

3E1132	Roll No. _____	Total No of Pages: 4
	3E1132 B. Tech. III - Sem. (Main / Back) Exam., Dec. 2019 PCC Civil Engineering 3CE4-05 Surveying	

Time: 3 Hours

Maximum Marks: 120

Instructions to Candidates:

Attempt all ten questions from Part A, five questions out of seven questions from Part B and four questions out of five from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used /calculated must be stated clearly.

Use of following supporting material is permitted during examination.
(Mentioned in form No. 205)

1. NIL _____

2. NIL _____

PART - A

(Answer should be given up to 25 words only)

[10×2=20]

All questions are compulsory

- Q.1 What do you mean by indirect ranging? [2]
- Q.2 What is the relation between fore bearing and back bearing? [2]
- Q.3 What do you mean by magnetic meridian? [2]
- Q.4 What is magnetic declination? [2]
- Q.5 What do you mean by reciprocal levelling? [2]
- Q.6 What are the temporary adjustments of Vernier theodolite? Only name. [2]
- Q.7 What do you mean by contour interval? [2]
- Q.8 What is the arc definition of simple circular curve? [2]
- Q.9 Write the name of different system of tachometric measurements. [2]
- Q.10 Write any two properties of electromagnetic waves used in EDM instruments. [2]

[3E1132]

Page 1 of 4

[3860]

PART - B

(Analytical/Problem solving questions)

[5×8=40]

Attempt any five questions

Q.1 A base line measured with a steel tape gives an approximate length of 1000 m. Compute the correct length of the base line at mean sea level when the pull at the standardization equal to 15kg. The applied pull is 23 kg. The cross - sectional area of tape is 0.0645 cm^2 and $E = 2.11 \times 10^6 \text{ kg/cm}^2$. Temperature T_m and T_o are 35°C and 15°C , respectively. The coefficient of thermal expansion of the material of the tape per $^\circ\text{C}$ is 11.5×10^{-6} . The difference in level of the two ends of base line is 2 m. $R = 6400 \text{ km}$. Elevation of base line above mean sea level = 1000 m. [8]

Q.2 The following bearing were observed in running a compass traverse. [8]

Line	Fore bearing	Back Bearing
AB	$66^\circ 15'$	$244^\circ 0'$
BC	$129^\circ 45'$	$313^\circ 0'$
CD	$218^\circ 30'$	$37^\circ 30'$
DA	$306^\circ 45'$	$126^\circ 45'$

Find the correct fore and back bearing and the true bearing of the line, given that the magnetic declination is $1^\circ 40' \text{E}$.

Q.3 To determine the height of a chimney a theodolite was kept at two stations I_1 and I_2 200 m apart, I_1 being nearer to the chimney. The reading at the benchmark (of RL 1020.375 m) were 1.35 m from station I_1 and 2.15 m from I_2 . The vertical angles to the top of the chimney were $19^\circ 30'$ and $8^\circ 15'$ from station I_1 and I_2 respectively. Find the horizontal distance and RL of the top of the chimney. [8]

- Q.4 The following consecutive readings were taken with a level and a 4.0 m staff on a continuous sloping ground at a common interval of 30 m.
0.780, 1.535, 1.955, 2.430, 2.985, 3.480, 1.155, 2.365, 3.640, 0.935, 1.045, 1.630 and 2.545
The reduced level of the first point A was 180.750 m. Calculate the reduced level of the points by height of instrument method. [8]
- Q.5 (a) Discuss briefly the effect of curvature and refraction in levelling. Derive an expression for curvature, refraction and for curvature and refraction combined correction. [4]
- (b) An observer stands on the top of a tower with his eye level at 85m. Determine the distance to visible horizon and the dip of horizon. The radius of earth may be taken as 6400 km. [4]
- Q.6 Derive the expression for finding the RL of a point when the base of the object is inaccessible and the instrument station are in the same vertical plane. Instruments axis are not in same level. http://www.rtuonline.com [8]
- Q.7 (a) Describe the method used for setting out of culverts. [4]
- (b) What is tilt distortion? Explain [4]

PART - C

(Descriptive/Analytical/Problem Solving/Design Questions) [4×15=60]

Attempt any four questions

- Q.1 Two Tangents intersect at chainage of 2500m. The deflection angle being $50^{\circ}30'$. Calculate the necessary data for setting out a curve of 15 chain radius to connect the two tangents if it is intended to set out the curve by Rankine's method of deflection angle. Take peg interval 20m, length of the chain being equal to 20 m. [15]
- Q.2 What is total station? Explain the parts of total station and write the advantages of total station over the Vernier theodolite. [15]

Q3 Derive the expression for distance and elevation formulae when – [15]

- (a) Staff is inclined to line of sight.
- (b) Staff is Normal to line of sight.

Q.4 While making reconnaissance survey through the woods, a surveyor with a hand compass, started a point A and walked a 1000 m in the direction of $S67^{\circ}45'W$ and reached a point B. Then he changed his direction and walked 512 m in the direction $N10^{\circ}20'E$ and reached point C. Then again he changed his direction and walked 1504 m in the direction $S65^{\circ}30'E$ and reached a point D. Now the surveyor wants to return to starting point A. In which direction should he move and how much meters should he walk. [15]

Q5 Write correction applied to length measurement with chain or tape. [15]

http://www.rtuonline.com

Whatsapp @ 9300930012

Your old paper & get 10/-

पुराने पेपर्स भेजे और 10 रुपये पायें,

Paytm or Google Pay से