

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/
MANAGEMENT/COMMERCIAL PRACTICE — OCTOBER, 2017**

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. What do you mean by triangulation ?
2. What is the principle of plane tabling ?
3. How would you detect the presence of local attraction in an area ?
4. What are the types of benchmark ?
5. What would you say if in a map, two consecutive contours cross each other ?

(5×2 = 10)

PART — B

(Maximum marks : 30)

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

1. Explain with a neat sketch, the principle and use of an optical square.
2. Describe the different methods of orientation in plane tabling.
3. Differentiate between the following :
 - (a) Whole circle bearing and reduced bearing.
 - (b) True meridian and magnetic meridian.
4. Convert the following whole circle bearing to quadrantal bearing.

(a) 45° 30'	(b) 125° 45'
(c) 22° 15'	(d) 320° 30'
5. Explain curvature and refraction correction.
6. Explain the different types of levels.
7. Show with neat sketches the characteristic features of contour lines of the following.

(a) Pond (b) Hill (c) Ridge (d) Valley (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) What are the points to be observed while entering the contents of a field book in chaining ? 8
- (b) Describe the procedure of setting up the plane table over the Station. 7

OR

- IV (a) Explain any two methods of chaining, when chaining and vision both are obstructed. 8
- (b) Mention the advantages and disadvantages of plane tabling. 7

UNIT — II

- V (a) The bearings observed in traversing with a compass at a place where local attraction was suspected are given below.

Line	Fore Bearing	Back Bearing
AB	134° 30'	314° 30'
BC	120° 00'	299° 20'
CD	03° 20'	185° 30'
DA	265° 00'	83° 30'

At what station do you suspect local attraction ? Find the corrected bearings of the lines. 9

- (b) Differentiate between the following.
- (i) Closed traverse and open traverse.
- (ii) Fore bearing and back bearing. 6

OR

- VI (a) If the observed whole circle bearing at a line PQ is 35°, calculate the bearings of lines PR, PS and PT given that $\angle QPR = 85^\circ$, $\angle RPM = 75^\circ$ and $\angle MPT = 110^\circ$ 7
- (b) The fore bearings of the following lines are given. Find the back bearings.
- (i) FB of AB = 310° 30'
- (ii) FB of BC = 145° 15'
- (iii) FB of PQ = S 60° 15' W
- (iv) FB of QR = N 40° 30' W 8

UNIT — III

- VII (a) The following staff readings were observed successively with a level, the instrument was shifted after third, sixth and eighth readings.
2.225, 1.605, 0.995, 2.090, 2.865, 1.265, 0.600, 1.985, 1.045 and 2.685m.
Enter the above readings, in a page of level book and calculate the reduced levels of all points, if the first reading was taken with staff held on B.M. of 135.75m. Using height of collimation method. 9
- (b) Define the following.
- (i) Change point.
- (ii) Datum.
- (iii) Benchmark. 6

OR

- VIII (a) The following successive readings were taken with a dumpy level. The reduced level of second change point was 107.215m. The Instrument was shifted after the third and seventh readings. Calculate the reduced levels of all points by rise and fall method. 3.150, 2.245, 1.125, 3.860, 2.125, 0.760, 2.235, 0.470, 1.935, 3.225 and 3.890 m. 9
- (b) Explain the temporary adjustment of a levelling instrument. 6

UNIT — IV

- IX (a) The area within the contour lines at the site of reservoir and face of the proposed dam are as follows. Taking 100m as the bottom level of the reservoir and 118m as the top level.

Contour (M)	Area (M ²)
100	1000
103	12800
106	16600
109	18800
112	24400
115	30600
118	38400

Calculate the capacity of the reservoir by

- (i) Trapezoidal formula.
- (ii) Prismoidal formula. 8
- (b) Explain direct method of contouring. 7

OR

X (a) Define the following :

- (i) Contour interval
- (ii) Horizontal Equivalent
- (iii) Contour line

6

(b) In running fly levels from a B. M. of reduced level 250.550, the following readings are obtained.

Back sight : 0.995, 1.250, 0.785, 1.535, 1.260, 0.675, 1.275, 1.655 and 0.450.

Fore sight : 2.150, 1.760, 2.055, 0.835, 0.955, 1.505, 2.050, 2.160 and 1.005.

Determine the reduced levels of all points.

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