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Total Number of Pages: 02

B.Tech
PECI5303

5th Semester Back Examination 2017-18

Surveying-II

BRANCH : CIVIL

Time: 3 Hours

Max Marks: 70

Q.CODE: B337

Answer Question No.1 which is compulsory and any five from the rest.
The figures in the right hand margin indicate marks.

Q1 Answer the following questions : (2 x 10)

- Write the advantages and disadvantages of fixed hair method of tacheometry.
- Enlist the various uses of tacheometry.
- Derive the relationship between the radius and the degree of curve.
- What are the basic criteria for the design of transition curve?
- What do you mean by extension of base line? How is it done?
- Draw the figure for arrangement of centred triangle and polygon.
- List the Laws of Weight.
- Explain the method of least square.
- What fundamental quantities can be measured by a total station?
- Distinguish between terrestrial photogrammetry and aerial photogrammetry:

Q2 a) Find the focal length of anallactic lens and distance at which it should be placed to get a multiplying constant of 100 from the following data: Focal length of objective lens = 24cm, stadia interval = 0.17cm, distance between the objective lens and vertical axis = 10.5cm. (5)

b) A tacheometer is placed at a station A and readings on a staff held vertical upon a B.M. of RL =100.0 meter and at station B are 0.640, 2.200, 3.760 and 0.010, 2.120, 4.230 m respectively. The angle of depression of the telescope in the first case is 6° 19' and in the second case is 7° 42'. Find the horizontal distance from A to B and the RL of station B, if the instrument has constants 100 and 0.5 (5)

Q3 a) Draw with neat sketch a simple curve showing the elements of it. (4)

b) Two parallel railway lines are to be connected by a reverse curve. If the lines are 10m apart, and the maximum distance between tangent points measured parallel to the straight is 50m. (6)

- Find (a) the radius R if $R_1 = R_2 = R$
(b) the radius R_2 if $R_1 = 50m$
(c) Also calculate the lengths of both the curves.

Q4 a) List the factors considered while selecting the site for base line. (4)

b) Two triangulation stations A and B are 60 km apart and the elevation of A is 240 m and that of ground at B is 280 m. Find the minimum height of a signal required at B so that the line of sight may not pass near the ground than 2.0 m. Assume elevation of intervening ground uniformly as 210 m. (6)

210 Q5 a) The relationship between the angles A, B and C is given by $A = 4B \times C$. Angle B is measured as $20''$ and angle C as $30''$. The Standard error in measurement of B is $\pm 0.03''$ while in the measurement in C it is $\pm 0.04''$. Determine the Standard Error of A. (5) 210

b) The followings are the direct measurement of a base line: (5)
3678.32 m, 3678.38 m, 3678.09 m, 3678.29 m, 3678.26 m, 3678.98 m.
Find the most probable value of the length of the base line and its probable error.

210 Q6 a) Directions are observed from a satellite station S, 10m from station A, with the following results (5)
A = $00^{\circ} 00' 00''$
B = $140^{\circ} 20' 20''$
C = $245^{\circ} 30' 25''$
D = $305^{\circ} 15' 35''$
If the lengths of sides AB, AC and AD are 3350.54 m, 4132.43m and 3145.83m respectively. Determine the direction of AB, AC and AD. 210 210 210

b) Explain the procedure of setting out a building by the method of *circumscribing rectangle*. (5)

210 Q7 a) A map of area plotted at scale of 1 in 20,000 is available. If the length of a runway on the map is 120mm, determine the scale. The photo distance of the runway is 188mm. (2) 210

b) How would you determine the ground coordinates and elevations in terrestrial photogrammetry? (4)

c) What are the practical uses of aerial photogrammetry? (4)

Q8 Write short notes on (any two) (5 x 2)

a) Base extension

b) Satellite Station

c) Terrestrial photogrammetry

d) Method of least square