[Total No. of Questions - 9] [Total No. of Printed Pa s - 4]
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16091(D) 10 DEC 2016

B. Tech 3rd Semester Examination

Engineering Surveying-I (CBS)

CE-303

Time : 3 Hours **Max. Marks : 60**

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : Attempt five question in all, selecting one question from each Unit I to IV and one question in Unit V is compulsory. Support your answer with neat sketches where ever necessary.

UNIT - I

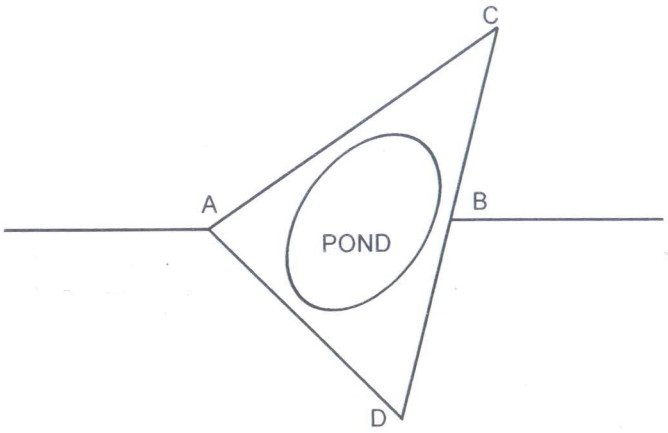
1. (a) A compass traverse ABCDA was run anticlockwise and the following bearings were observed where local attraction was suspected:

LINE	AB	BC	CD	DA
FORE BEARING	134°30'	**120°00'**	03°20'	265°00'
BACK BEARING	314°30'	299°20'	185°30'	83°30'

Note: FB of line BC **120°00'** is accepted to be correct. Determine the local attraction and corrected bearings of all the lines. (6)

(b) Write a short note on Optical Square. (4)

2. (a) During Chain Survey along line AB, an obstacle was faced in between A and B and to overcome this, following observations were taken by selecting points C and D from which point A is clearly visible and line AC, CD and AD are clear of obstacle. The point B lies in line of C and D.



Determine the distance AB if observations are as below: AC= 300 m; CB = 150m; CD = 325m; AD = 250 m (6)

(b) Draw the neat sketch of graduated circle of a surveyor compass showing reading as N 60° E. (4)

UNIT - II

3. (a) Enumerate different methods of plane table surveying and describe any one of them in detail with sketches. (6)

(b) Reduced Level of floor of a hall is 100m. Staff reading on the floor is 1.515m and staff reading when it is held inverted with bottom touching the ceiling of hall is 2.485m. Find the height of the ceiling above the floor. (4)

4. (a) Following readings were taken with a dumpy level. Calculate R.Ls of all the points using height of instrument method in tabular form. The first reading was taken on the Bench mark whose RL is 200.000 m. Also apply the arithmetic check. (6)

Stn.	1	2	3	4	5	6	7	8
BS (m)	0.685	1.800			2.550		2.590	
IS (m)			1.225	2.830		2.745		
FS (m)		2.905			0.455		1.555	2.625

(b) Describe the temporary adjustments of plane table. (4)

UNIT - III

5. (a) In a theodolite survey, following consecutive coordinates were observed in respect of a closed traverse ABCDA:

STATION	North	South	East	West
A	300.75			200.50
B	200.25		299.50	
C		299.00	199.75	
D		200.00		300.50

Calculate the following:

(i) Magnitude and direction of closing error.

(ii) Corrected consecutive coordinates of station B, using transit rule.

(iii) Independent coordinates of station B if those of A are (100,100). (6)

(b) With the help of neat line diagram, clearly show any four fundamental axis (or lines) of a Transit theodolite. (4)

6. (a) In a theodolite survey, following observations were made for a closed traverse:

LINE	AB	BC	CD	DA
Length (m)	500.00	345.00	-	216.00
WCB	Roughly East	178°00'	270°00'	1°0'

Determine the length of CD and bearing of AB. (6)

(b) Describe the horizontal control and vertical control in setting out work. (4)

UNIT - IV

7. (a) Following offsets were taken at 50 m intervals from the chain line to hedge:

Points along Chain Line	A	B	C	D	E	F	G	H	I	J	K
Offset in m	10.6	15.4	20.2	21.3	18.7	16.4	20.4	25.8	30.6	20.8	17.4

Calculate the area in square metres included between chain line and the hedge using Trapezoidal Rule and Average Ordinate Rule. (6)

(b) With the help of neat line diagram, clearly differentiate between Reverse Curve and Transition Curve. (4)

8. (a) A simple circular curve of radius 450m is drawn between the two straight line intersecting each other at deflection angle 50°. For this curve, calculate the followings:

(i) Tangent distance (ii) length of the curve

(iii) Length of the long chord (iv) degree of curve

(v) Apex distance (vi) mid ordinate (6)

(b) Describe the Simpson's 1/3rd Rule for determining the area of irregular figure. (4)

UNIT - V

9. (a) Describe the following:

(i) Super Elevation and its importance.

(ii) Planimeter and its use.

(iii) Setting out of foundation plan.

(iv) Temporary adjustment of a level. (4×3=12)

(b) Draw the typical neat line sketch of the followings:

(i) Contours representing Ridge line and valley line.

(ii) Open Cross Staff.

(iii) Dip of a magnetic needle.

(iv) Tie line and Check line. (4×2=8)