

Government College of Engineering, Aurangabad
(An Autonomous institute of Government of Maharashtra)

S.E. (Civil) F.T./P.T.
End Semester Examination Nov 2016

CE 245/206: SURVEY- I

23 NOV 2016

Time: Three Hours

Marks: 60

“Verify the course code and check whether you have got the correct question paper”

N.B.:

1. All the questions are compulsory
2. Figure to the right indicate full marks
3. Assume suitable data if necessary
4. Use of non-programmable calculator is allowed

Q 1. Attempt any two

(12)

- i. a. Give a brief description of line ranger and method of using it for ranging a line.
b. Explain the steps involved in chaining.
- ii. a. Differentiate between Chain surveying and Chain & compass surveying.
b. What points you will keep in mind while deciding the position of stations?
- iii. The observed bearings of a closed traverse are given below. Find the stations affected by local attraction and correct the bearings by finding the local attraction at the affected stations.

Line	F.B	B.B.
AB	S 36° 15'E	N 36° 15'W
BC	S 44° 30'W	N 45° 00'E
CD	N 71° 45'W	S 71° 00'E
DE	N 14° 00'E	S 14° 30'W
EA	N 61° 15'E	S 61° 00'W

Q 2. Attempt any two

(12)

- i. Describe the method used to carry on leveling work across a river, a wall and high ground.
- ii. Following observations were taken with the instrument being shifted after 3rd, 7th, 10th and 13th reading. The first reading was to a bench mark of elevation 100.000. Find the reduced levels of the remaining points.
1.605, 2.150, 1.385, 1.895, 1.365, 2.105, 1.950, 0.985, 1.305, 1.185, 1.305, -2.105, 1.385, 1.005, 1.155 and 1.145
- iii. The ground levels at 20 m intervals are as follows:

Chainage	0	20	40	60	80
Ground Level	101.5	101.55	101.68	101.79	102.24

The depth of cutting at the first section is 1.5 m. The formation has downward slope of 1 in 40. Formation width is 8 m and side slope is 2:1. Find the volume of earthwork in this length.

Q 3. Attempt any two**(12)**

- a. Explain how would you measure i) bearing of a line ii) deflection angle using theodolite
b. Following are the lengths and bearings of a traverse ABCDE:

Line	Length in m	Bearing
AB	229.0	$198^{\circ} 59'$
BC	131.35	$282^{\circ} 14'$
CD	80.00	$320^{\circ} 13'$
DE	199.25	$35^{\circ} 13'$

Calculate the length and bearing of the line EA which could not be surveyed due to an obstruction in the way.

- c. What are the fundamental lines of theodolite? What is the relation between these lines?

Q 4. Attempt any two**(12)**

- a. Explain two peg method for adjusting line of collimation parallel to the axis of the bubble tube.
b. What are the advantages and disadvantages of plane table survey.
c. What are the sources of error in plane table survey. Explain in detail.

Q 5. Attempt any two**(12)**

- a. Derive the distance and elevation formula for a case when the staff is held vertical and line of sight inclined.
b. Explain the principle of stadia method.
c. Find the difference in elevation between stations P and Q from the data given below. The stadia constants are 100 and 0.3

Inst Stn	Staff stn	Vertical angle	Stadia readings
A	P	$+3^{\circ} 15'$	1.355, 2.580, 3.935
	Q	$-1^{\circ} 45'$	0.985, 1.660, 2.335