B.E.Fourth Semester (Civil Engineering) (C.B.S.)

Surveying - I

P. Pages : 3

Time : Three Hours

NKT/KS/17/7266

Max. Marks : 80

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Notes : 1. All questions carry marks as indicated.
2. Solve Question 1 OR Questions No. 2.
3. Solve Question 3 OR Questions No. 4.
4. Solve Question 5 OR Questions No. 6.
5. Solve Question 7 OR Questions No. 8.
6. Solve Question 9 OR Questions No. 10.
7. Solve Question 11 OR Questions No. 12.
8. Due credit will be given to neatness and adequate dimensions.
9. Assume suitable data whenever necessary.
10. Illustrate your answers whenever necessary with the help of neat sketches.
11. Use of non programmable calculator is permitted.

1. a) Define Ranging and explain various methods of Ranging. **5**

b) The following bearings were observed in running a close travers. **8**

LINE	F.B.	B.B.
AB	70°50'	254°20'
BC	115°20'	296°35'
CD	165°35'	345°35'
DE	224°50'	44°45'
EA	304°50'	125°50'

Determine the correct included angles and determine the correct bearings.

OR

2. a) Differentiate between Prismatic Compass and Surveyor's Compass. **6**

b) The area of and old map plotted to a scale of 10 m to 1 cm measures now as 250 cm^2 as measured by planimeter. The plan is found to have shrunk so that a line originally 10 cm long now measures 9.80 cm only further 20 m chain used was 8 cm to short. Find the true area of the land. **7**

3. a) The following consecutive readings were taken with a level and 4 m leveling staff on continuously sloping ground at common interval of 50m. 0.350, 0.750, 2.655, 2.820, 3.150, 0.670, 1.445, 1.790, 2.530, 2.870, 3.850, 0.730, 2.125, 3.310, 3.750. The R.L. of first point is 325.50 m. Calculate R.L. of other points in a level page and also determine the gradient of line Use HL method. **8**

b) An observer standing on the deck of a ship just sees a light house. The top of the light house is 65 m above the sea level and height of the observer's eye is 5 m above the sea level. Find the distance of the observer from the light house. **5**

OR

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4. a) What are the temporary adjustments of Auto level ? Explain how to carry it. **6**

b) The following notes refer to reciprocal levels : **7**

Instrument at	Staff Reading at		Remark
	A	B	
A	1.055	1.655	Distance AB = 1500 m.
B	0.940	1.550	RL of A = 220.250 m

Find :
i) True RL of point B.
ii) Combined correction for curvature and refraction.
iii) Error in line of collimation.

5. a) In conducting the two-peg test of level, the same was set up at a station 'C' exactly mid-way between pegs A and B 100 m apart. The staff reading on pegs A and B was found to be 1.325 m and 1.565 m. The instrument was then moved and set up at point 'D' beyond peg A in line BA produced at a distance 10 m from A. the staff readings on pegs A and B were 1.110 m and 1.375 m. Calculate the staff readings on pegs A and B to give a horizontal line of sight. **7**

b) Explain with neat sketches the characteristics of contours. **6**

OR

6. a) What are the fundamental lines of level ? How to check and adjust for the desired relation between them ? **7**

b) A theodolite was setup at a distance of 250 m from a tower, and the angle of elevation to its top was 15°30'. The staff reading on B.M. of reduced level 210.20 m the telescope horizontal was 0.350. Find the R.L. of the top of tower. **6**

7. a) What are the temporary adjustments of theodolite ? Explain in detail. **6**

b) Following notes refer to theodolite surveying. **8**

Line	Length (m)	Bearing
AB	100.0	?
BC	80.50	140°30'
CD	60.25	220°30'
DA	?	310°15'

Calculate the distance DA and bearing of AB.

OR

8. a) Find the area of closed traverse having the following data, by the departure and total latitude method. **7**

Side	Latitude (m)	Departure (m)
AB	+108.00	+4.00
BC	+15.00	+249.00
CD	-123.00	+4.00
DA	0.00	-257.00

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b)   List out the various uses of theodolite and explain measurement of vertical angle.   **7**

9.   a)   Define principle of plane table surveying. Explain Traversing method of plane table surveying.   **6**

b)   A railway embankment is 8 m wide and 250 m in length at the formation level with a side slop of 2:1. The embankment has a rising gradient of 1 in 100. The ground level at 50 m interval are as follows :   **7**

Chainage (m)	0	50	100	150	200	250
G.L. (m)	115.50	114.35	116.90	115.30	118.60	118.30

The formation level of zero chainage is 115.00 m. Assuming ground level across the center line compute the volume of earth work.

OR

10.   a)   Explain the resection method of plane table surveying.   **6**

b)   The width of formation width of road is 10 m and the side slopes for cutting is 1:1 and filling 2:1. The transverse slop of the ground is 1 in 5 (fall). The sections are 50 m apart. The depth of excavation at the centers of two sections is 0.50 m and 0.70 m respectively. Find the volume of cutting and filling.   **7**

11.   a)   Enlist the various methods of locating soundings. Explain any one method in detail.   **7**

b)   Explain the measurement of velocity of flow with neat sketches.   **7**

OR

12.   Write short notes on **any three.**   **14**

    i)   Transferring the alignment underground.

    ii)   E.D.M.

    iii)   G.P.S.

    iv)   Hydrographic survey.

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