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Question Paper Code: 43106

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2018

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)

1. While measuring a chain line between two stations *A* and *B* intervened by a raised ground
 - (a) vision gets obstructed
 - (b) chaining gets obstructed
 - (c) both vision and chaining get obstructed
 - (d) all the above
2. In chain surveying, tie lines are primarily provided
 - (a) to check the accuracy of the survey
 - (b) to take offsets for detail survey
 - (c) to avoid long offsets from chain lines
 - (d) to increase the number of chain lines
3. The bearing of a line measured in the direction of the progress of the survey is called
 - (a) Back bearing
 - (b) Whole Circle bearing
 - (c) Fore bearing
 - (d) Quadrantal bearing
4. Radiation, intersection, traversing and resection are the four methods of
 - (a) Compass surveying
 - (b) Plane table surveying
 - (c) Chain surveying
 - (d) Compass traversing

5. The last reading taken before shifting the instrument to a new station is said to be
- (a) Back sight
 - (b) Fore sight
 - (c) Intermediate sight
 - (d) Change point
6. Parallax error is
- (a) Personal error
 - (b) Natural error
 - (c) Instrumental error
 - (d) 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
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9. The diaphragm of a stadia theodolite is fitted with two additional
- (a) horizontal hairs
 - (b) vertical hairs
 - (c) horizontal and two vertical hairs
 - (d) none of these
10. A theodolite is said to be in perfect adjustment if
- (a) rotation axis is vertical to the transit axis
 - (b) transit axis is perpendicular to line of collimation
 - (c) line of collimation sweeps out a vertical plane while the telescope is elevated or depressed
 - (d) all the above

PART - B (5 x 2 = 10 Marks)

11. Distinguish between check line and tie line.
12. Define three - point problem.
13. Define levelling.
14. What do you mean by contour interval?
15. List out the uses of Anallactic lens.

PART - C (5 x 16 = 80 Marks)

16. (a) (i) Explain the various errors in chain surveying. (10)
 (ii) List out the instruments used in chain surveying. (6)

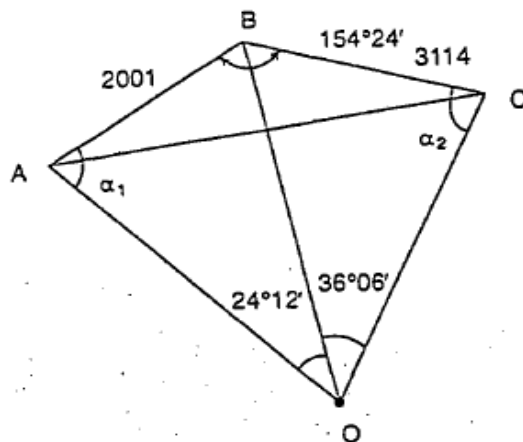
Or

- (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 chainage at A is $1262.44m$, calculate the chainage 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) Write short note on (i) Reciprocal leveling (ii) Fly leveling (iii) Differential leveling (iv) Simple leveling and state where each is used. (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	
<i>A</i>	(i)	13	5	1.618
	(ii)	18	12	1.767
<i>B</i>	(i)	15	3	1.635
	(ii)	6	14	1.788

19. (a) Explain the various method of locating the contour. (16)

Or

- (b) Explain the various method of locating the contour. (16)

20. (a) What are the possible sources of errors while using a theodolite? (16)

Or

- (b) The stadia intercept read by means of a fixed hair instrument on a vertically held staff is $1.05m$, the angle of elevation being $5^\circ 36'$. The instrument constants are 100 and 0.3. What would be the total number of turns register on movable hair instrument at the same station for a $1.75m$ intercept on a staff held on the same point, the vertical angle in this case being $5^\circ 24'$ and the constants 1000 and 0.5? (16)