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Signature

DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/
MANAGEMENT/COMMERCIAL PRACTICE — OCTOBER, 2019

SURVEYING - I

[Time : 3 hours

(Maximum marks : 100)

PART — A

(Maximum marks : 10)

Marks

I Answer *all* questions in one or two sentences. Each question carries 2 marks.

1. Write down fundamental principles of surveying.
2. List operations to set up the plane table on a station.
3. Differentiate true bearing and magnetic bearing.
4. List out any four important axes of leveling instrument.
5. Define refraction in optical survey instruments.

(5×2 = 10)

PART — B

(Maximum marks : 30)

II Answer any *five* of the following questions. Each question carries 6 marks.

1. Give the factors considered for marking stations in chain surveying.
2. Differentiate whole circle bearing and reduced bearing systems.
3. The magnetic bearing of a line is $48^{\circ}20'$. Calculate the true bearing, if the magnetic declinations are $5^{\circ}30'$ East.
4. Explain different types of bench marks.
5. Differentiate following :
 - (a) Staff station and Change point
 - (b) Back sight and Fore sight
 - (c) Reduced level and Height of instrument
6. Write short notes on precise leveling and reciprocal leveling.
7. List characteristics of contour line.

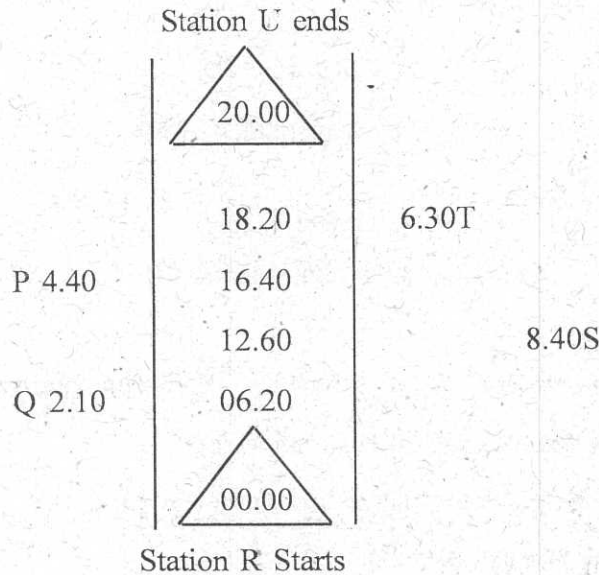
(5×6 = 30)

PART — C
(Maximum marks : 60)

(Answer one full question from each unit. Each full question carries 15 marks.)

UNIT — I

- III (a) Plot the following cross staff survey of field P, Q, R, S, T, U and calculate its area.



8

- (b) Explain different methods of orientation in plane table survey.

7

OR

- IV (a) Explain with neat sketch the method of chain survey on sloping ground.

7

- (b) Explain with neat sketch the method of resection and its suitability in the field.

8

UNIT — II

- V (a) List methods of plotting campus survey and explain any one method.

7

- (b) The following bearings were observed in traversing with a compass in an area where local attraction was suspected. Find the amounts of local attraction at different stations, the correct bearings of lines and the included angle.

Line	FB	BB
AB	68°15'	248°15'
BC	148°45'	326°15'
CD	224°30'	46°00'
DE	217°15'	38°15'
EA	327°45'	147°45'

8

OR

- VI (a) Describe balancing of closed traverse. Explain any three methods of adjusting the traverse. 7
- (b) The following are the bearing of line in a closed traverse ABCD, calculate included angle of traverse.

<i>Line</i>	<i>fore bearing</i>
AB	N25°40'E
BC	S 85°20'E
CD	S40°10'W
DA	N 50°20'W

8

UNIT — III

- VII (a) Tabulate the points of difference between dumpy level and tilting level. 7
- (b) The following staff readings were taken with a level which was shifted after 3rd, 6th and 10th reading.
1.350, 1.995, 0.780, 0.790, 0.930, 1.775, 1.235, 1.995, 2.005, 2.430, 2.010, 1.885.
Assuming the RL of starting point as 50.000m. Enter the reading in the form of level book page and determine reduced levels of all points by rise and fall method. 8

OR

- VIII (a) List and explain the function of instruments used in leveling survey. 7
- (b) The staff reading was observed for a leveling survey work as follows 1.820, 2.150, 1.230, 1.460, .905, 2.345, 1.995, 1.860. The level was shifted after 4th staff reading. Reduced level of 5th staff point as 100.000. Calculate reduced level of all other staff points by collimation method. 8

UNIT — IV

- IX (a) Derive an expression for the combined effect of curvature and refraction in leveling survey. Given that diameter of earth as 12740m. 9
- (b) Show the conventional contour of following :
- (i) valley
 - (ii) hill
 - (iii) saddle
 - (iv) overhanging cliff
- 6

OR

- X (a) Explain the method of longitudinal leveling and sketch a typical longitudinal section for a proposed road alignment. 8
- (b) Illustrate and explain the interpolation of contour. 7

