24067

B.Tech. 3rd Semester Civil Engg. F-Scheme

Examination, December–2014

SURVEYING–I

Paper–CE–207–F

Time allowed : 3 hours] *[Maximum marks : 100*

Note : 1. ***Question No. 1 is compulsory.*** *Attempt* ***one*** *question from each section.*

2. All questions carry equal marks.

3. Assume missing data, if any, suitably.

1. (a) Define principles of surveying.

(b) Differentiate fly leveling and profile leveling.

(c) Define different types of meridians.

(d) Enumerate the instruments used in plane table surveying.

(e) Briefly describe types of vertical curves. 20

Section–A

2. (a) A base line measured with a steel tape gives an approximate length of 1000m. Compute the correct length when standard pull is 15kg The temperature T_m and T_o are 35°C and 15°C. The applied pull is 22kg. Cross-sectional area of tape is 0.0655 cm^2, E = 2.109 × 10^6 kg/cm^2

and co-efficient of expansion of tape per 1°C = 11.5×10^{-6}. The difference in level of the two ends of base line is 2m. 10

(b) Explain the classification of surveying on different basis. 10

3. (a) A distance 1000 m was measured by a 30 m chain. Later, it was detected that the chain was 0.2 m too long. Another 500 m was measured and it was detected the chain was 0.25 m too long. If the chain was correct initially, determine the exact length that was measured. 10

(b) Explain the various sources and nature of errors in chain survey. 10

Section–B

4. (a) The following are bearing taken on a closed compass traverse.

Line	F.B	B.B
AB	S 37°30′E	N 37° 30′W
BC	S 43° 15′W	N 44° 15′E
CD	N 73° 00′W	S 72° 15′E
DE	N 12°45′E	S 13°15′W
EA	N 60°00′E	S 59° 00′W

Compute the interior angles and correct them for observational errors. 10

(b) Differentiate between :

(i) W.C.B. and Q.B. and

(ii) True bearing and magnetic bearing. 10

5. (a) The following staffs reading were observed successively with a level, the instrument having been moved after third, sixth, and eight readings.

2.228 : 1.606: 0.988: 2.090: 2.864: 1.262: 0.602: 1.982: 1.044: 2.684 meters

Enter the above reading in page of level book and calculate the R.L of point by Height of instrument if the first reading was taken with a staff held on a bench mark of 432.384 m. 10

(b) What do you mean by contour line ? Explain the different methods of interpolation of contours. 10

Section–C

6. (a) Name different methods of plane tabling and explain any two. 10

(b) Explain the methods used for measuring the horizontal angles of a traverse. 10

7. In a closed traverse ABCDEA, the lengths of line DE and EA could not be measured due to an obstruction.

Determine the length from the following data :

Line	length (m)	Bearing
AB	480	99°00'
BC	625	31°05'
CD	470	301°20'
DE	?	235°00'
EA	?	153°25'

20

Section–D

8. A tacheometer is placed at a station A and readings on staff held vertical upon a B.M. of R.L. 100.20 m and at a station B are 0.640, 2.200, 3.760 and 0.010, 2.120, 4.230 m, respectively. The angle of depression of the telescope in the first case is 6° 19' and in the second case is 7°42'. Find the horizontal distance from A to B and R.L. of station B, if the instrument has constants 100 and 0.5. 20

9. (a) Write short notes on methods of setting out simple circular curve. 5

(b) Two straights intersect at chainage 2056.44m and the angle of intersection is 120°. If the radius of the simple curve to be introduced is 600 m, find the following :

(i) Tangent distance

(ii) Chainage of the point of commencement

(iii) Chainage of the point of tangency

(iv) Length of the long chord 15