



Sanjay Ghodawat University, Kolhapur

Established as State Private University under Govt. of Maharashtra. Act No XL, 2017

2018-19

EXM/P/09/01

Year and Program: 2018-19

School of Technology

Department of SY B.Tech

Course Code: CET204

Course Title: Engineering
Surveying

Semester – III

Day and Date: Tuesday

04/12/18 *Tuesday*

End Semester Examination
(ESE)

Time: 2.30 p.m. to 5.30 p.m.

Max Marks: 100

Instructions:

- 1) All questions are compulsory.
- 2) Assume suitable data wherever necessary.
- 3) Figures to the right indicate full marks.

Q.1 Solve the following

- | | Marks | Bloom's Level | CO |
|---|-------|----------------|-----|
| a) Explain principle of equalizing back sight and foresight distances | 07 | L ₃ | CO1 |
- OR

- | | | | |
|--|----|----------------|-----|
| a) The following records refer to an operation involving reciprocal levelling. | 07 | L ₃ | CO1 |
|--|----|----------------|-----|

Instrument at	Staff Reading at		Remark
	A	B	
A	1.155	2.595	Distance AB=500m RL of A = 525.500m
B	0985	2.415	

Find: i) RL of B.

ii) The collimation error

iii) Whether the line of collimation is inclined upward or downward

- | | | | |
|---|----|--|-----|
| b) Describe with sketch the process of measuring the vertical angle and magnetic bearing. | 08 | | CO2 |
|---|----|--|-----|

OR

- | | | | |
|---|----|----------------|-----|
| b) The record of a closed traverse is given below, with two distances missing. Find L1 and L2 | 08 | L ₃ | CO2 |
|---|----|----------------|-----|

Line	Length (m)	Bearing
AB	100.5	N 30° 30'E
BC	L1	S 45° 0'E
CD	75.0	S 40° 30'W
DE	50.5	S 60° 0'W

EA	L2	N 40° 15' W
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Q.2 Solve the following

- a) **Derive** the Expression for Base of Object Inaccessible: Instrument at Different Height (Instrument in same vertical plane as the elevated object.). 07 L₃ CO3

OR

- a) **Determine** the elevation of the foot of the signal if the height of signal above its base is 3m(Q). When the following observations were taken. Station P & R & The Top of the signal are in the same vertical plane 07 L₃ CO3

Inst. St.	Staff reading on BM	Angle of Elevation	Remarks
P	2.870	28° 42'	RL of BM = 287.280m
R	3.750	18° 6'	Dist. Between A & B = 100m

- b) **What** are the advantages and application for total station? 08 L₃ CO4

OR

- b) **Explain** working of distomat and tellurometer 08 L₃ CO4

Q.3 Solve any Two

- a) **Describe** with the help of neat sketches the characteristics of contour. 08 L₂ CO1
- b) How is the closing error in a traverse balanced? 08 L₂ CO2
- c) **Derive** the Expression for Base of Object Inaccessible: Instrument not in same vertical plane as the elevated object. 08 L₂ CO3
- d) **Explain** the principle of electronic distance measurement with neat sketch. 08 L₂ CO4

Q.4 Solve any Two

- a) **Derive** expression for horizontal distance reduced level of staff station for staff held vertical when the line of sight is inclined upwards for tacheometer? 09 L₃ CO5

- b) **Derive** expression for horizontal and vertical distance in fixed hair method when the staff is held normal to the line of sight and the measured angle is that of elevation. 09 L₃ CO5
- c) **Determine** the values of stadia constants from the following observation 09 L₃ CO5

Inst. St.	Staff Station	Distance (m)	Stadia reading	
			Lower	Upper
O	A	150	1.255	2.750
	B	200	1.000	3.000
	C	250	0.750	3.255

Q.5 **Solve any Two**

- a) Two tangents intersect at a chainage of 1000m the deflection angle being 30°. Calculate all the necessary data for setting out a circular curve of radius 200m by the method of offsets from the chord produced, taking a peg interval of 20m. 09 L₃ CO6
- b) **Describe** the method of setting out simple curve by method by Rankines/deflection angle method? 09 L₃ CO6
- c) **Explain** the method of setting out simple curve by method of offsets from long chords. 09 L₃ CO6

Q.6 **Solve any Three**

- a) **Describe** method of determining the constants of a tacheometer from field measurements. Explain the advantages of anallatic lens 06 L₂ CO5
- b) **Discuss** the methods of Tacheometry? 06 L₂ CO5
- c) Draw neat sketch of elements of simple curve and define Tangent length, Point of intersection, Long chord? 06 L₂ CO6
- d) **What** do you understand by degree of curve? **Derive** the relation between degree of curve and radius of curve? 06 L₂ CO6
