

Mid-West University
Examinations Management Office
 End-Semester Examinations -2080

Bachelor level/ B.E. Civil /3rd Semester
 Time: 3 hours
Subject: Surveying-I (CE433/CE206)

Full Marks: 50
 Pass Marks: 25

- Attempt all the questions
- Figures in the margin indicate full marks.
- Assume suitable values, with a stipulation, if necessary.
- Candidates are required to answer the questions in their own words as far as possible.

1. Classification of surveying on the basis of its purposes. Differentiate between plane surveying and geodetic surveying. [2+2]
2. Define Error, Precision and Accuracy. Write the types of errors with example. [1+2]
3. During the measurement in cartenary of a survey line of four bays the following information were obtained.

	Bays	Measured length(m)	Temperature (⁰ C)	Difference in Level(m)	Applied Pulling force(N)
T h e	1	24.980	25	0.045	165
	2	24.960	24	0.075	170
	3	24.980	23.5	0.080	175
	4	24.950	24.5	0.070	170

tape has a mass of 0.030kg/m and cross section area of 3.25mm². it was standardized on the flat at 20⁰C under a pull of 100N. The coefficient of linear expansion for material of tape is 0.000011/⁰C and Young's modulus is 20.07x104 MN/m². The measured of line is 895m above msl. Determine the absolute length of survey line, reduced to sea level. [4]

4. Which method is preferring to measure the horizontal distance in sloping ground? Describe it. [2]
5. List out the points keeping on mind while selecting the survey stations? The following bearings were observed in a compass traverse. [2+4]

Line	AB	BC	CD	DE	EA
FB	195°50'	73°30'	35°30'	267°30'	235°00'
BB	17°10'	250°45'	214°50'	85°00'	57°30'

At what stations do you suspect local attraction? Find the true bearings if magnetic declination is 1°15'W.

6. Define Consecutive coordinate and misclosure. Following data were obtained for a closed traverse direction. [1+5]

Line	Length (m)	Station	Internal angle	Bearing
AB	186	A	118° 20'	AB=50° 25'
BC	164	B	80° 10'	
CD	303	C	135° 30'	
DE	162	D	70° 40'	
EA	240	E	131° 50'	

Determine the closing error if any? Adjust the traverse by Bowditch rule.

7. a) Write about the reciprocal leveling with necessary derivation. Described about the Curvature and refraction correction in levelling. [2+2]
- b) The consecutive readings taken at a distance of 30m interval during a leveling operation are as follows;

0.685(A), 1.215, -1.725, -0.745, 1.105, 1.355, 2.565, 1.355, 1.750 and -2.105m (B)

The instrument was shifted after 4th and 7th readings. The 4th readings was taken to a BM of assumed elevations of 245.545m. find the reduced level of other point and gradient of line BA. [4]

8. Write the pros and cons of plane table surveying. [2]

9. A transit theodolite with least count 10" is set over station 'O' to measure the angle to station P, Q, R and S. The

Instrument	Target station	Telescope	HCR	VCR
O	P	FL	00°00'10"	118°10'10"
		FR	179°59'40"	?
	Q	FL	85°45'10"	?
		FR	265°44'40"	270°55'50"
	R	FL	155°25'50"	?
		FR	335°26'00"	335°25'00"
	S	FL	275°20'00"	90°00'00"
		FR	95°21'50"	?
	P	FL	0°1'50"	10°00'40"
		FR	180°01'30"	?

observed circle readings are as follows:

Compute the mean horizontal angle and adjust them if necessary. Also compute the missing data of vertical circle readings. [5]

10. Write the principle of trilateration and distinguish between triangulation and trilateration. [2+2]

11. a) Briefly described out the methods to calculate the area between straight line and curve boundary. [2]

b) A level book page given below shows the readings taken on the center line of a highway alignment.

The designed crest (Formation level) of the proposed embankment of chainage 500 m is 562.155m with a falling gradient of 1 in 100. The designed crest width of the said embankment is 8 m with side slopes 5: 3 (H: V). [4]

Chainage	Staff readings(m)			RL(m)	Remarks
	BS	IS	FS		
	2.725			555.000	

	2.810		0.290		
500	1.425		0.115		
530		1.530			
560		1.685			
590	2.030		1.775		
620		2.525			
650		2.880			
680	1.895		3.380		
710		2.145			
740			2.370		

Assuming the ground to be level across the alignment, calculate the earth work in filling from chainage. 560 to 740 m.

The End