SECOND SEMESTER DIPLOMA EXAMINATION IN ENGINEERING/
TECHNOLOGY—OCTOBER, 2013

SURVEYING–I

(Common for CE, AR, QS, WR and EV)

[*Time* : 3 hours

(Maximum marks : 100)

PART—A

Marks

I   Answer the following questions in one or two sentences. Each question carries 2 marks.

1. Define the term ranging a line.

2. List the instruments used in plane tabling.

3. Explain the term declination of a Magnetic needle.

4. Name the different types of bench marks.

5. What are the two systems of reduction of levels ?   (5×2=10)

PART—B

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

1. Determine the area of the field from the following observations :

	B	
10	100	0
10	50	78
48	30	60
0	0	10
	A	

2. Describe the method of orientation of plane table by back sighting.

3. In the closed traverse A B C D A the bearing of the line AB was measured as 150°30′. The included angles were measured as ∠A = 30°10′ ∠B = 88°45′ ∠C = 167°10′ ∠D = 73°55′. Calculate the bearing of all other sides.

4. Explain the different sources of errors in a compass survey.

5. Define bench mark, what are its classifications ? Explain.

6. What are the temporary adjustments in leveling ? Explain.

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7. Two pegs P & Q were 1500 m apart across a wide river following readings were taken with a level :

	Peg P	Peg B
level near peg P	2.260	2.755
level near peg Q	0.755	1.270

Determine the true difference in level, between P & Q.   (5×6=30)

PART—C

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

UNIT—I

III (a) Explain with neat sketches, the intersection method of plane tabling.   8

    (b) A chain line ABC crosses a river. Point B and C are on the banks of the river. A 25 m long perpendicular BD is drawn from B to a point D outside of the line ABC. If angle ADC =90° and length AB = 20 m, determine the width of the river BC.   7

OR

IV (a) Differentiate between plane survey and geodetic survey.   4

    (b) Explain the method of stepping for chaining on sloping ground.   3

    (c) What are the methods of plane tabling ? Explain.   8

UNIT—II

V (a) With help of sketches describe the types of traverses in compass survey.   4

    (b) Define the term meridian in compass survey. List the names of different meridians.   5

    (c) Convert the following bearings into whole circle bearing :

    N 36°16′ E, S 46°26′ W, N 5°40′ W.   6

OR

VI (a) What is local attraction ? Explain.   5

    (b) The following bearings were taken on a closed compass traverse AB = N30°30′ E, BC = S 47°10′ E,   CD = S 50°10′ W,   AD = S 40°40′ E. Calculate the internal angles, clearly indicating the method used with the help of a figure.   10

UNIT—III

VII (a) Explain briefly the different types of leveling.   7

    (b) The staff readings recorded for a work are 1.205, 1.710, 2.500, 0.230, 0.910, 2.100, 2.800, 0.310, 1.820, 2.915. The first reading was taken at BM 140.00. Rule out a page of field book in rise and fall method and find the average slope between the points. The instrument was shift after the fourth and eighth reading the distance between first and last station is 1500 m.   8

OR

Marks

VIII (a) What is reciprocal leveling ? What are the advantages of reciprocal leveling over other methods ?   7

(b) The following staff readings were taken with a level. The instrument was moved after third, sixth and eighth readings. Calculate the RL of the points, if the first reading was taken by a staff held on a BM + 75.00 use height of collimation method. 0.765, 1.825, 1.050, 1.885, 1.850, 0.995, 1.375, 2.250, 0.765, 2.200.   8

UNIT—IV

IX (a) List and explain the factors which controls the selection of contour interval.   6

(b) Workout the true difference in level between A & B if curvature and refraction effects are taken in account in the following case :

Level set up over A and staff held over B

RL of A = 150.00 m

H.I. at point A = 1.00 m

Staff reading at point B = 1.800 m

Distance AB = 500 m

Assume diameter of earth = 12742 km.   9

OR

X In running fly levels from BM of RL 250.00, the following readings were obtained :

        Back sight : 1.315, 2.035, 1.980, 2.625

        Fore sight : 1.150, 3.451, 2.255

From the last point of the instrument, 5 pegs at 20 m intervals are to be set out on a uniform rising gradient of 1 in 40 the first peg is to have a RL of 247.245. Work out the staff readings required for setting the tops of the pegs on the given gradient.   15