Code: 15A01304 **R15**

B.Tech II Year I Semester (R15) Regular & Supplementary Examinations November/December 2017

SURVEYING – I

(Civil Engineering)

Time: 3 hours Max. Marks: 70

PART – A

(Compulsory Question)

*****

1 Answer the following: (10 X 02 = 20 Marks)

(a) Differentiate between precision and accuracy.

(b) List out the tape corrections in chain surveying.

(c) The magnetic bearing of a line is $62° 30'$, What is the true bearing of the line, if the magnetic declination is $3° 45'W$ and $4° 10' E$?

(d) Define orientation and back sighting in plane table surveying.

(e) List out the methods of leveling.

(f) What do you mean by contour interpolation? List out the methods of contour interpolation.

(g) Define transiting and face left in theodolite surveying.

(h) What do you understand by omitted measurement? List out the various cases.

(i) Give the area formulae by trapezoidal rule and Simpson's rule.

(j) List out the uses of Abney level.

PART – B

(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

2 (a) List out the sources of errors and explain in brief.

(b) In carrying a line of levels across a river, the following eight readings were taken with a level under identical conditions: 2.322, 2.346, 2.352, 2.306, 2.312, 2.300, 2.306 and 2.326 m. Calculate: (i) The probable error of single observation. (ii) Probable error of the mean.

OR

3 (a) What is a well conditioned triangle? Why is it necessary to use well conditioned triangles?

(b) A chain line PQ intersects a pond. Two points A and B are taken on the chain line on opposite sides of the pond. A line AC, 250 m long, is set out on the left of AB and another line AD, 300 m long, is set out on the right of AB. Points C, B and D are in the same straight line. CB and BD are 100 and 150 m long respectively. Calculate the length of AB.

UNIT – II

4 Following are the bearings observed while traversing with a compass, an area where local attraction was suspected. Find the correct bearings of the lines and also the true bearings, if the magnetic declination is $10°$ W.

Line	Fore bearing	Back bearing
AB	$59° 00'$	$239° 00'$
BC	$139° 30'$	$317° 00'$
CD	$215° 15'$	$36° 30'$
DE	$208° 00'$	$29° 00'$
EA	$318° 30'$	$138° 45'$

OR

5 List out the methods of plane tabling and explain any two methods.

Contd. in page 2

UNIT – III

6 (a) List out the temporary adjustments of a dumpy level.

(b) The following staff readings were observed successively with a level, the instrument having been moved after third, sixth and eighth readings: 2.228, 1.606, 0.988, 2.090, 2.864, 1.262, 0.602, 1.982, 1 .044 and 2.684 m. Enter the above readings in a page of a level book and calculate the R.L of points if the first reading was taken with a staff held on B.M of 432.384 m.

OR

7 Describe the characteristics of contours with neat sketches.

UNIT – IV

8 Explain how you would measure with a theodolite:

(a) Horizontal angle by repetition.

(b) Vertical angle.

OR

9 Calculate latitudes, departures and closing error for the following traverse and adjust using Bowditch's rule.

Line	Fore bearing	Back bearing
AB	$89° 31'$	$45° 10'$
BC	$219° 76'$	$72° 05'$
CD	$151° 18'$	$161° 52'$
DE	$159° 10'$	$228° 43'$
EA	$232° 26'$	$300° 42'$

UNIT – V

10 The following offsets are taken from a survey line to a curved boundary line.

Distance (m)	0	5	10	15	20	30	40	60	80
Offset (m)	2.50	3.80	4.60	5.20	6.10	4.70	5.80	3.90	2.20

Find the area between the survey line, the curved boundary line, and the first & last offsets by: (i) Trapezoidal rule. (ii) Simpson's rule.

OR

11 Briefly explain about the following:

(a) Hand level.

(b) Box sextant.

*****