Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-III(New) EXAMINATION - SUMMER 2016

Subject Code:2130601 Date:02/06/2016

Subject Name: Surveying

Time:10:30 AM to 01:00 PM Total Marks: 70

Instructions:

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

MARKS

Q.1 Short Questions

14

- 1 In plane table survey, the inaccessible points may be located by
 - a Resection

b Radiation

c Intersection

- d Traversing
- 2 U fork and plumb bob are required for
 - a Bisecting

b Levelling

c Orientation

- d Centering
- 3 Turning the telescope in the vertical plane about its horizontal axis is called
 - a Plunging

s Swinging

c Transiting

- d Both a and c
- 4 If n be the number of lines of a traverse, then the sum of measured interior angles should be equal to
 - a $(2n + 4) \times 90^{\circ}$

b $(2n \times 4) + 90^{\circ}$

c $(2n-4)+90^{\circ}$

- d $(2n 4) \times 90^{\circ}$
- 5 Trigonometric levelling is the Method of levelling.
 - a Indirect

Direct

c Relative

- d Reciprocal
- 6 When the base of the object is accessible, the horizontal distance between the instrument and the object is D, the elevation H is given by
 - a D sinα

b D tanα

c $D \cos \alpha$

- d D cota
- 7 The radius of 1 degree curve is
 - a 1819m

b 1718m

c 1719m

- d 1918m
- **8** Shift of the curve is given by
 - a $L^2 / 6 R$

b $L/24 R^2$

 $c L^2/24 R$

- $d L^2 / 36 R$
- 9 In the trapezoidal formula, the line joining to the top ordinates is assumed to be
 - a Parabolic

b Straignt

c Curved

- d Circular
- 10 In simpson's rule, the number of ordinates must be
 - a Either odd or even
- b Odd

c Even

d In multiple of 3

	11	The angles from sounding boat are measured with a							
		a Nautical sextant b Compass							
		c Box sextant d Theodolite							
	12	The observations to establish MSL are recorded for about							
		a 9 years b 19 years							
		c 29 years d 39 years							
	13	Tunnel surveying consists of							
		a Surface survey b Underground survey							
		c Both a and b d None of the above							
	14	Bridges cannot be set out from the centre because							
		a The water body involved is generally a b Alignment of							
		perennial one bridge is inclined							
		c They generally consist of more than one span d Both a and c							
Q.2	(a)	Explain radiation method of plane table survey.							
C	(b)	• • • • • • • • • • • • • • • • • • • •							
	(c)								
		OR							
	(c)								
		it was observed that Σ L=1.42 and Σ D=-2.14. Calculate the length and bearing							
0.3	()	of the closing error.	0.3						
Q.3	(a)	_							
	(b) (c)								
	(0)	Derive the expressions for computing horizontal distance and elevation in trigonometric leveling while base of the object is inaccessible and instrument							
		stations are in the same vertical plane with the elevated object for the							
		instrument axis at same level.							
		OR							
Q.3	(a)	Define hydrographic surveying, sounding and datum.	03						
	(b)	<u>▲</u>							
	(c)	A theodolite was setup at P and the angle of elevation of the top of an electric	07						
	pole QR was 25°30'. The horizontal distance between P and Q, the fo								
		pole was 500m. determine the RL of the top of the pole if the staff reading held							
0.4	(a)	on a BM or RL 100m was 3.535m with the telescope in horizontal plane.	03						
Q.4	(a)	 a) Draw a neat sketch of simple circular curve with all notations and define po of intersection. 							
	(b)	Explain designation of curve.	04						
	(c)	Explain offsets from the long chord method of setting out circular curve with	07						
	` /	neat sketch.							
		OR							
Q.4	(a)	Define transition curve, compound curve and reverse curve.	03						
	(b)	Explain why super elevation is required in roads and railways. Derive an	04						
	(c)	expression for super elevation. Two straight lines intersect at chainage of 1150 50 m and the angle of	07						
	(c) Two straight lines intersect at chainage of 1150.50 m and the a deflection is 60°. If the radius of the curve is 450m, determine (1)								
		distance (2) length of curve (3) chainages of points of curvature and tangency							
		(4) length of long chord (5) Degree of curve (6) Apex distance and (7) Mid-							
		ordinate.							
Q.5	(a)	Derive the expression to compute area from offsets to a base line by trapezoidal	03						
-		rule.							
	(b)	Discuss how reservoir capacity is determined?	04						
	(c)	The ground level along the centre line of a road is given below. It is proposed	07						
		that the formation level of RL 215.0 should be kept constant of starting from							

the chainage zero. The formation width of the road is 7 m and the side slope 1:1. The ground is level transverse to the centre line.

Ch (m)	0	50	100	150	200	250	300
GL (m)	218.0	216.5	216.0	216.75	217.3	217.95	215.65

OR

Q.5 (a) Explain float gauge with reference to hydrography.
(b) Describe station pointer.
(c) Explain the procedure of setting out of building foundation.
03
04
07
