PARUL UNIVERSITY
FACULTY OF ENGINEERING & TECHNOLOGY
B.Tech. Winter, 2019 – 20 Examination

Semester: 3   Date: 27/11/2019
Subject Code: 203104203   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 - (All are compulsory) (Each of one mark)   **(15)**

1. What is the line which passes through the optical centres of objective and eye piece?
a) axis of the telescope
b) centre of axis line
c) line of collimation
d) line of objective

2. The focal length of an objective varies with eyepiece.
a) True
b) False

3. What is the term used for an imaginary line on the ground joining points of equal elevation?
a) Level line
b) Line of sight
c) Datum
d) Contour

4. If one of the vernier is at $0°$ then another vernier reading shows / also shows _____
a) $90°$
b) $0°$
c) $180°$
d) $45°$

5. In trapezoidal formula, volume can be over estimated.
a) False
b) True

6. If Δ is the angle of deflection of a simple curve of radius R, the length of its long chord, is _____.

7. Determining the difference in elevation between two points on the surface of the earth, is known as_____.

8. The whole circle bearing of a line is 325^0. Its reduced bearing is _____.

9. Contours of different elevations may cross each other only in the case of _____.

10. Overturning of vehicles on a curve can be avoided by using_____.

11. Define omitted measurements.

12. Define latitude.

13. Define combined curve.

14. Define geodetic survey.

15. Define magnetic bearing.

Q.2 Answer the following questions. (Attempt any three)   **(15)**
A) Describe steps of vertical angular measurement using theodolite.
B) Define the term Contour. Write the uses of Contour Map.
C) Write the Sources of errors in theodolite survey.
D) What is tachometry? Briefly discuss purposes of tachometric surveying and methods of tachometry.

Q.3 A) What are the elements of simple circular curve? Define with figure and give their relationship. **(07)**

B) The offsets between survey line and boundary are as under. **(08)**

Chainage(m)	0	15	30	45	60	70	80	100	120	140
Offset(m)	7.6	8.5	10.7	12.8	10.6	9.5	8.3	7.9	6.4	4.4

Calculate the area between the survey line , the boundary and the end offsets using trapezoidal rule and simpson's rule.

OR

B) An embankments of width 11m and side slope 1.5:1 is required to be made on a ground which is level in a direction transverse to the centre line. The central height at 40 m intervals are as follows: **(08)**
1.00 , 1.25 , 2.15 , 2.50 , 1.85 , 1.35 , and 0.90.

Compute the volume of earthwork according to
1. Trapezoidal formula
2. Prismoidal formula.

Q.4 A) Following readings were taken to find out height of towers. **(07)**

Instrument station	Reading on B.M.	Angle of elevation	Remarks.
A	1.25	$12^0 42'$	R.L of B.M=100 m
B	2.75	$10^0 24'$	Distance AB=50 m

Compute R.L. of top of tower if station A and B and tower are in one vertical plane and station A is nearer to tower.

OR

A) Compute R.L. of top of tower with following observations. **(07)**

Instrument station	Reading on B.M.	Angle of elevation
A	2.50	$11^0 24'$
B	1.385	$9^0 18'$

R.L. of B.M. is 122.50 m. AB=50 m. Station A and B and tower are in one vertical plane.

B) Prepare gale's traverse table to adjust the closing error of the closed traverse ABCDA for the following data: **(08)**

Line	Length (m)	Corrected W.C.B.
AB	250	130^0
BC	600	42^0
CD	100	317^0
DA	635.46	$235^0 40'$