

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

Surveying – I

P. Pages : 3

Time : Three Hours



NRT/KS/19/3351

Max. Marks : 80

- Notes :
1. Solve Question 1 OR Questions No. 2.
 2. Solve Question 3 OR Questions No. 4.
 3. Solve Question 5 OR Questions No. 6.
 4. Solve Question 7 OR Questions No. 8.
 5. Solve Question 9 OR Questions No. 10.
 6. Solve Question 11 OR Questions No. 12.
 7. Assume suitable data whenever necessary.
 8. Illustrate your answers whenever necessary with the help of neat sketches.

1. a) Explain with neat sketch reciprocal Ranging. 6
- b) Describe with neat sketch, the construction and use of an optical square. 7

OR

2. a) Describe the Temporary adjustment of prismatic compass. 5
- b) The following are the bearing observed in traversing with a compass, an area were local attraction was suspected find the amount of local attraction at Different station, the correct Bearing of the lines and the included angles. 8

Line	FB	B. B
AB	59°0'	239°0'
BC	139°30'	317°0'
CD	215°15'	36°0'
DE	208°0'	29°0'
EA	318°30'	138°45'

3. a) A man at a position 10 m above sea level observes the peak of a Hill. The distance between the man and the hill is 80 km. Find the height of the hill. 6
- b) The following consecutive reading were taken with a level and 4 m levelling staff on a continuously sloping ground at common interval of 30 m : 7
- 0.855 (on A), 1.545, 2.335, 3.115, 3.825, 0.455, 1.380, 2.055, 2.855, 3.455, 0.585, 1.015, 1.850, 2.755, 3.845 (on B).
- The RL of A was 380.500. Make entries in a level book and apply the usual check. Determine the gradient of AB.

OR

4. a) Explain with neat sketch. Indirect method of contouring. 6
- b) In testing a level, the following records were noted while undertaking reciprocal levelling. 7

Instrument at	Reading at	
	A	B
A	1.725	1.370
B	1.560	1.235

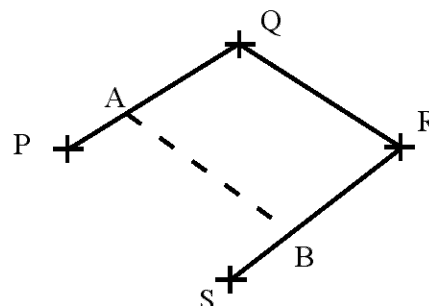
Is the line of collimation in adjustment? What should be the correct staff reading at A, During the second set up to make the line of collimation Truly Horizontal? Find the amount of collimation error also.

5. a) In conducting the two peg test of a Dumpy level the same set up at a station '0' exactly midway between pegs A and B 90 mts apart. The staff reading on Pegs A and B were found to 1.325 m and 1.565 m. The instrument was moved and setup at a point '0', beyond peg A in line BA produced at a distance 15 mt from A. The staff reading on pegs A and B were 1.110 and 1.375 m. Calculate the staff reading on peg A and B to give horizontal line of sight. 7
- b) Enlist the fundamental lines of level and describe relationship between them. 6

OR

6. a) Explain the method of calculation of reduced level. Height of instrument system (H.I.). 6
- b) Explain with neat sketch reciprocal levelling. 7
7. a) What are the temporary adjustment of theodolite? Explain in details. 7
- b) The following particulars are given for a Traverse Survey, where the length of the line AB is required to be measured. Point A is 50.0 m from P, and B is 75.0 m from R. 7

Line	Length (m)	Bearing
PQ	125.5	N30°15'E
QR	80.25	S40°30'E
RS	150.75	S60°30'W



OR

8. a) Explain the measurement of Magnetic Bearing by theodolite. 7
 b) Find the area of the closed traverse having the following data by the co-ordinate method. 7

Side	Latitude	Departure
AB	+ 225.5	+ 120.5
BC	- 245.0	+ 210.0
CD	- 150.5	- 110.5
DA	+ 170.0	- 220.0

9. a) Describe the method of orienting plane table by back sighting. 6
 b) An embankment of width 10 m and side slop $1\frac{1}{2} : 1$ is required to be made on a ground which is level in a direction transverse to the centre line. The central height at 40 m interval are as follows.
 0.90, 1.25, 2.15, 2.50, 1.85, 1.35 and 0.85
 Calculate the volume of earth work according to
 i) The Trapezoidal formula ii) The Prismoidal formula.

OR

10. a) Explain the resection method of plane table surveying. 6
 b) A railway embankment of width of 8 m and side slope 2 : 1 is to be constructed. The ground level along the centre line is as follows : 7

Chainage	0	50	100	150	200	250
G. L (m)	115.75	114.35	116.80	115.20	118.50	118.25

The embankment has a rising gradient of 1 in 100, and the formation level at zero changes is 115.00. Assuming the ground is level across the centre line, compute the volume of earth work.

11. a) What is sounding? Explain any two method of locating sounding. 7
 b) Explain the measurement of velocity of flow with neat sketches. 7

OR

12. a) Explain the procedure of transferring the levels underground. 6
 b) Write short note on : 8
 i) GPS ii) EDM.
