



**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)**

Siddharth Nagar, Narayanavanam Road, Puttur – 517583

QUESTION BANK (DESCRIPTIVE)

Subject with Code: SURVEYING (23CE0105)

Course & Branch: B.Tech & CE

Year & Sem: II Year & I Sem

Regulation: R23

UNIT –I

INTRODUCTION AND BASIC CONCEPTS, LINEAR DISTANCES, PRISMATIC COMPASS

1	a	Define surveying.	[L1][CO1]	[2M]	
	b	List any four accessories in surveying.	[L1][CO1]	[2M]	
	c	Make a note on non-metric chain.	[L1][CO1]	[2M]	
	d	Mention the various types of tape.	[L1][CO1]	[2M]	
	e	Differentiate between WCB and RB.	[L2][CO1]	[2M]	
2	a	Briefly explain about the primary divisions of surveying.	[L2][CO1]	[5M]	
	b	Mention the objectives of surveying.	[L1][CO1]	[5M]	
3	Explain in detail the classifications of surveying.		[L2][CO1]	[10M]	
4	a	Briefly explain the principles of surveying?	[L2][CO1]	[5M]	
	b	Make a note on Plane Table Surveying with their advantages.	[L1][CO1]	[5M]	
5	a	Briefly explain the various approximate methods in linear measurement.	[L2][CO1]	[5M]	
	b	A steel tape was exactly 30 m long at 20°C when supported throughout its length under a pull of 98N. A line was measured with this tape under a pull of 147N and at a mean temperature of 32°C and found to be 780 m long. The cross-sectional area of the tape = 0.03 cm ² , and its total weight = 6.8N. For steel, $\alpha = 11 \times 10^{-6}$ per °C and E for steel = 20.58 X 10 ⁶ N/cm ² . Compute the true length of the line if the tape was supported during measurement at every 30 m.	[L3][CO1]	[5M]	
6	Apply the appropriate tape corrections to obtain the correct horizontal distance in surveying measurements.		[L3][CO1]	[10M]	
7	a	List out the various accessories used in chain surveying and explain any two in detail.	[L2][CO1]	[6M]	
	b	Apply the indirect ranging method to establish intermediate survey points between two end stations and illustrate the procedure with a neat sketch.	[L3][CO1]	[4M]	
8	With neat sketch, explain the prismatic compass by indicating their parts.		[L2][CO1]	[10M]	
9	a	Apply the concepts of magnetic dip and declination to correct compass observations in surveying.	[L3][CO1]	[6M]	
	b	Define bearing & mention the types of bearing.	[L1][CO1]	[4M]	
10	a	Convert the WCB into RB. i) 331°30' ii) 297°00' iii) 127°30' iv) 23°00'	[L3][CO1]	[4M]	
	b	Apply the concept of local attraction to identify its effect on compass surveying and demonstrate the appropriate methods for correcting local attraction.	[L3][CO1]	[6M]	
11	The following bearings were observed in running a closed traverse. At what stations do you suspect local attraction? Find the correct bearings of lines and also compute the included angles.		[L4][CO1]	[10M]	
	LINE	FORE BEARING			BACKBEARING
	AB	71°05'			250°20'
	BC	110°20'			292°35'
	CD	161°40'			341°40'
	DE	220°50'			40°05'
EA	300°50'	121°10'			

UNIT –II
LEVELLING, CONTOURING, AREAS, VOLUMES

1	a	What is levelling in surveying?	[L1][CO2]	[2M]																								
	b	Differentiate between backsight and foresight.	[L2][CO2]	[2M]																								
	c	Define contour gradient.	[L1][CO2]	[2M]																								
	d	Make a note on Simpson’s one third rule.	[L1][CO2]	[2M]																								
	e	List out the various methods of calculating the volume.	[L1][CO2]	[2M]																								
2	a	Mention the various types of levels and explain briefly tilting level.	[L1][CO2]	[5M]																								
	b	Select and apply suitable methods of leveling for various field conditions in surveying.	[L3][CO2]	[5M]																								
3		Discuss the effects of curvature and refraction in leveling.	[L2][CO2]	[10M]																								
4		The following staff readings were observed successively with level, the instrument has been moved forward after the second, fourth and eighth readings: 0.875, 1.235, 2.310, 1.385, 2.930, 3.125, 4.125, 0.120, 1.875, 2.030 and 3.765. The first reading was taken with the staff held upon a benchmark of elevation 132.135m. Enter the readings in level book-form and reduce the levels. Apply the usual checks. Find also the difference in level between the first and the last points.	[L4][CO2]	[10M]																								
5	a	Briefly explain about the leveling staff.	[L2][CO2]	[5M]																								
	b	Mention the uses of contour in civil engineering works?	[L1][CO2]	[5M]																								
6		Define contour. Analyze a contour map and explain how the characteristics of contour lines represent different landforms.	[L4][CO2]	[10M]																								
7		What are the indirect methods of locating a contour? Write about any two methods.	[L1][CO2]	[10M]																								
8		The following perpendicular offsets were taken at 10m intervals from a survey line to an irregular boundary line: 3.25, 5.60, 4.20, 6.65, 8.75, 6.20, 3.25, 4.20 and 5.65m. Calculate the area enclosed between the survey line, the irregular boundary line and the first and the last offsets, by the application of (i) Average ordinate rule, (ii) Trapezoidal rule and (iii) Simpson’s rule.	[L4][CO2]	[10M]																								
9		The following perpendicular offsets were taken at 10m intervals from a survey line to a hedge:	[L4][CO2]	[10M]																								
		<table><tr><td>Chainage (m)</td><td>0</td><td>15</td><td>30</td><td>45</td><td>60</td><td>70</td><td>80</td><td>100</td><td>120</td><td>140</td></tr><tr><td>Offsets (m)</td><td>7.6</td><td>8.5</td><td>10.7</td><td>12.8</td><td>10.6</td><td>9.5</td><td>8.3</td><td>7.9</td><td>6.4</td><td>4.4</td></tr></table>			Chainage (m)	0	15	30	45	60	70	80	100	120	140	Offsets (m)	7.6	8.5	10.7	12.8	10.6	9.5	8.3	7.9	6.4	4.4		
	Chainage (m)	0			15	30	45	60	70	80	100	120	140															
	Offsets (m)	7.6			8.5	10.7	12.8	10.6	9.5	8.3	7.9	6.4	4.4															
	Calculate the area between the survey line, the hedge and the end offset by																											
	(a) Trapezoidal rule (b) Simpson’s rule.																											
10	a	List out the various methods of determining the areas of given surface.	[L1][CO2]	[4M]																								
	b	Discuss in detail about the volume by cross section method.	[L2][CO2]	[6M]																								
11		The areas within the contour line at the site of reservoir and the face of the proposed dam area as follows:	[L4][CO2]	[10M]																								
		<table><tr><td>Contour</td><td>Area (m²)</td><td>Contour</td><td>Area (m²)</td></tr><tr><td>101</td><td>1000</td><td>106</td><td>135000</td></tr><tr><td>102</td><td>1280</td><td>107</td><td>198500</td></tr><tr><td>103</td><td>9520</td><td>108</td><td>228600</td></tr><tr><td>104</td><td>14760</td><td>109</td><td>251200</td></tr><tr><td>105</td><td>87250</td><td></td><td></td></tr></table>			Contour	Area (m ²)	Contour	Area (m ²)	101	1000	106	135000	102	1280	107	198500	103	9520	108	228600	104	14760	109	251200	105	87250		
	Contour	Area (m ²)			Contour	Area (m ²)																						
	101	1000			106	135000																						
	102	1280			107	198500																						
	103	9520			108	228600																						
	104	14760			109	251200																						
	105	87250																										
	Taking 101 as the bottom level of the reservoir and 100 as the top level, Calculate the capacity of the reservoir.																											

UNIT –III
THEODOLITE SURVEYING, TRAVERSING

1	a	Define centering.		[L1][CO3]	[2M]	
	b	Differentiate between face left and face right observation.		[L2][CO3]	[2M]	
	c	What is departure and latitude?		[L1][CO3]	[2M]	
	d	Mention the formula to find the distance between the two points when the base is inaccessible by single plane method.		[L1][CO3]	[2M]	
	e	What is omitted measurement?		[L1][CO3]	[2M]	
2	a	Make a note on types of theodolite.		[L1][CO3]	[4M]	
	b	How do you measure horizontal angle between two points with the help of a theodolite by repetition method?		[L2][CO3]	[6M]	
3	With neat sketch, write about the parts of a transit theodolite.			[L1][CO3]	[10M]	
4	a	Write the temporary adjustments of a theodolite		[L1][CO3]	[5M]	
	b	How do you measure the horizontal angles between various points by reiteration method?		[L1][CO3]	[5M]	
5	Determine the R.L of the top of a temple from the following data. Station A and B are in line with the top of the temple.			[L3][CO3]	[10M]	
	Inst Station	Reading on BM(m)	Vertical Angle			R.L of BM
	A	1.085	10°48′			R.L of BM = 150.000m
	B	1.265	7°12′			AB=50 m
6	Derive an expression to find the height of an object by double plane method.			[L3][CO3]	[10M]	
7	Mention the various methods used for the measurement of angles in a theodolite traverse. Briefly explain the methods of included angles.			[L2][CO4]	[5M]	
8	a	Write short notes on methods of adjusting the traverse.		[L1][CO4]	[5M]	
	b	Briefly explain the Bowditch’s method of adjusting the traverse.		[L2][CO4]	[5M]	
9	The following are the latitudes and departures of closed traverse ABCD. Calculate the area by independent coordinate method.			[L3][CO4]	[10M]	
	LINE	LATITUDE	DEPARTURE			
	AB	204.6	113.9			
	BC	-234.9	205.8			
	CD	-150.7	-86.0			
	DA	181.0	-233.7			
10	a	Make a note on closing error.		[L2][CO4]	[5M]	
	b	Apply the appropriate method to determine the omitted measurement for different cases encountered in surveying.		[L3][CO4]	[5M]	
11	The table below gives the lengths and bearing of the lines of a traverse ABCDE, the length and bearing of EA having been omitted. Calculate the length and bearing of the line EA.			[L3][CO4]	[10M]	
	Line	Length (m)	Bearing			
	AB	204	87°30′			
	BC	226	20°20′			
	CD	187	280°00′			
	DE	192	210°3’0			
	EA	?	?			

UNIT –IV
CURVES, MODERN SURVEYING METHODS

1	a	How a curve is designated?				[L1][CO5]	[2M]
	b	Define tangent length of a curve.				[L1][CO5]	[2M]
	c	Make a note on staff intercept in tacheometry.				[L1][CO5]	[2M]
	d	List out the applications of total station.				[L1][CO5]	[2M]
	e	Write short note on infrared type of EDM instrument				[L1][CO5]	[2M]
2	a	Write short notes on types of circular curves.				[L1][CO5]	[5M]
	b	Draw a neat sketch of reverse curve and explain it.				[L2][CO5]	[5M]
3	Explain the various elements of a simple curve with a neat sketch.					[L2][CO5]	[10M]
4	Mention the various methods of setting out of simple curve. Briefly explain the field procedure of setting out of curve by two theodolite method.					[L2][CO5]	[10M]
5	Two tangents intersect at chainage 1250 m. The angle of intersection is 150^0 . Calculate all data necessary for setting out a curve of radius 250 m by the deflection angle method. The peg intervals may be taken as 20 m. Prepare a setting out table when the least count of the vernier is 20". Calculate the data for field checking.					[L2][CO5]	[10M]
6	A compound curve is made up of two arcs of radii 380 m and 520 m. The deflection angle of the combined curve is 105^0 and that of the first arc of radius 380 m is 58^0 . The chainage of the first tangent point is 848.55 m. Find the chainage of the point of intersection, common tangent point, and forward tangent point.					[L2][CO5]	[10M]
7	a	Define tacheometry and list the different systems of tacheometric measurement.				[L1][CO5]	[5M]
	b	Determine the values of stadia constants from the following observations.				[L3][CO5]	[5M]
		Instrument Station	Staff reading on	Distances (m)	Stadia readings		
					Lower	Upper	
		O	A	150	1.250	2.750	
		B	200	1.000	3.000		
		C	250	0.750	3.250		
8	a	Explain with sketch the principle of EDM instrument.				[L2][CO5]	[5M]
	b	Mention about the advantages of total station.				[L1][CO5]	[5M]
9	Briefly explain the types of EDM instrument.					[L2][CO5]	[10M]
10	Apply the principles of a total station to measure horizontal and vertical angles and distances, and illustrate the procedure with a neat sketch.					[L3][CO5]	[10M]
11	a	Write short notes on Global Positional System.				[L1][CO5]	[4M]
	b	Brief explain about Drone survey and LiDAR survey.				[L2][CO5]	[6M]

UNIT –V
PHOTOGRAMMETRY SURVEYING

1	a	Define focal length.	[L1][CO6]	[2M]
	b	What do you mean by nadir point?	[L1][CO6]	[2M]
	c	Make a note on Isocentre.	[L1][CO6]	[2M]
	d	Mention the various types of photogrammetry.	[L1][CO6]	[2M]
	e	Define photographic mapping.	[L1][CO6]	[2M]
2	a	Write short notes on basic concepts of photogrammetric surveying.	[L1][CO6]	[5M]
	b	Discuss about the perspective geometry of aerial photograph.	[L2][CO6]	[5M]
3		Brief explain with sketch the relief and tilt displacements.	[L2][CO6]	[10M]
4		Illustrate about terrestrial photogrammetry in detail.	[L2][CO6]	[10M]
5	a	Make a note on flight planning in photogrammetric surveying.	[L1][CO6]	[5M]
	b	Discuss briefly about ground control extension for photographic mapping.	[L2][CO6]	[5M]
6		Apply the principles of stereoscopy to interpret aerial photographs in photogrammetric surveying.	[L3][CO6]	[10M]
7		Briefly explain the various applications of photogrammetric surveying.	[L2][CO6]	[10M]
8		What is aerial triangulation? Mention how aerial triangulation works with their applications.	[L1][CO6]	[10M]
9		Explain in detail about radial triangulation.	[L2][CO6]	[10M]
10	a	Make a note on mapping using paper prints.	[L1][CO6]	[5M]
	b	Brief about mapping using stereo-plotting instruments with their types and applications.	[L2][CO6]	[5M]
11	a	Define mosaic with their types.	[L1][CO6]	[5M]
	b	Apply the concept of map substitutes to select suitable alternatives for different surveying applications.	[L3][CO6]	[5M]

Prepared by:
Dr.G.Prabhakaran
Professor/Civil