Practical No: 05 **Measure fore bearing and back bearing of a closed traverse of 5 to 6 sides and correct the bearings and included angles.**

I. Practical Significance:

When the fore and back bearing of line does not have the exact difference of ±180 degree it means the prismatic compass is affected by local attraction. Local attraction is the condition arises due to the presence of magnetic field around the compass, due to which the magnetic needle gets deflected from its original position.

II. Industry/Employer expected outcome(s):

- Determining the magnetic bearing of line
- Plotting of open and closed traverse on field.
- Determining and providing correction to the stations affected by local attraction.

III. Course Level Learning Outcome (COs):

- CO 2- Undertake cross staff and compass survey for the given field.

IV. Laboratory Learning Outcome (LLO):

- LLO 5.1 Prepare traverse using Prismatic Compass.

V. Relevant Affective Domain related Outcome(s):

- Using Safe behaviors effectively.
- Maintain high standards of hygiene.
- Efficient application of tools, equipment's and machinery.
- Professional and ethical standards.

VI. Relevant Theoretical Background:

Traversing is that type of survey in which a number if connected survey lines from the directions and lengths of survey line are measured with the help of prismatic compass and chains respectively. When the lines from a closed loop which ends at the starting point is known as closed traverse. If the loop of lines or series of line ends other than the starting point is known as open traverse.

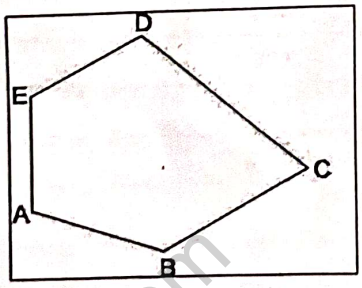

Figure 5.1 Closed traverse

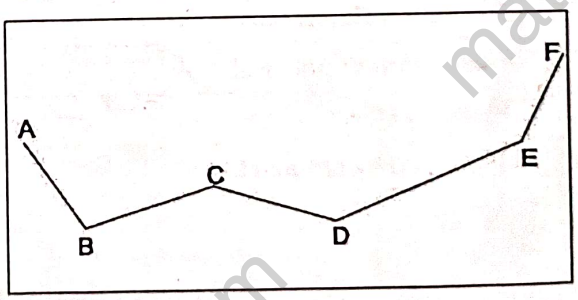

Figure 5.2 Open traverse

VII. Required resources/equipment:

Sr. No.	Resource required	Particulars	Quantity
01	Metric chain	30m	1 nos.
02	Metallic tape	30m	1 nos
03	Ranging rods	2m length	5 nos
04	Pegs	Wooden	1 nos
05	Arrows	GI wired	4 nos
06	Prismatic compass with stand	As per IS standard	1 nos

VIII. Precautions to be followed:

1. Pegs should fix exact over the station in truly vertical manner.
2. Temporary adjustment of the prismatic compass should be done properly.
3. The graduated aluminum ring should suspend freely.
4. Bearing should observe and record carefully.

IX. Procedure:

1. First collect the all instruments as per mentioned in point no VIII from the survey lab.
2. Do the detailed inspection of field and fix the position of stations of closed traverse.
3. Fix the position of stations of traverse A, B, C, D, and E.
4. Measure the distance of line AB, BC, CD, DE, EA.
5. Set the prismatic compass over Station A.
6. Observe the FB and BB of line AB and EA respectively from station A.
7. Set the prismatic compass over Station B.
8. Observe the FB and BB of line BA and AB respectively from station B.
9. After this shift the prismatic compass over the consecutive station C, D, and E.
10. Repeat the procedure and record the FB of forward line and BB of preceding line from each station of traverse and record it accurately in field book.
11. Calculate the included angles from the observed bearings.
12. Apply the check for included angle i.e. sum of included angle should be = (2n-4) x 90°.
13. If condition satisfied then ok or else repeat the procedure on every station.
14. Return back the instrument to survey store.

X. Observation Table:

Sr. No.	Station	Line	Length (m)	Fore Bearing	Back Bearing	Difference (FB-BB)=±180
		AB		68° 15'	248° 15'	
		BC		148° 45'	328° 45'	
		CD		227°	47°	
		DE		218° 15'	38° 15'	
		EA		327° 45'	147° 45'	

XI. Results:

using a prismatic compass we find the out close traveles bearing

XII. Interpretation of results:

using prismatic compass we find crose travels bearing

XIII. Conclusions:

XIV. Practical Related Questions:

1. Explain local Attraction.
2. How to provide correction's to the included angle?

Space for Answer

Q. 1 ⟶ ?

Ans:- Local attraction in a phemomenon that course a compass needle to deviate from true magnetic north. It occurs when external magnetic objects such as steel, iron, or electric wires, inter fare with the compass needle.

- check the diffrence between the force bearing (FB) and back bearing (BB) of a line.

- If the diffrence is not 180 degress, ther local attraction is present.

Q. 2 ⟶ ?

Ans:-

To correct the included angle in surveying you can devide the error the traverse.