

B.Tech Degree IV Semester Examination April 2011

CE 402 A/B SURVEYING II (2006 Scheme)

Time : 3 Hours

Maximum Marks : 100

PART - A (Answer ALL questions)

(8 x 5 = 40)

- I.
- (a) Which are the elements of a simple curve?
 - (b) How will you arrive at the length of a transition curve?
 - (c) What are the factors that influence the selection of stations in a triangulation survey?
 - (d) Explain the figure adjustment of a plane triangle.
 - (e) Explain any one method of determination of latitude of a place.
 - (f) If the longitude of the place of observation, is $93^{\circ} 45' 45'' E$, find the L.M.T of the place.
 - (g) Explain any one method of locating soundings.
 - (h) Determine the flying height of the camera above M.S.L if the focal length is 150 mm, the average elevation of the ground surface is 1500 m and the scale of photograph is 1 : 10, 000.

PART - B

(4 x 15 = 60)

- II. The straight lines intersect at a chainage of 1150.50, and the angle of intersection is 60° . If the radius of the curve is 500 m, determine :
- (i) tangent distance
 - (ii) length of the curve
 - (iii) chainage of points of curvature and tangency
 - (iv) length of the long chord
 - (v) degree of curve
 - (vi) apex distance and the mid - ordinate
- (15)
- OR
- III. Two tangents intersect at the chainage 1190 m, the deflection angle being 36° . Calculate all the data necessary for setting out a curve with a radius of 300 m by deflection angle method. The peg interval is 30 m. (15)
- IV. (a) What do you understand by a satellite station? (5)
(b) Two triangulation stations A and B are 45 Km apart. Their elevations are 244.45 m and 275.00 m respectively. The intervening ground may be assumed to have a mean elevation of 222 m. Find the minimum height of the signal required to be erected at B so that the line of sight may not graze the ground less than 3 m. (10)
- OR
- V. (a) Which are the different laws of weight? (7)

(P.T.O.)

- (b) The following observations refer to the values of the angles A, B, C at a triangulation station :

$$A = 20^{\circ} 18' 26.4''$$

$$B = 36^{\circ} 28' 14.8''$$

$$C = 56^{\circ} 46' 44.5''$$

Fulfilling the condition that $A + B = C$, find the most probable values of A, B and C.

(8)

- VI. Find the declination and the hour angle of a star from the following data :

$$\text{Latitude of the place} = 48^{\circ} 30' N$$

$$\text{Azimuth of the star} = 50^{\circ} W$$

$$\text{Altitude of the star} = 28^{\circ} 24'$$

(15)

OR

- VII. Find the L.S.T at a place in longitude $76^{\circ} 30' E$ at 4 h 30 m P.M, G.S.T at G.M.N being 4 h 36 m 18 s.

(15)

- VIII. P, Q and R are three visible stations in a hydrological survey. The computed sides of the ΔPQR are : PQ = 1000 m, QR = 1300 m and RP = 1900 m. Outside the ΔPQR and nearer to PR a station X is established and its position is to be found by three point resection P, Q and R, the angles PXQ and QXP being respectively 40° and 50° , find PX and RX.

(15)

OR

- IX. (a) Explain the principle of the method of Terrestrial photogrammetry.
(b) A ground area 30 Km x 20 Km is to be covered by aerial surveying. The following data are available :

(5)

$$\text{Format size} : 230 \text{ mm} \times 230 \text{ mm}$$

$$\text{Scale} : \text{R.F} = 1 : 20,000$$

$$\text{Longitudinal overlapping} : 60\%$$

$$\text{Lateral overlapping} : 20\%$$

Calculate the air base length and also the number of photographs required.

(10)
