Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–III EXAMINATION – WINTER 2015

Subject Code:130601 **Date:05/01/2016**

Subject Name: Surveying

Time: 2:30pm to 5:00pm **Total Marks: 70**

Instructions:

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

Q.1 **(a)** What is orientation? Enlist different methods of orientation of a plane table & Explain any one. **05**

(b) Define the following terms: **04**

(i) Vertical axis (ii) Plunging (iii) Swinging (iv) Line of collimation

(c) Enlist different methods of plane table survey. Explain any one with neat sketch. **05**

Q.2 **(a)** Explain the repetition method to measure horizontal angles and how readings are recorded? What are the advantages of this method? **07**

(b) The following are the lengths and bearings of the lines of a Traverse ABCD. Calculate consecutive coordinates of points of a Traverse and also find out closing error and its direction. **07**

Line	Length (m)	Bearings
AB	235.10	338°20'
BC	317.40	82°22'
CD	215.00	167°00'
DA	281.60	259°40'

OR

(b) In a closed traverse ABCDEA, the lengths of lines DE and EA could not be measured due to an obstruction. Determine the lengths from the following data. **07**

Line	Length (m)	Bearings
AB	481	98°30'
BC	624	31°00'
CD	469	301°40'
DE	?	235°30'
EA	?	153°00'

Q.3 **(a)** What are the different types of transition curve? Describe them briefly with neat sketches. **07**

(b) The chainage of the intersection point of two straights is 100 chains + 50 links and the deflection angle is 45°20'. A circular curve of 250 m radius is to be set out to connect two straights. Calculate the necessary data for setting out the curve by the method of offsets from the chord produced. Length of one chain is 20 m with 100 links and peg interval is 20 m or 1 chain. **07**

OR

Q.3 **(a)** Explain why super elevation is required in roads and railways. Derive an expression for super elevation. **07**

(b) Discuss the method of determination of the difference of elevation of the instrument station and top of a chimney when it is not possible to set the instrument at two stations P and Q in the same vertical plane as the chimney. **07**

Q.4 **(a)** What are the elements of a simple circular curve? Explain with neat sketch **07**

(b) What is temporary adjustment of a theodolite? Describe the process of such adjustment. **07**

OR

Q.4 **(a)** What is use of Planimeter? What is the zero circle? Under what condition do the zero circles get traced by the tracing point? How you can find the area of zero circles? **07**

(b) A road embankment is 8 m wide and 200 m in length at the formation level, with a side slope of 1.5(H): 1(V). The embankment has a rising gradient of 1 in 100m.The ground levels at every 50m along the centre line are as follows **07**

Distance (m)	0	50	100	150	200
Ground RL (m)	164.50	165.20	166.80	167.00	167.20

Take formation level of zero chainage as 166 m. Calculate the volume of earth work by Trapezoidal rule & Prismoidal rule.

Q.5 **(a)** Discuss various methods of locating soundings in hydrographic surveying. **07**

(b) Explain the procedure of setting out of building foundation. **07**

OR

Q.5 **(a)** What are the different types of tide guage? Explain the working of non-registering tide gauges with suitable sketches. **07**

(b) What is Trigonometric leveling? What are its advantages and disadvantages over direct levelling? **07**

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