CBCS SCHEME

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17MN45

Fourth Semester B.E. Degree Examination, Jan./Feb. 2021
Mine Surveying - I

Time: 3 hrs. Max. Marks: 100

Note: ***Answer any FIVE full questions, choosing ONE full question from each module.***

Module-1

1 a. The distance measured between two points on a sloping ground is 450m. Find the correction to be applied and the horizontal distance if : i) The angle of slope is 10^0 ii) The slope is 1 in 5 iii) The difference in elevation between the two points is 45m. **(06 Marks)**

b. Given below are the bearings observed in a traverse survey conducted with a prismatic compass at a place where local attraction was suspected.

Line	Fore Bearing	Back Bearing
AB	124^0 30'	304^0 30'
BC	68^0 15'	246^0
CD	310^0 30'	135^0 15'
DA	200^0 15'	17^0 45'

At what stations do you suspect local attraction? Find the correct bearings of the line and the included angles. **(14 Marks)**

OR

2 a. The bearings observed in traversing with a compass at a place where local attraction was suspected are given below :

Line	Fore Bearing	Back Bearing
AB	S 45^0 30' E	N 45^0 30' W
BC	S 60^0 00' E	N 60^0 40' W
CD	N 03^0 20' E	S 05^0 30' W
DA	S 85^0 00' W	N 83^0 30' E

At what stations do you suspect local attraction? Find the corrected bearings of the line. **(10 Marks)**

b. A chain line ABC crosses a river at 90^0 B & C are two points located at the near and far bank respectively. AB = 57.73m , BD = 100m and $\angle ABC = 90^0$. The bearings of C & A taken at D are 30^0 and 120^0 respectively. Find the width of the river. **(10 Marks)**

Module-2

3 a. Determine the effect of curvature and refraction on leveling. **(08 Marks)**

b. The following consecutive readings were taken with a level and a 4.0m staff on a continuously sloping ground at a common interval of 30m :
0.780 ; 1.535 ; 1.955 ; 2.430 ; 2.985 ; 3.480 ; 1.155 ; 1.960 ; 2.365 ; 3.640 ; 0.935 ; 1.045 ; 1.630 & 2.545.
The reduced level of the first point A was 180.750m. Rule out a page of a level field book and enter the above readings. Calculate the reduced levels of the points by the collimation system and calculate the gradient of the line. **(12 Marks)**

OR

4 a. Explain the process of setting up a level and temporary adjustments to be adopted during setting up a level. **(08 Marks)**

b. The following consecutive readings were taken with a level and 5 meter leveling staff on continuously sloping ground at a common interval of 20m : 0.385 ; 1.030 ; 1.925 ; 2.825 3.730 ; 4.685 ; 0.625 ; 2.005 ; 3.110 ; 4.485. The reduced level of the first point was 208.125m. Rule out a page of a level field book and enter the above readings. Calculate the reduced levels of the points by Rise and Fall method and also the gradient. **(12 Marks)**

Module-3

5 a. Explain the principle of triangulation considering braced quadrilateral and determine the independent co-ordinates of the same. **(10 Marks)**

b. Explain the characteristics of contour lines, with neat sketch. **(10 Marks)**

OR

6 a. Prove that the best shape of a triangle is isosceles (well conditioned triangle) with base angles equal to 56^0 14. **(10 Marks)**

b. Explain the Indirect methods of locating contours on ground. **(10 Marks)**

Module-4

7 a. Explain the methods to determine the area from offsets to an irregular boundary. **(10 Marks)**

b. A railway embankment is 10m wide with side slopes 1½ to 1. Assuming the ground to be level in a direction transverse to the centre line, calculate the volume contained in a length of 120m, the centre heights at 20m intervals being in metres 2.2 , 3.7 , 3.8 , 4.0 , 3.8 , 2.8 and 2.5. **(10 Marks)**

OR

8 a. Explain the process of determining the volume by spot levels and contours. **(10 Marks)**

b. The following perpendicular offsets were taken from a chain line to an irregular boundary.

Chainage (m)	0	30	60	90	120	150	180	210
Offset length (m)	0	2.65	3.8	3.75	4.65	3.60	5	5.80

Calculate the area between the chain line and the irregular boundary : i) Trapezoidal rule ii) Simpsons rule iii) AVS – ordinate rule iv) Mid – ordinate rule. **(10 Marks)**

Module-5

9 a. Explain the miscellaneous operation that can be carried out using a theodolite. **(10 Marks)**

b. Explain the method to determine the Horizontal angle using theodolite to a finer degree of accuracy. **(10 Marks)**

OR

10 a. Explain the methods of Balancing of traverse. **(10 Marks)**

b. Explain the method of determining a series of horizontal angle from a theodolite stationed at a common vertex point. **(10 Marks)**

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