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Question Paper Code: 41316

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2016

Third Semester

Civil Engineering

14UCE306 - SURVEYING - I

(Regulation 2014)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions.

PART A - (10 x 1 = 10 Marks)

- The errors which define well defined pattern are classified as
 - Systematic Errors
 - Accidental Errors
 - Mistakes
 - Instrumental Errors
- The Gunter or Surveyor's Chain is
 - 100 ft
 - 33 ft
 - 66 ft
 - 88 ft
- Radiation, intersection, traversing and resection are the four methods of
 - Compass Surveying
 - Plane table surveying
 - Chain Surveying
 - Compass Traversing
- The bearing of a line measured in the direction of the progress of the survey is called
 - Back bearing
 - Whole Circle bearing
 - Fore bearing
 - Quadrantal bearing
- The last reading taken before shifting the instrument to a new station is said to be
 - Back sight
 - Fore Sight
 - Intermediate sight
 - Change Point
- Parallax error is
 - Personal error
 - Natural error
 - Instrumental error
 - Accidental error

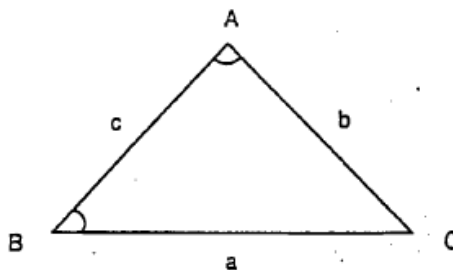
7. The bench mark established by Survey of India through-out the country is called
- (a) Permanent Bench Mark (b) GTS Bench Mark
(c) Temporary Bench Mark (d) Arbitrary Bench Mark
8. The total volume of excavation multiplied by average haul distance is said to be
- (a) Mass Haul (b) Free Haul (c) Haul (d) Over haul
9. A theodolite can measure
- (a) Difference in level (b) bearing of a line
(c) Zenith angle (d) all the above
10. If the departure and latitude of a line are +78.0m and -135.1m, respectively, the whole circle bearing of the line is
- (a) 150° (b) 30° (c) 60° (d) 120°

PART - B (5 x 2 = 10 Marks)

11. Distinguish between check line and tie line.
12. When a three - point problem resorted to in plane table surveying?
13. Write the formula for curvature correction, refraction correction and combined correction.
14. What are the different characteristics of contour?
15. List the essential qualities of a theodolite telescope.

PART - C (5 x 16 = 80 Marks)

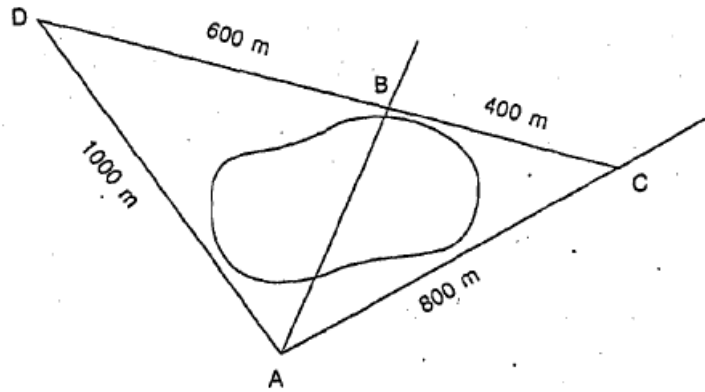
16. (a) One side and two adjacent angles of a triangle are measured in order to determine the lengths of the other two sides because the vertex opposite the measured side is in accessible figure given below. The side c measures $320 \pm 0.02m$, angle A measure $70^\circ 30' \pm 20''$ angle B measures $60^\circ 10' \pm 40''$. Compute angle C , side a and side b . Compute the standard error of each quantity.



(16)

Or

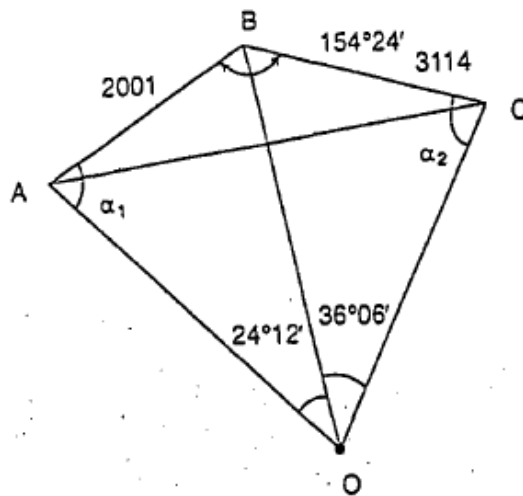
- (b) AB is a chain line crossing a lake. A and B are on the opposite sides of the lake. A line AC , $800m$ long is ranged to the right of AB clear of the lake. Similarly another line AD , $1000m$ long is ranged to the left of AB such that the points C , B and D are collinear. The lengths BC and BD are $400m$ and $600m$ respectively. If the chain-age at A is $1262.44m$, calculate the chain-age of B . (16)



17. (a) The following fore-bearings and back-bearings were observed while traversing with compass. Calculate the interior angles and correct for observational errors. (16)

Or

- (b) The sides AB and BC of a triangle ABC with stations in clockwise order are $2001m$ and $3114m$ respectively and the angle ABC is $154^{\circ}24'$. Outside this triangle, a station O is established, the stations B and O being on the opposite sides of AC . The position O is to be found by three point resection on A , B and C , the angles AOB and BOC being respectively $24^{\circ}12'$ and $36^{\circ}06'$. Determine the distances OA and OC . (16)



18. (a) The following readings were taken with a level and 4m staff. Draw up a level book page and reduce the levels by the height of instrument method. 0.578 B.M.(= 58.250m), 0.933,1.7687,2.450 (2.005 and 0.567) C.P., 1.888, 1.181, (3.679 and 0.612) C.P., 0.705, 1.810. (16)

Or

- (b) The following observations were made to determine the sensitivity of two bubble tubes. Determine which bubble tube is more sensitive. The distance of the staff from the instrument was 80m and the length of one division of both bubble tubes is 2 mm. (16)

Bubble tube	Bubble reading		Staff reading	
	L.H.S.	R.H.S.		
A	(i)	13	5	1.618
	(ii)	18	12	1.767
B	(i)	15	3	1.635
	(ii)	6	14	1.788

19. (a) (i) List the uses of contour lines. (4)
(ii) Mention any ten characteristics of contour. (12)

Or

- (b) Explain the various method of locating the contour. (16)
20. (a) An angle of elevation was measured by vernier theodolite and it was noted that the altitude bubble was not in the centre of its run in either the face left or face right positions. Deduce the value of that angle from the data given below. *O* and *E* refer to the objective and eyepiece end respectively of the bubble and one division of the altitude level is equivalent to 20 seconds. (16)

Face	Vernier readings		Altitude level	
			<i>O</i>	<i>E</i>
Left	25°20'40"	25°21'00"	3.5 div.	2.5 div.
Right	20°21'00"	25°21'20"	4.5 div.	1.5 div.

Or

- (b) Describe the procedure involved in the method of repetition and explain the advantages and disadvantages. (16)