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Roll No. :

320453(20)

B. E. (Fourth Semester) Examination,

April-May 2020

(New Scheme)

(Civil Branch)

SURVEYING-II

Time Allowed : Three hours

Maximum Marks : 80

Minimum Pass Marks : 28

Note : Attempt all questions. Part (a) of each question is compulsory. Answer any two parts from (b), (c) and (d).

*** Unit-I**

1. (a) Define triangulation and trilateration. 2
- (b) The altitude of two proposed station *A* and *B*,

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100 km apart, are respectively 420 m and 700 m. The intervening situated at C, 70 km from A has an elevation of 478 m. Ascertain if A and B are inter visible, and, if necessary, find how much B should be raised so that the line of sight must nowhere be less than 3 m above the surface of the ground.

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- (c) Write short notes on any two of the following : 7
- (i) Reconnaissance of triangulation
 - (ii) Classification of triangulation system
 - (iii) Strength of figure
- (d) What are the types of correction to be applied in base line? Explain with formula. 7

Unit-II

2. (a) Define the principle of least square in survey adjustment. 2
- (b) Define the following : 7
- (i) Independent quantity
 - (ii) Conditional quantity
 - (iii) Residual error
 - (iv) Most probable error

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- (v) Most probable value
 - (vi) Normal equation
 - (vii) Conditional equation
- (c) The angles of triangle ABC were recorded as follows :

Angle	Weight
$A = 77^{\circ}14'20''$	4
$B = 49^{\circ}40'35''$	3
$C = 53^{\circ}04'52''$	2

Give the corrected values of the angles. 7

- (d) Explain in detail notes on adjustment triangulation figure. 7

Unit-III

3. (a) Write short note on range finders. 2
- (b) Derive an expression for distance and elevation for inclined sights when staff is held normal. 7
- (c) Write short notes on any two : 7
- (i) Total station
 - (ii) Geodimeter and tellurometer

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- (iii) Multiplying constant and additive constant
- (d) Subtense theodolite
- (d) A tacheometer was set up at a station C and the following readings were obtained on a vertically held staff.

Inst Station	Staff station	Vertical angle	Hair reading
C	BM	$-5^{\circ}20'$	1.150, 1.80, 2.450
C	D	$+8^{\circ}12'$	0.750, 1.500, 2.250

The constant of instrument were 100 and 0.15.
Find the horizontal distance CD and RL of BM is 750.500 m.

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Unit-IV

- 4. (a) What is meant by phototheodolite? Where it is used? 2
- (b) Define : any four : 7
 - (i) Photographic surveying
 - (ii) GIS
 - (iii) Tilt
 - (iv) Exposure station
 - (v) Vertical photograph

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- (c) A section line AB appears to be 10.16 cm on a photograph for which the focal length is 16 cm. The corresponding line measures 2.54 cm on a map which is to a scale 1/50,000. The terrain has an average elevation of 200 m above mean sea level. Calculate the flying altitude of the aircraft, above mean sea level, when the photograph was taken. 7
- (d) Differentiate at least 7 points between stereo photogrammetric and aerial surveying. 7

Unit-V

- 5. (a) What is fathometer? 2
- (b) Define the purpose of hydrographic surveying? Write a short note on three point problem in hydrographic survey. 7
- (c) A, B and C are three visible stations in a hydrographic survey. The computed sides of triangle ABC are $AB = 1130$ m, $BC = 1372$ m, and $CA = 1889$ m. Outside of this triangle (and nearer to AC) a station P is established and its position is to be found by three-point resection on A, B and C. The angles APB and BPC being $42^{\circ}35'$ and $54^{\circ}20'$. Determine PA and PC. 7

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(d) Explain the method of locating soundings in hydrographic surveying.

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(ii) Differentiate in least 7 points between stereo photogrammetric and aerial surveying.

Group V

2. (a) What is bathymetry?
- (b) Define the purpose of hydrographic surveying. Write a short note on three point problem in hydrographic survey.
- (c) A, B and C are three visible stations in a hydrographic survey. The computed sides of triangle ABC are $AB = 11.96$ m, $BC = 13.75$ m and $CA = 18.89$ m. One side of this triangle (and hence to AC) a station D is established and its position is to be found by three-point resection on A, B and C. The angles $\angle ADB$ and $\angle BDC$ being $12^\circ 45'$ and $74^\circ 20'$. Determine $\angle BAC$ and $\angle ABC$.