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Total Number of Pages : 02

B.Tech
PCCE4205

4th Semester Back Examination 2017-18

SURVEYING - I

BRANCH : CIVIL, MECH

Time : 3 Hours

Max Marks : 70

Q.CODE : C1176

Answer Question No.1 which is compulsory and any five from the rest.

The figures in the right hand margin indicate marks.

Answer all parts of a question at a place.

Q1 Answer the following questions : (2 x 10)

- Define ill conditioned triangle.
- In optical square, the two mirrors are placed at an angle of -----
- Can you measure an angle of $30^{\circ} 20'$ with help of a prismatic compass. Justify your answer.
- What is the principle of plane table surveying?
- Write the principle used to adjust closing error.
- Give an example of a level surface.
- Reciprocal leveling eliminates the error due to -----.
- Contour lines may intersect at a point in case of a ----
- What is the meaning of 100 mm theodolite?
- Define transiting of a theodolite.

Q2 a) A 30 m long steel tape is supported at the ends. Find the normal tension for the tape with the following data. (5)

Cross section of the tape = 4 mm^2 , weight of tape material = 0.0786 N/mm^3 , $E = 200 \text{ GN/m}^2$, The pull at which the tape is standardized is 100 N.

- b) During chain survey, a pond came in the way of a chain line, making direct length measurement impossible. Two lines, AC and AD, were set out on either side of the chain line and measured 321.8 m on the left and 228.7 m on the right. The triangle was completed by a straight line CBD, wherein CB measured 124.5 m and BD measured 108.8 m, B being on the continuation of the chain line. Calculate the length AB. (5)**

Q3 a) Discuss common errors in plane table survey. (5)
b) How permanent adjustment is done in dumpy level? (5)

Q4 a) Whole circle bearings of the lines of a traverse ABCDA are given below. Find the interior angles at A, B, C and D. (5)

Line	AB	BC	CD	DA
Bearing	$70^{\circ} 30'$	$120^{\circ} 45'$	$223^{\circ} 30'$	$320^{\circ} 47'$

- b) Derive the equation for correction of curvature. (5)**

Q5 a) To calculate the sensitivity of a bubble tube, the following observations were made on a staff held at 50 m from the level. (5)

Reading at the left end bubble = 20, Reading at the right end bubble = 10, staff reading = 1.865 m,

Reading at the left end bubble = 10, Reading at the right end bubble = 20, staff reading = 1.785 m. Calculate the sensitivity and radius of curvature of the bubble tube.

b) Explain indirect method of contouring (5)

- Q6** a) Explain method of reiteration for measuring horizontal angle. (5)
b) Describe the odolite traversing. (5)

Q7 The page of an old field book is shown below. Some readings are not clear. Calculate these readings from the available data and do usual checks. Considering distance between two staff point is 30 m, calculate the gradient between A and F. (10)

Staff Point	B.S.	I.S.	F.S.	Height of Collimation	R.L.	Remarks
A					100.91	
B		1.085				
C		2.125				BM RL 100
D	1.315				101.26	
E			1.325	102.235		
F					101.61	

Q8 Write short answer on any TWO : (5 x 2)

- a) Use of theodolite
b) Reciprocal levelling
c) Plane table surveying by Resection method
d) Elimination of errors in Chain surveying