

SURVEYING – I

(Civil Engineering)

Time: 3 hours

Max. Marks: 70

PART – A

(Compulsory Question)

- 1 Answer the following: (10 X 02 = 20 Marks)
- Define surveying. What are the fundamental principles of surveying?
 - What are the different sources of errors in chain surveying?
 - Define true meridian and magnetic bearing.
 - Distinguish between closed traverse and open traverse.
 - Define benchmark and reduced level.
 - Define contour, contour interval and horizontal equivalent.
 - Define theodolite surveying. What are the uses of a theodolite?
 - List out the fundamental lines of theodolite.
 - What is trapezoidal rule? What are the limitations of this method?
 - List out the methods adopted for measuring the volume.

PART – B

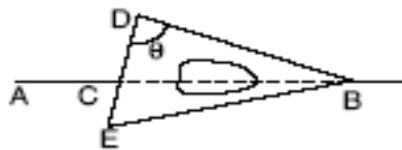
(Answer all five units, 5 X 10 = 50 Marks)

UNIT - I

- 2 (a) What are the instruments used in chain surveying? How a chain survey executed in the field?
(b) What are the divisions of surveying? Explain them in detail.

OR

- 3 In chaining past a pond, stations C and B were taken on the opposite sides of the pond. A line DCE was set by selecting CD = 220 m and CE = 280 m. The lines DB and ED which are on the opposite sides of the pond are measured. If DB = 500 m and EB = 600 m, find obstructed length CB.

**UNIT - II**

- 4 Explain with sketches, the following methods of locating a point by plane table survey (i) Radiation.
(ii) Intersection.

OR

- 5 Below are the bearings observed in a traverse survey conducted with prismatic compass at a place where local attraction was suspected?

Line	F.B	B.B
AB	$74^{\circ}20'$	$256^{\circ}0'$
BC	$107^{\circ}20'$	$286^{\circ}20'$
CD	$224^{\circ}50'$	$44^{\circ}50'$
DE	$306^{\circ}40'$	$126^{\circ}0'$

At what stations do you suspect local attraction? Find the corrected bearings of the lines and also calculate the included angles.

Contd. in page 2

UNIT - III

- 6 (a) Describe in detail how you would proceed in the field for (i) profile leveling, and (ii) cross-sectioning.
- (b) The following staff readings were observed successively with level, the instrument has been moved forward after the second, fourth and eighth readings: 0.875, 1.235, 2.310, 1.385, 2.930, 3.125, 4.125, 0.120, 1.875, 2.030 and 3.765.
The first reading was taken with the staff held upon a benchmark of elevation 132.135. Enter the readings in level book-form and reduce the levels. Apply the usual checks. Find also the difference in level between the first and the last points.

OR

- 7 The following consecutive readings were taken with a dumpy level and 4 m leveling staff on a continuously sloping ground at common intervals of 30 m 0.905 (on A), 1.745, 2.345, 3.125, 3.725, 0.545, 1.390, 2.055, 2.955, 3.445, 0.595, 1.015, 1.850, 2.655, 2.945(on B). The RL of A was 395.500 m. Tabulate the page of field book and calculate the levels of the points.

UNIT - IV

- 8 (a) Write down the list of permanent adjustments needed for a transit theodolite. Describe in detail the trunnion axis adjustment of a transit theodolite.
- (b) Particulars of a traverse ABCDA are as under:

Line	Length (m)	Bearing
AB	145.8	$342^{\circ}24'$
BC	517.2	$14^{\circ}35'$
CD	315.9	$137^{\circ}20'$
DA	?	?

Calculate the length and bearing of DA.

OR

- 9 What is a theodolite? What are the essential parts of a transit theodolite? Show with the help of a neat sketch.

UNIT - V

- 10 (a) Name the three methods of measuring volume. For what purpose each one of these are used.
- (b) Explain the measurement of volume from the cross section.

OR

- 11 A series of offsets were taken from a chain line to a curved boundary line at intervals of 15 meters of 15 meters in the following order.
0, 2.65, 3.80, 3.75, 4.65, 3.60, 4.95, 5.85m
Compute the area between the chain line, the curved boundary and the end offsets by:
- (a) Average ordinate rule.
(b) Trapezoidal rule.
(c) Simpson's rule.
