TED (10) – 3002

(REVISION – 2010)

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SECOND SEMESTER DIPLOMA EXAMINATION IN ENGINEERING/ TECHNOLOGY — MARCH, 2015

SURVEYING – I

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

[*Time* : 3 hours

(Maximum marks : 100)

PART—A

(Maximum marks : 10)

Marks

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

1. What is surveying ? What is the primary object of survey ?
2. Mention the three different system of chain surveying.
3. What do you mean by :
   (i) True bearing of a line (ii) Agonic line
4. How are centering and levelling done in plane tabling ?
5. Distinguish between simple levelling and differential levelling. (5×2=10)

PART—B

(Maximum marks : 30)

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

1. What is the basic principle of compass surveying ? What is the essential difference between the use of compass surveying and chain surveying ?
2. The following bearings were observed in traversing with a compass at a place were local attraction was suspected. At what station do you suspect local attraction ? Determine the corrected bearings of the lines.

Line	FB	BB
AB	80°30′	260°30′
BC	351°15′	173°00′
CD	32°15′	208°00′
DE	106°15′	287°45′
EF	99°00′	280°00′
FG	209°30′	29°30′

3. Enumerate different methods of plane table surveying. Under what field conditions each method is used.
4. Explain the processes of setting the plane table over a given station in not more than six sentence.

Marks

5. Explain reciprocal levelling and what are the errors to be eliminated by this process.

6. An observer standing on the deck of a ship just sees the top of a light house. The top of the light house is 30 m above sea level and the height of the observer's eye is 5 m above sea level. Find the distance of the sailor from the light house.

7. What are the uses of contour maps ? (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) Explain Reference sketch, Index sketch and well conditioned triangles. 7

(b) What are survey stations ? What points should be considered while fixing the positions of survey stations and survey lines in the field ? 8

OR

IV (a) What is Reconnaissance ? State it's important in chain surveying. 7

(b) Explain principle on which chain survey is based. Mention the different methods generally adopted to find the areas from the previously ploted plans. 8

UNIT—II

V (a) Define Dip and Magnetic Declination. 3

(b) What is mean by closing error in a closed traverse ? State the methods of adjusting of closing error. 4

(c) The magnetic bearing of a line AC is 137°45′. Station B is situated on the western side of the line AC. The three angles A, B and C of the triangle ABC are 67°15′, 71°45′, 41°00′ respectively. Calculate the fore and back bearings of all the three sides of the triangle ABC. If the magnetic declination in the area is 2°30′ W, determine the true bearings of all the three sides of the triangle ABC. 8

OR

VI (a) Explain with neat sketches open and closed traverse. In what situation is open traverse preferred ? 4

(b) Define Magnetic bearing and Magnetic meridian. 3

(c) The bearings of the sides of a traverse ABCDE are as follows. Calculate the interior angles and apply usual check.

Side	FB
AB	56°30′
BC	118°0′
CD	42°0′
DE	201°30′
EA	296°0′

8

Marks

UNIT—III

VII (a) Define compound levelling. 3

(b) What is mean by contouring ? State the different methods of contouring. 4

(c) The following reading were observed with a level 1.150 (B.M 37.430), 1.930, 2.810, 4.000, C.P. 1.520, 2.440, 0.730, 0.490, C.P. 4.000, 3.160, 1.800, 0.700 T.B.M. Reduce the levels by Height of collimation. Apply check. 8

OR

VIII (a) Differentiate between profile levelling and cross sectioning. 3

(b) Write any four uses of contour map. 4

(c) Following series of readings of back sight and fore sights was taken in a fly levelling. The first reading was taken on a point of R.L 100.000 m. Draw a page of levelling Field-book and enter readings on it. Find R.Ls. of all points. Apply Check 1.235, 1.396, 2.345, 1.986, 2.148, 3.755, 0.325, 2.568, 1.465, 2.435, 1.356, 0.768, 1.985, 2.655. 8

UNIT—IV

IX (a) What are the points should be observed while conducting levelling work. 5

(b) The following staff reading were recorded for a certain work of levelling 1.810, 2.110, 1.225, 1.455, 0.905, 2.435, 2.810, 2.675 and 1.765. The level was shifted after 4^{th} and 7^{th} readings. The first reading was taken on a bench mark of R.L. 50.000 m. Rule out a page of level book and enter the readings.

(i) Work out the R.Ls of all stations.

(ii) If the staff were held inverted and readings on a ceilling from last instrument position was 3.500, find the R.L of the ceiling. 10

OR

X In running fly levels from a bench mark of R.L 140.602 the following readings were obtained :

Back sight — 1.543, 2.694, 1.416, 2.923.

Fore sight — 0.574, 1.236, 0.596.

From the last position of the instrument, six pegs at 20 m intervals are to be set out on a uniform rising gradient of 1 in 50. The first peg is to have a R.L of 144.000. Work out the staff readings required for setting the tops of the pegs on a given gradient. 15
