude and departure of the sides of the traverse. Also calculate closing error and relative error of closure of this traverse.

(2) The lengths and bearing of the lines of a closed traverse ABCDE are given below. The length and bearing of EA could not be measured in the field calculate the length and bearing of the line EA.

Line	**Length (m)**	**Bearing**
AB	204.0	87° 30'
BC	226.0	20° 20'
CD	187.0	280° 0'
DE	192.0	210° 30'
EA	(?)	(?)

(3) The corrected consecutive co-ordinates of stations A, B, C, D are as under Assuming independent co-ordinates of station 'A' latitude = 170 and Departure = 100 Find out the independent co-ordinates of other stations

Station	**N**	**S**	**E**	**W**
A	-	8.0	-	80
B	-	155.0	10.0	-
C	4.0	-	79.0	-
D	159.0	-	-	9.0

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

(1) Lead lines

(2) Purposes of hydrographic survey.

(3) Radiation method

(4) Advantages and disadvantages of plane table survey

(5) Bowditch's rule.

4 Attempt any five **25**

(1) Explain rise and full method of levelling.

(2) What is mass diagram ? What are its characteristics?

(3) Explain the obstacles in setting out simple curves how are they overcome?

(4) Write the procedure of setting out a culvert.

(5) What are temporary adjustments of a level?

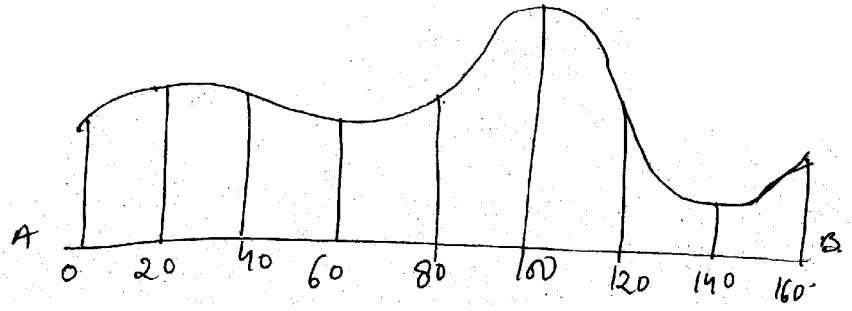
(6) What are the adjustments of planimeter ? What affects the accuracy result by planimeter?

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

5 (a) The following readings were taken with a dumpy level and 4 m levelling staff the instrument was shifted after 3rd and 6th readings. The readings are 2.665, 3.225, 2.905, 1.850, 0.98, 2.62, 1.585, 0.96, 0.425 m. Enter the above readings in a page of level book and calculate the RL of points, if the first reading was taken with a staff held on a benchmark of 240 m. Use rise and full method and apply arithmetical checks. **8**

OR

(a) Determine the area in hectares between the line AB and a meandering stream for offsets taken at a regular interval of 20m along the line AB. Use both the trapezoidal rule and Simpson's rule. **8**



Point	A								B
Distance (m)	0	20	40	60	80	100	120	140	160
Offset length (m)	23	40	42	30	32	60	10	14	22

(b) A circular curve has a radius of 200 m and 65° deflection angle. What is it degree ? Also Calculate : 8

(i) Length of curve

(ii) Tangent length

(iii) Length of the long chord

(iv) Mid ordinate.

6 Write short notes on any three **9**

(1) Lemniscate curve

(2) Mid ordinate rule of are calculation

(3) Spot levels

(4) Height of instrument

(5) Reverse curve

(6) Setting out a sewer.
