

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-III (New) EXAMINATION – WINTER 2018

Subject Code: 2130601

Date: 28/11/2018

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

- Q.1**
- (a) Define: (1) Axis of telescope (2) Swinging of telescope (3) Trunnion axis **03**
- (b) Enlist various methods of plane table survey. Describe the procedure for radiation method. **04**
- (c) What are the elements of simple circular curve? Explain with neat sketch. **07**

- Q.2**
- (a) What are the sources of errors in plane table survey? **03**
- (b) What is transition curve? What are the requirements of transition curve? **04**
- (c) What is three point problem in plane table survey? How is it solved by Lehmann's Method? **07**

OR

- (c) What are the adjustments required before starting plane table survey? How are these adjustments done? **07**
- Q.3**
- (a) If the latitude of a line is 184.96 m and its departure is -214.44 m, find its length and bearing. **03**
- (b) Calculate the value of (1) length of curve (2) tangent length (3) Apex distance (4) Length of long Chord, if the radius of simple circular is 400 m and angle of deflection is 50° . **04**
- (c) Explain step by step procedure of repetition method to measure horizontal angle with theodolite. And how are the readings recorded? **07**

OR

- Q.3**
- (a) Write a short note on super elevation **03**
- (b) What is closing error? Enlist various methods of balancing a traverse. Explain Transit rule **04**
- (c) The table below gives the length and bearings of lines of a traverse ABCDE, the length and bearing of EA having been omitted. Calculate the length and bearing of the line EA **07**

Line	AB	BC	CD	DE	EA
Length(m)	204	226	187	192	?
Bearing	$87^\circ 30'$	$20^\circ 20'$	280°	$210^\circ 3'$	?

- Q.4**
- (a) What is the importance of setting out works? **03**
- (b) Write a short note on correction for curvature and refraction **04**
- (c) A theodolite was set up at a distance of 200m from a tower. The angle of elevations to the top of the parapet was $8^\circ 18'$ while the angle of depression to the foot of the wall was $2^\circ 24'$. The staff reading on BM of RL 248.362 m with telescope horizontal was 1.286m, find the height of the tower and RL of top of the parapet. **07**

OR

- Q.4**

(a)

Explain briefly setting out building with the method of centre line rectangle .

03

(b)

Derive the equation for distance and elevation in trigonometric leveling when base of the object is inaccessible, the instruments axes are at different level and the difference in level is small.

04

(c)

In order to ascertain the elevation of the top (Q) of the signal on a hill , observations were made from two instrument stations P and R at a horizontal distance 100m apart, the stations P and R being in line with Q. The angles of elevations of Q at P and R were 28° 42' and 18°6' respectively 2.870 m and 3.750 m when instrument was at P and R, the telescope being horizontal. Determine the elevation of the foot of the signal if the height of signal above its base is 3m.

07
- Q.5**

(a)

What is hydrography? What are the operations involved in hydrographic survey?

03

(b)

What is prismoidal correction? Explain in detail.

04

(c)

An area enclosed between the dam and upstream contours at a reservoir site are as follows:

07

Contour level (m)	70	72	74	76	78
Enclosed area (sq. m.)	802	7426	64200	87000	426000

If the bottom level is 102m and FRL is 78m. determine the capacity of the reservoir by Trapezoidal and Prismoidal formula

OR

- Q.5**

(a)

What is sounding? What are the purposes of sounding?

03

(b)

Explain the procedure to find out Area with help of planimeter.

04

(c)

Derive the expression to compute area of an irregular boundary by Trapezoidal rule and Simpson's one third rule

07
