17451

14115

3 Hours / 100 Marks **Seat No.** | | | | | | | | |

Instructions : (1) All Questions are *compulsory*.

(2) Answer each next main Question on a new page.

(3) Illustrate your answers with neat sketches wherever necessary.

(4) Figures to the right indicate full marks.

(5) Assume suitable data, if necessary.

(6) Use of Non-Programmable Electronic Pocket Calculator is permissible.

(7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. Attempt any TEN : **20**

(a) State the uses of surveying.

(b) State the different types of tapes commonly used in surveying.

(c) What are the basic principles of surveying ?

(d) What do you understand by (i) linear measurement (ii) Angular measurement ?

(e) Distinguish between check line and tie line.

(f) What do you understand by well-conditioned triangle.

(g) Define “Bearing of a line”.

(h) What are the advantages of observing back bearing in a traverse.

(i) Define “level surface”.

(j) Define “line of collimation”.

(k) State the uses of contour maps.

(l) Define “horizontal equivalent”.

(m) Enlist the different accessories used in plane table surveying.

(n) State the situations where plane table survey is preferred.

2. Attempt any FOUR : **16**

(a) Describe briefly the advantages and disadvantages of plane tabling.

(b) Explain the construction and use of polar planimeter.

(c) The perimeter of a figure is traversed clockwise with anchor point inside and with the tracing arm of the planimeter so set that one revolution of the roller measures 100 sq.cm on the paper. The initial and final readings are 2.816 and 9.824. The zero mark of the disc passed the fixed index mark twice in the reverse direction. The area of the zero circle is found to be 2350 sq.cm. Find the area of the figure.

(d) What are the main sources of errors in plane tabling ? How can they be kept to the minimum ?

(e) The plane table can be used to determine the horizontal distance between two inaccessible points. Which method is recommended ?

(f) Describe the characteristics of contours with sketches.

3. Attempt any FOUR : **16**

(a) Explain the factors affecting contour interval.

(b) Explain the main classification of surveying.

(c) What do you understand by “working from whole to part and not from part to whole.” ?

(d) An area surveyed by 30 m chain was plotted to a scale of 1 cm = 30m and found to be 150 sq.cm. It was found later on that the chain used was 8 cm too short. Find the true area of land surveyed.

(e) Enumerate the cumulative and compensating errors in chaining and state how these are eliminated.

4. Attempt any FOUR : **16**

(a) What is local attraction ? How is it detected and Rectified ?

(b) Convert the following whole circle bearings to reduced bearings :

(1) 65°30' (1) 140°20' (1) 255°10' (1) 336°40'

(c) How chaining is carried out on a sloping ground ?

(d) Explain in detail the method of chaining a line.

(e) The following bearings were observed in a running a closed traverse.

Line	F.B.	B.B.
AB	45° 15'	225° 15'
BC	123° 15'	303° 15'
CD	181° 0'	1° 0'
DA	289° 30'	109° 30'

Calculate the interior angles of the traverse.

5. Attempt any FOUR : **16**

(a) State and describe the permanent and temporary adjustments of a prismatic compass.

(b) What are the rules for calculating true bearings when the station is affected from magnetic declination.

(c) Draw a neat sketch of a Dumpy level naming its various parts.

(d) What do you understand by Reciprocal levelling ? Explain in detail. Under what situations is it adopted ?

(e) State the advantages and disadvantages of compass survey.

6. Attempt any TWO : **16**

(a) The fore bearing and back bearing of the lines of a traverse are as follows. Correct the bearings for local attraction and tabulate the results :

Line	F.B.	B.B.
AB	S 40° E	N 40° 30' W
BC	S 31° 30' W	N 31° 45' E
CD	N 76° 00' W	S 76° 00' E
DE	N 4° 15' W	S 3° 15' E
EA	N 69° 00' E	S 68° 15' W

(b) The following consecutive readings were taken with a level and a 4 m levelling staff on continuously sloping ground at a common interval of 20 m.

0.625 at A, 0.905, 1.825, 2.750, 3.520, 3.975, 0.725, 1.420, 1.985, 2.650, 3.720, 0.825, 1.520 and 2.530 on B. The elevation of 'A' was 500.00 m. Make up a level book and apply the used checks. Determine the gradient of line AB.

(c) What are the sources of errors in levelling and precautions to be taken to eliminate the same ?

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