PAPER ID-311246

Subject Code: NCE303

Roll No: | | | | | | | | | | | | | |

B TECH
(SEM-III) THEORY EXAMINATION 2020-21
SURVEYING-I

Time: 3 Hours ***Total Marks: 100***

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. 2 x 10 = 20

Q no.	Question	Marks
a.	Define Benchmark. How is it established?	2
b.	Distinguish between a True Bearing and Magnetic Bearing.	2
c.	What do you mean by "closing error"?	2
d.	Write the functions of theodolite.	2
e.	What is reciprocal leveling? Where one can use this leveling?	2
f.	What is magnetic declination?	2
g.	What is triangulation?	2
h.	Calculate the true bearing of a line for which magnetic bearing is 46°34'. and declination is 5°38' East.	2
i.	List the various types of curves.	2
j.	What are the initial and final sub-cords?	2

SECTION B

2. Attempt any *three* of the following:

Q no.	Question	Marks
a.	The distance between two points A and B measured along a slope is 504 meters. Find the horizontal distance between A and B when i. The angle of slope is 120. ii. The slope is 1 in 45. iii. The difference in elevation of A and B is 65 m.	10
b.	Explain the indirect methods of contouring. Explain the advantages and disadvantages of these methods.	10
c.	What do you understand by balancing traverse? Describe any three method of adjusting the traverse.	10
d.	Why is a curve provided? Derive the expression for an ideal transition curve.	10
e.	A curve of radius 300 meter has a deflection angle of 76°, it has to be set with deflection angles from the backward tangent point, tabulate the angle and theodolite readings for locating points on the curve at 20-meter peg intervals. The chainage of the tangent point is 1008.65 meter.	10

SECTION C

3. Attempt any *one* part of the following:

Q no.	Question	Marks
a.	The bearings observed in traversing with a compass at a place where local attraction was suspected are given below: Line | FB | BB AB | 124°30' | 304°30' BC | 68°15' | 246°00' CD | 310°30' | 135°15' DA | 200°15' | 17°45' At what stations do you suspect local attraction? Find the correct bearings of the lines and the included angles.	10
b.	What are the sources of error in chaining? What precautions would you take to avoid them?	10

4. Attempt any *one* part of the following:

Q no.	Question	Marks
a.	What do you mean by contour? Describe the characteristics of contour.	10
b.	The following consecutive reading were taken with a level and 5-meter levelling staff on continuously sloping ground at a common interval of 20 meters: 0.385; 1.030; 1.925; 2.825; 3.730; 4.686; 0.625; 2.005; 3.110; 4.485. The reduced level of the first point was 208.125 meter. Rule out a page of level field book and enter the above readings. Calculate the reduced levels of the points by rise and fall method and the gradient of the line joining the first and the last point.	10

5. Attempt any *one* part of the following:

Q no.	Question	Marks
a.	Explain the basis on which length of transition curve is decided. Also, Define the following: i. Degree of curve, ii. Apex distance, iii. Tangent length, iv. Long chord in simple circular curve.	10
b.	A circular curve has 200-meter radius and 65^o deflection angle. Calculate its degree: i. By arc method, ii. By chord definition. Also, Calculate. iii. Length of curve, iv. Tangent length, v. Length of long chord, vi. Apex distance, vii. Mid-ordinate.	10

6. Attempt any *one* part of the following:

Q no.	Question	Marks
a.	Explain the steps involved in measuring a horizontal angle with a theodolite.	10
b.	The following staff reading were observed successively with a level, the instrument having been moved after third, sixth and eight readings: 2.228; 1.606; 0.988; 2.090; 2.864; 1.262; 0.602; 1.982; 1.044; 2.684 meters. Tabulate a level field book and calculate the Reduced Level (RL) of points if the first reading was taken with a staff held on a benchmark of 432.384 meter.	10

7. Attempt any *one* part of the following:

Q no.	Question	Marks
a.	What is orientation in Plane Table surveying? Distinguish between Resection and Intersection methods as applied to Plane table surveying.	10
b.	For the following traverse, compute the length of the line CD so that A, D and E may be in one straight line.	10

Line	Length	Bearing
AB	110	83°12’
BC	165	30°42’
CD	?	346°06’
DA	212	16°18’