GUJARAT TECHNOLOGICAL UNIVERSITY BE - SEMESTER-III (New) EXAMINATION - WINTER 2015

Subject Code:2130601 **Subject Name:** Surveying **Time: 2:30pm to 5:00pm Instructions:**

Date:23/12/2015

Total Marks: 70

1. Attempt all questions.

- 2. Make suitable assumptions wherever necessary.
- 3. Figures to the right indicate full marks.

0-1 **Shorts Ouestions**

1 The working edge of the alidade is known as (a)Fiducial edge (b)Parallel edge (c)Drawing edge (d) Straight edge The U-fork and plumb bob are required for 2 (a) Levelling (b) Centring (c) Orientation (d) Bisecting 3 The operation of revolving the telescope in the horizontal plane about its vertical axis is called (a) Swinging (b) Transiting (c) Plunging (d) None of above 4 If N is the number of sides in a closed traverse, then the sum of interior angles should be equal to (a) $(2N + 4) \times 90^{\circ}$ (b) $(2N * 4) \times 90^{\circ}$ (d) $(N-4) \times 90^{\circ}$ (c) $(2N-4) \times 90^{\circ}$ In a closed traverse the algebraic sum of the latitudes and departures must be 5 equal to (a) 0^0 (b) 90° (c) 180° (d) 360° 6 When the vertical circle is to right side of the observer, it called (a) Telescope inverted (b) Telescope normal (c) Telescope reversed (d) None of above The combined correction for earth's curvature and refraction in linear 7 measurement is given by (a) 0.0673 D^2 (b) 0.0785 D^2 $(c)0.0112 D^2$ (d) None of above 8 The Shortest distance between the point of curve (P.C) and the point of tangency (P.T) is (a) Normal Chord (b) Long chord (c) Sub chord (d) half chord

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	9	The Curve preferred for vertical curve is a					
		(a) Circular (b) Spiral					
		(c) Parabola (d) hyperbola					
	10	Sounding in hydrography means					
		(a) Distance travelled by water sound in water body					
		(b) depth of water body at the point of measurement(c) Velocity of water waves					
		(d) None of the above					
	11	11 In ocean where depth of water is great the instrument used is					
		(a) Sounding poles (b) Lead lines					
		(c)Fathometer (d) Sounding machine					
	12	2 The branch of surveying which deals with the measurement of bodies of					
		is called					
		(a)Hydrology (b) Fluid mechanics					
		(c) Hydraulics (d) Hydrographic surveying					
	13	The accessory used in setting out works is					
		(a) Boning rod (b) Traveller					
		(c) batter board (d) All of the above					
	14	The accessory used for controlling the side slopes in embankments and in					
		cutting					
		(a) Batter board (b) traveller					
		(c) boning rod (d) Cross head					
Q-2	(a)	a) Explain three instruments of plane table survey with sketch					
	(b)	State different methods of measurement of horizontal angle using theodolite 04					
		and explain any one method					
	(c)	List the Fundamental lines of a theodolite and explain briefly the desired	07				
	relationship between these lines.						
		OR					
	(a)	Explain the stang of gala's traverse table	07				
	(\mathbf{C})	Explain the steps of gale's traverse table					
0-3	(a)	Define					
τ-		(1)Batter board (2) Boning road (3) Traveller					
	(b)	Derive the expression to compute the area by simpson's one third rule	04				
	(c)	Explain method of setting out of culvert					
		OR					
Q-3	(a)	Describe the permanent adjustment of a theodolite to make the vertical axis	03				
		truly vertical.					
	(b)	Define (1) Latitude (2) Departure (3 Independent Co-Ordinate 04					
		(4) Consective Coordinate					
	(c)	Describe the setting out of foundation plan of building 0					
0-4	(2)	Define	03				
V-4	(4)	(1) Line of Collimation (2) Telescone Normal (3) Telescone Inverted	03				
		(1) Line of commuton (2) released to multiply released to more the					

	(b)	Derive formula for height h and distance D in trigonometric leveling when							
	(c)	two instruments are set at same level. What are the elements of Simple circular Curve? Define with figure and give their relationship							
		OR							
Q-4	(a)	What are the requirement and purpose of transition curve							
	(b)	b) What is the Sounding? Explain methods of locating sounding?							
	(c)	A road embankment is 8m wide with a side slope of 1.5:1 the end .The ground levels at along cent Distance (M) ($R.L(M)$) 16 The Formation level of zero of earth work	le and 200m in mbankment h ntre line are as 0 50 54.5 165.5 chainage is 16	n length at the s as a rising grad s follow. 100 150 166.8 167 56 m. Calculate	formation level lient of 1 in 100 m 200 167.2 the volume of	07			
Q-5	 (a) Define (1) Face left (2) Face right (3) Transiting (b) Explain instrument use for taking sounding 								
	(c)	Prepare Gale's Traverse table to adjust the closing error of the closed traverse 0 ABCDA for Following data							
		Line L	Length (M)	Corrected					
			110	W.C.B					
		AB	80	$\frac{110}{170^0}$					
			95	$\frac{170}{250^0}$					
		DA	160	<u>350⁰</u>					
OR									

- Q-5 (a) Write advantage and disadvantage of Rankine's method 03
 - (b) What is vertical curve? Explain difference types of vertical curve 04
 - (c) Compute the values of the following components of simple curve and show them in detailed sketch. (1) Length Of Curve (2) Tangent Length (3) Length of long Chord (4) Apex Distance (5) Mid Ordinate The radius of curve=300 M deflection angle = 40^{0}