

Time: 3 Hours

Total marks: 80

NOTE:

- i) Question No. 1 is compulsory.
- ii) Attempt any three out of the remaining five questions.
- iii) Figure to the right indicates full marks.
- iv) Assume suitable data if required.

Q.1 Write notes on **any four** of the following questions. 20

- i.- Differentiate Prismatic and Surveyor compass
- ii.- Characteristics of contour lines
- iii.- Radial contouring.
- iv.- Types of curves.
- v.- Zero circle.

Q.2 A) The following consecutive readings were taken with a level and 4m levelling staff on a continuously sloping ground at common intervals of 30m. 10

0.905(on A), 1.745, 2.345, 3.125, 3.725, 0.545, 1.390, 2.055, 2.955, 3.455, 0.595, 1.015, 1.850, 2.655 and 2.945(on B)

The RL of A was 395.500. Calculate the RLs of different points and find the gradient of the line AB.

B) What are the difficulties faced in levelling? Explain. 10

Q.3 A) An incomplete traverse stable is given below 10

Line	Length(m)	Bearing
AB	100.0	?
BC	80.5	140° 30'
CD	60.0	220° 30'
DA	?	310° 15'

Calculate the length of DA and bearing of AB.

B). Explain the working procedure of repetition and reiteration methods. 10

Q.4 A) A tacheometer fitted with an analytic lens and having a multiplying constant of 100 was set up at R, which is an intermediate point on a traverse leg AB. The following reading were taken with the staff held vertically. 10

Staff station	Bearing	Vertical angle	Intercept (m)	Axial hair reading(m)
A	40° 35'	-4° 24'	2.21	1.99
B	22° 35'	-5° 12'	2.02	1.90

Calculate the length AB and the level difference between A and B

B) Explain the principle and applications of EDM. 10

Q.5 A) the following perpendicular offsets were taken from a chain line to a hedge 10

Distance (m)	0	5	10	15	20	30	40	50	65	80
Offset(m)	3.40	4.25	2.60	3.70	2.90	1.80	3.20	4.50	3.70	2.80

Calculate the area by Trapezoidal rule and Simpson's rule.

B) Explain the principle of Plane table surveying. Discuss about its merits and demerits? 10

Q.6 A) two straight lines AC and CB to be connected by a 3 deg curve, intersect at a chainage of 2,760 m. the WCBs of AC and CB are $45^{\circ}30'$ and $75^{\circ}30'$ respectively. Calculate all necessary data for setting out the curve by method of offsets from the long chord 10

B) What is bearing? Describe the types bearing with necessary diagram. 5

C) What is ranging? Explain the types of ranging. 5
