

Roll No.

Total Pages : 04

BT-4/M-20
SURVEYING-II
CE-210N

34113

Time : Three Hours]

[Maximum Marks : 75

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit.

Unit I

1. (a) Explain about reconnaissance survey in detail. Write the points to be kept in mind while selecting triangulation section. 7
- (b) The attitudes of two-proposed stations A and B. 100 km apart are respectively 420 m and 700 m. The intervening obstruction situated at C, 70 km from A has an elevation of 478 m. Ascertain if A and B are intervisible and if necessary, find by 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 ? 8

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2. (a) Discuss the base of the object inaccessible when instrument station not in the same vertical plane as the elevated object. 7
- (b) In the trigonometrical measurement of the difference in level of two stations P and Q. 10480 m apart the following data were obtained :
- Instrument at P, angle of elevation of Q = $0^{\circ}15''$
Height of instrument at P = 1.42 m
Instrument at Q, angle of depression of P = $3^{\circ}33''$
Height of Instrument at Q = 1.45 m
Height of signal at P = 3.95 m
Height of signal at Q = 3.92 m
Find the difference in level between P and Q and the curvature and refraction correction. Take $R \sin 1'' = 30.38$ metres. 8

Unit II

3. (a) Define the following :
- (i) Most probable value
 - (ii) Most probable error
 - (iii) True error
 - (iv) Residual error. 8

- (b) An angle A was measured by different persons and following are the values :

Angle	Number of Measurement
65°30'10"	2
65°29'50"	3
65°30'00"	3
65°30'20"	4
65°30'10"	3

Find the most probable value of the angle. 7

4. (a) Discuss in brief the laws of weights. 8
- (b) The following-observations of three angles A, B and C were taken at one station :

$$A = 75^{\circ}32'46''.3 \text{ with weight } 3.$$

$$B = 55^{\circ}09'53''.2 \text{ with weight } 2.$$

$$C = 108^{\circ}09'28''.8 \text{ with weight } 2.$$

$$A + B = 130^{\circ}42'41''.6 \text{ with weight } 2.$$

$$B + C = 163^{\circ}19'22''.5 \text{ with weight } 1.$$

$$A + B + C = 238^{\circ}52'9''.8 \text{ with weight } 1.$$

Determine the most probable value of each angle. 7

Unit III

5. (a) Find the L.M.T. of observation at a place the following data :
L.A.T. of observation = $15^{\text{n}}12^{\text{m}}40^{\text{s}}$
E.T. at G.M.N. = $5^{\text{m}}10.65^{\text{s}}$ additive to apparent time and increasing at 0.22^{s} per hour.
longitude of the place = $20^{\circ}30'W$. **8**
- (b) What are the co-ordinate systems ? Explain any *two*. **7**
6. (a) Define the following :
(i) The Azimuth (A) **5**
(ii) The Declination (δ).
- (b) Explain the working principle and survey with total station with neat sketch. **10**

Unit IV

7. (a) The scale of an aerial photograph is $1 \text{ cm} = 100 \text{ m}$ the photograph size is $20 \text{ cm} \times 20 \text{ cm}$. Determine the number of photographs required to cover an area of 100 sq. km if the longitudinal lap is 60% and the side lap is 30% . **8**
- (b) What is the scale of vertical photograph ? Discuss in brief. **7**
8. Explain the basic components, data input and storage output of GIS and GPS. **15**