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Roll No. :

320453(20)

B. E. (Fourth Semester) Examination

April-May 2021

(New Scheme)

(Civil Engg. Branch)

SURVEYING-II

Time Allowed : Three hours

Maximum Marks : 80

Minimum Pass Marks : 28

Note : Part (a) in each unit is compulsory. Attempt any two from part (b), (c) and (d).

Unit-I

1. (a) Define well-conditioned triangle. 2
- (b) What do you mean by strength of figure? And how is determined. 7

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- (c) If there are two stations P and Q at elevations of 200 m and 995 m, respectively. The distance of Q from P is 105 km. If the elevation of a peak M at a distance of 38 km from P is 301 m, determine whether Q is visible from P or not. If not, what would be the height of scaffolding required at Q so that Q becomes visible from P ? 7
- (d) What are the various corrections applied in base line measurement? Explain in detail. 7

Unit-II

2. (a) Define residual error. 2
- (b) Find the most probable values of the following angles closing the horizontal at a station :
- $P = 45^\circ 23' 37''$ Weight = 1
 $Q = 75^\circ 37' 15''$ Weight = 2
 $R = 125^\circ 21' 21''$ Weight = 3
 $S = 113^\circ 37' 59''$ Weight = 3 7
- (c) An angle A was measured by different persons and the following are the values :

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Angle	Number of measurements
$65^\circ 30' 10''$ 2
$65^\circ 29' 50''$ 3
$65^\circ 30' 00''$ 3
$65^\circ 30' 20''$ 4
$65^\circ 30' 10''$ 3

Find the most probable value of the angle. 7

- (d) Form the normal equation for x , y and z from the following equations :

	Weight
$3x + 3y + 2z - 4 = 0$	2
$3x + 2y + 2z - 5 = 0$	3
$4x + y + 4z - 21 = 0$	1

Unit-III

3. (a) What is objective of tacheometry? 2
- (b) Derive an equation for stadia constant of a tachometer. 7
- (c) Write short notes on laser meter and range finder. 7

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- (d) To determine the gradient between two points A and B a tacheometer was set up at another station C and the following observations were taken, keeping the staff vertical.

Staff at	Vertical angle	Stadia readings (m)
A	$+ 4^{\circ} 20' 00''$	1.300, 1.610, 1.920
B	$+ 0^{\circ} 10' 40''$	1.100, 1.410, 1.720

If the horizontal angle ACB is $35^{\circ} 20' 00''$. Determine the average gradient between A and B , $k = 100$, $c = 0$.

7

Unit-IV

4. (a) What do you mean by photo theodolite? 2
- (b) Define principal point, plumb point and isocenter. And derive relation between them. 7
- (c) Derive an expression for scale of tilted photograph. 7
- (d) Derive expression for relief displacement in a vertical photograph. 7

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Unit-V

5. (a) What are applications of hydrographic surveying? 2
- (b) What are various types of gauges? Explain in detail. 7
- (c) What are various methods of plotting sounding? Explain in detail. 7
- (d) What are various methods of locating sounding? Explain in detail. 7

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