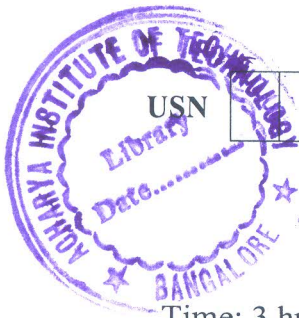


# CBCS SCHEME



USN

15CV34

## Third Semester B.E. Degree Examination, Aug./Sept.2020 Basic Surveying

Time: 3 hrs.

Max. Marks: 80

*Note: Answer any FIVE full questions, choosing ONE full question from each module.*

### Module-1

- 1 a. Define Surveying, Enumerate the objects of Surveying. (08 Marks)
- b. The area of the plan of an old survey plotted to a scale of 10m to 1cm now measures as  $90.5\text{cm}^2$  as found by a planimeter. The plan is found to have shrunk, so that a line originally 10cm long now measures 9.5cm only. A note on the plan also states that the 20cm chain used was 9cm too short, find the true area of the survey. (08 Marks)

**OR**

- 2 a. Define the term EDM, explain the principle of pulse distance meter method with sketches. (08 Marks)
- b. A river is flowing from west to east for determining the width of the river, two points A and B are selected on the southern bank, such that distance  $AB = 100\text{m}$  point A is west wards. The bearings at a tree C on the northern bank are observed to be  $40^\circ$  and  $340^\circ$  respectively from A and B, calculate the width of the river. (08 Marks)

### Module-2

- 3 a. Comparison between Prismatic compass and surveyor's compass. (06 Marks)
- b. A closed compass traverse ABCD was conducted round a lake and the following bearings were obtained. Determine which of the stations are suffering from local attraction and give the values of the corrected bearings:

Line	Force bearing	Back bearing
AB	$74^\circ 20'$	$256^\circ 0'$
BC	$107^\circ 20'$	$286^\circ 20'$
CD	$224^\circ 50'$	$44^\circ 50'$
DA	$206^\circ 40'$	$126^\circ 00'$

(10 Marks)

**OR**

- 4 a. Explain the source of errors in a theodolite survey. (08 Marks)
- b. Explain the method of repetition for measuring the horizontal angle using Transit theodolite and mention their advantages. (08 Marks)

### Module-3

- 5 a. Define the term Latitude and Departure, Enumerate the Transit method of adjusting the transverse. (08 Marks)
- b. Define tacheometry. Discuss the types of tacheometry. (08 Marks)

OR

- 6 a. Explain briefly concept of stadia method of tacheometry. (06 Marks)  
 b. Determine the gradient from a point P to another point Q from the following observations made with a tacheometer fitted with an anallactic lens. The constants of the instrument were 100 and 0, and the staff was held vertical.

Instrument station	Staff station	Bearing	Vertical angle	Staff readings (m)
R	P	130°	+10°32'	1.255, 1.810, 2.365
	Q	220°	+5°06'	1.300, 2.120, 2.940

(10 Marks)

**Module-4**

- 7 a. List out the difference between the line of collimation method and rise and fall method in leveling. (06 Marks)  
 b. The following staff readings were observed with a dumpy level,

0.795, 1.655, 2.890, 3.015, 0.655, 0.625, 0.955, 0.255, 1.635, 0.860, 2.375
--------------------------------------------------------------------------------

The instrument was shifted after the fourth and the eighth readings. The first reading was taken on a benchmark whose R.L. is 550.605 meters, rule out a page of a level field book and enter the above readings. Calculate the reduced levels of the stations by the rise and fall method and apply the usual checks. (10 Marks)

OR

- 8 a. Define leveling, list out the errors in leveling. (06 Marks)  
 b. Two points A and B are 1530m apart across a wide river. The following reciprocal levels are taken with one level,

Levels at	Readings on	
	A	B
A	2.165	3.810
B	0.910	2.355

The error in the collimation adjustments of the level is -0.004m in 100m. Calculate the true difference of level between A and B and the refraction. (10 Marks)

**Module-5**

- 9 a. What is meant by planimeter constant and enumerate the adjustments of planimeter. (06 Marks)  
 b. 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. (10 Marks)

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

OR

- 10 a. Define the term contour, explain with neat sketches, for the characteristics of contours. (08 Marks)  
 b. Write a note on:  
 i) Interpolations of contours  
 ii) Contour Gradient. (08 Marks)

\*\*\*\*\*