PARUL UNIVERSITY
FACULTY OF ENGINEERING & TECHNOLOGY
B.Tech. Summer 2018 - 19 Examination

Semester: 4   Date: 29/04/2019
Subject Code: 03104251   Time: 2:00pm to 4:30pm
Subject Name: Surveying   Total Marks: 60

Instructions:
1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1 Objective Type Questions -   (Each of one mark)   (15)
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   b   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)×90   b (2n×4)+90
    c (2n-4)+90   d (2n-4)×90
5. Trigonometric levelling is the ……. Method of levelling.
    a   Indirect   b   Direct
    c   Relative   d   Both a and b
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 cosα   d   D cotα

7. The radius of 1 degree curve (length 30m) is _____m.

8. Reverse curve is preferred on high ways and railways defined for _____speed.

9. In simpson's rule, the number of ordinates must be _____.

10. Total station is a combination of _____. (Tachometer / theodolite/ dumpy level /compass/
    an electronic theodolite /EDM)

11. _____ is a graphical method of surveying in which field works and
    plotting both are done simultaneously.

12. Full form of GPS is _____.

13. The shortest distance between the point of curve (P.C) and the point of tangency (P.T) is __

14. Setting out works involves _____

15. Setting out tunnels involves _____

Q.2 Answer the following questions. (Attempt any three) **(15)**

A) Enlist method of plane tabling. Write down advantages and disadvantages of plane tabling.

B) Discuss Reiteration method of horizontal angle measurement using theodolite.

C) Write short note on total station.

D) Draw a neat sketch of simple circular curve with all notations and define point of intersection

Q.3 A) A road embankment is 8m wide and 200m in length at the formation level with a side slope of 1.5:1 the embankment has a rising gradient of 1 in 100 m .The ground levels at along centre line are as follow. **(07)**

Distance (m)	0	50	100	150	200
R.L. (m)	164.5	165.5	166.8	167	167.2

The Formation level of zero chainage is 166 m. Calculate the volume of earth work.

B) A theodolite was set up at a distance of 155m from tower. The angle of elevation to the top of the parapet was 12°20´. While the angle of depression to the foot of the wall was 5°12´. The staff reading on the BM of RL 50.200 with the telescope horizontal was 0.98. Find the height of the tower and the reduced level of the top of the parapet. **(08)**

<div align="center">OR</div>

B) A tachometer was set up at a station A and the readings on a vertically held staff at B were 2.350, 2.600, 2.950, the line of sight being inclined at +7°24'. Another observation on a vertically held staff at B.M. gave the readings 1.200,1.185,1.170, the inclination of the line of sight being + 1°4'. Calculate the horizontal distance between A and B, and the elevation of B, if the R.L of B.M is 420.600 meters. The constants of the instrument were 100 and 0.25. **(08)**

Q.4 A) Two straight lines intersect at chainage of 1400 m and the angle of deflection is 24 °. If the radius of the curve is 275m, determine (1) tangent distance (2) length of curve (3) chainage of point of curvature (4) chainage of point of tangency (5) length of long chord (6) apex distance. **(07)**

<div align="center">OR</div>

A) Prepare Gale's Traverse table to adjust the closing error of the closed traverse ABCDA for Following data: **(07)**

Line	Length (M)	Corrected W.C.B
AB	110	110^0
BC	80	170^0
CD	95	250^0
DA	160	350^0

B) Describe with sketches, the characteristics of contours. **(08)**