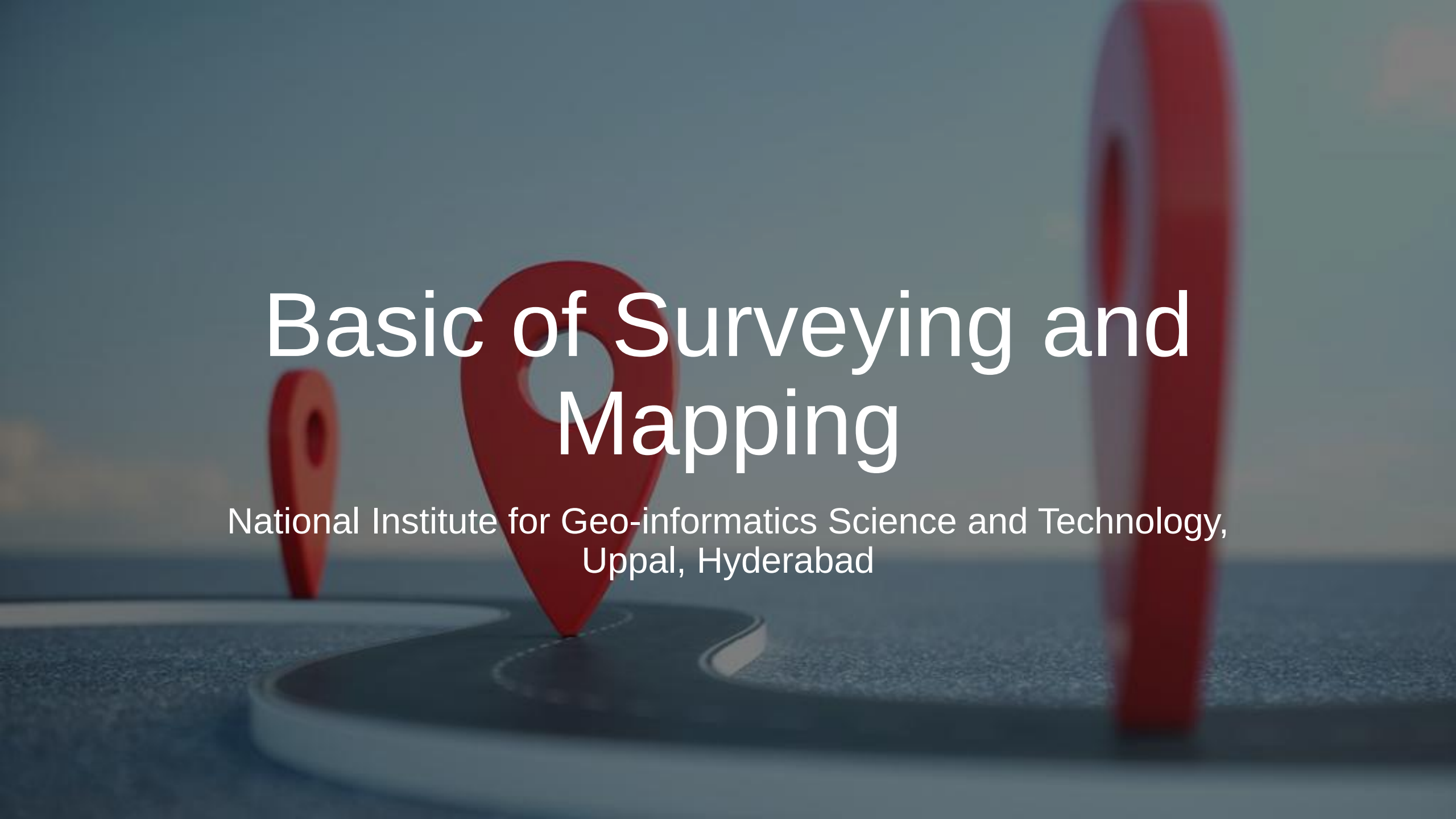
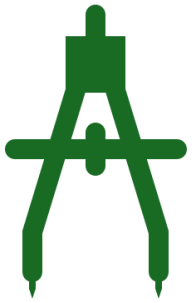


Basic of Surveying and Mapping

National Institute for Geo-informatics Science and Technology,
Uppal, Hyderabad

Objective

Learn about basic of surveying?



Outcome

Describe what is surveying?

Describe what are the fundamental principle in surveying?

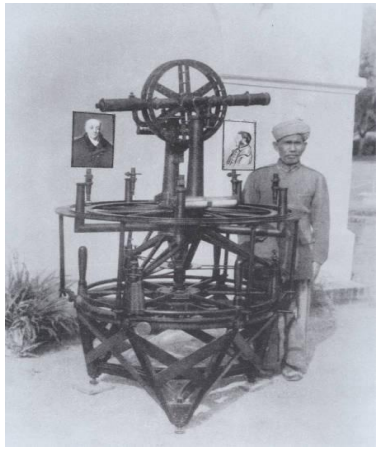
Describe what are the classification of sruveying?

What is Surveying?

- Surveying is the art of making measurements (i.e. distance, angle, height) of the relative positions of points on the surface of the earth and drawing them to a scale on paper to show the natural and artificial features in their correct horizontal and vertical relationship.

Or

- Art and science of obtaining quantified and qualified measurements, the interpretation of these measurements and a meaningful presentation of results.



What is Map

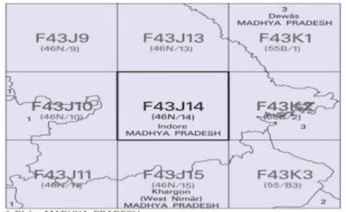
“A map is a graphical representation of selected natural and man made features of the whole or a part of the earth’s surface on a flat sheet of paper on a definite scale and in their correct relative geographical positions and elevations.”

निर्यात के लिए नहीं NOT FOR EXPORT

OPEN SERIES MAP

No. F43J14

Scale 1:50,000



1 Dhār, MADHYA PRADESH.
2 Khandwa (East Nimār), MADHYA PRADESH.

भारतीय सर्वेक्षण विभाग SURVEY OF INDIA

1st Edition 2011. Price: ₹ 70/-

CONVENTIONAL SYMBOLS

Express highway: with toll; with bridge; with distance stone
Roads, metalled: according to importance
Roads, double carriageway: according to importance
Unmetalled road. Cart-track. Pack-track with pass. Foot-path
Streams: with track in bed; undefined. Canal
Dams: masonry or rock-filled; earthwork. Weir
River: dry with water channel; with island & rocks. Tidal river
Submerged rocks. Shoal. Swamp. Reeds
Wells: lined; unlined. Tube-well. Spring. Tanks: perennial; dry
Embankments: road or rail; tank. Broken ground
Railways, broad gauge: double; single with station; under constrn
Railways, other gauges: double; single with distance stone; do
Mineral line or tramway. Kiln. Cutting with tunnel
Contours with sub-features. Rocky slopes. Cliffs
Sand features: (1)flat.(2)sand-hills (permanent). (3)dunes(shifting).
Towns or Villages: inhabited; deserted. Fort
Huts: permanent; temporary. Tower. Antiquities
Temple. Chhatri. Church. Mosque. Idgāh. Tomb. Graves
Lighthouse. Lightship. Buoys: lighted; unlighted. Anchorage
Mine. Vine on trellis. Grass. Scrub
Palms: palmyra; other. Plantain. Conifer. Bamboo. Other trees
Areas: cultivated; wooded. Surveyed tree
Boundary, international
" state: demarcated; undemarcated
" district; subdivision, tahsil or tāluk; forest
Boundary pillars: surveyed; unlocated
Heights, triangulated: station; point; approximate — 200
Bench-mark: geodetic; tertiary; canal — BM 63·3
Post office. Telegraph office. Overhead tank
Rest house or Inspection bungalow. Circuit house. Police station
Camping ground. Forest: reserved; protected
Spaced names: administrative; locality or tribal — KIKRI NĀGA
Hospital. Dispensary. Veterinary : Hospital / Dispensary
Aerodrome. Helipad. Tourist site
Power line: with pylons surveyed; with poles unsurveyed

REFERENCES

NH 59 National Highway No. 59. WR Western Railway. Chy Chimney.

NOTES :-

Heights are in metres and above Indian mean sea level.
Contours are approximate.
A relative height, e.g., ·3r, represents the approximate height, in metres, between the top and bottom of a steep slope.

COMPILATION INDEX

A Surveyed during 1965–66. Updated for major details during 2003–04.

Projection – UTM *Datum – WGS 84*

Magnetic Variation from True North about ½° West in 2005.
(Decreasing by about 1′ annually).

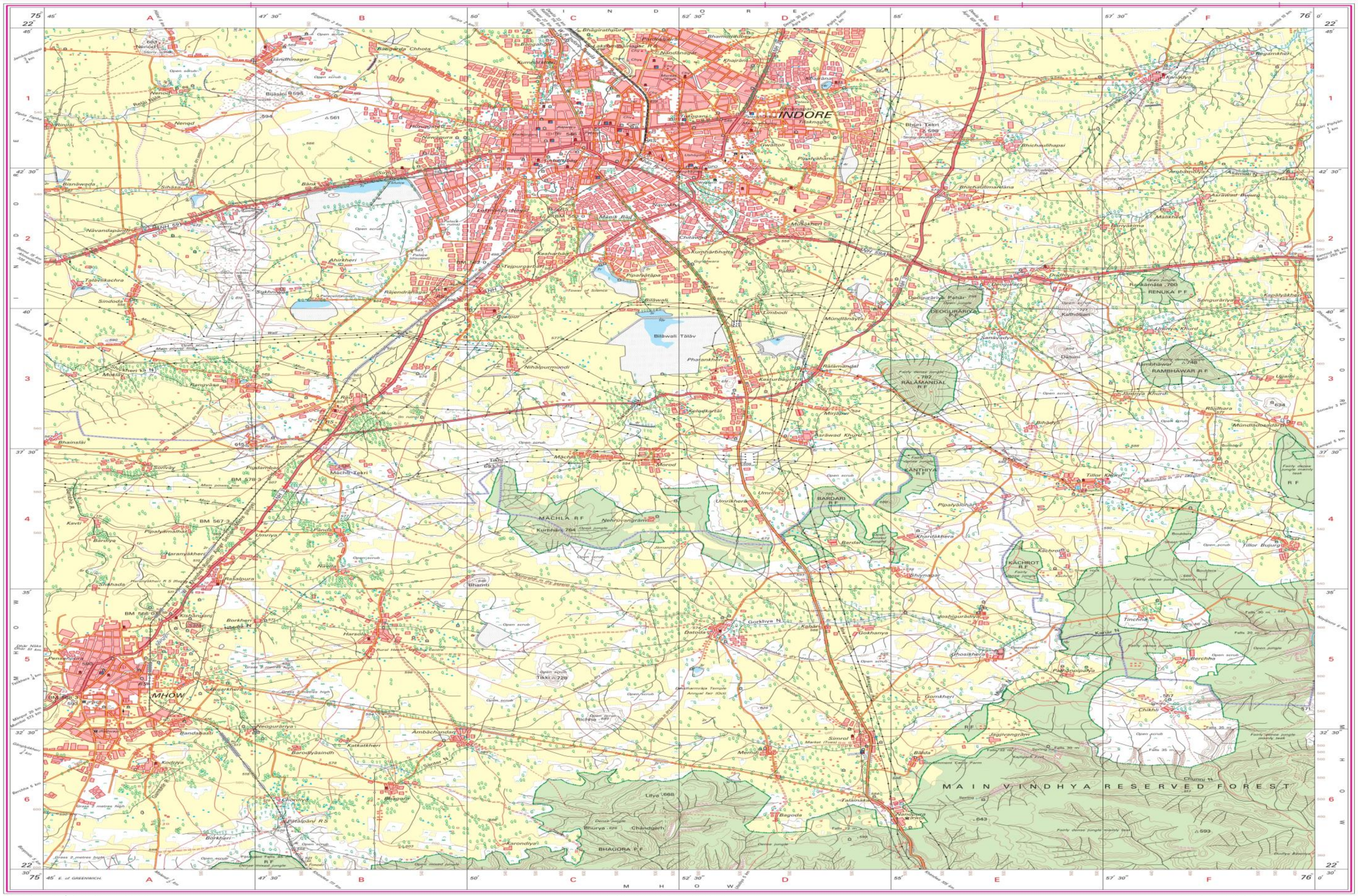
500 m to 1 cm — 1:50,000 — 2 cm to 1 km

Metres 1000 500 0 1 2 3 Kilometres

CONTOUR INTERVAL 20 METRES

For further details about this map, please contact
Director
Madhya Pradesh Geo-Spatial Data Centre
Survey of India
Survey Colony, Vijaynagar
Jabalpur.

WEBSITE – www.surveyofindia.gov.in



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भारत के महासर्वेक्षक स्वर्ण सुब्बा राव, बी.ई. के निदेशन में प्रकाशित,
Published under the direction of Swarna Subba Rao, B.E., *Surveyor General of India,*
Survey of India, Hāthībarkala Estate, Post Box No. 37, Dehra Dūn – 248001 (Uttarākhand),
Department of Science & Technology, Government of India.

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Steps Involved in Surveying and Mapping

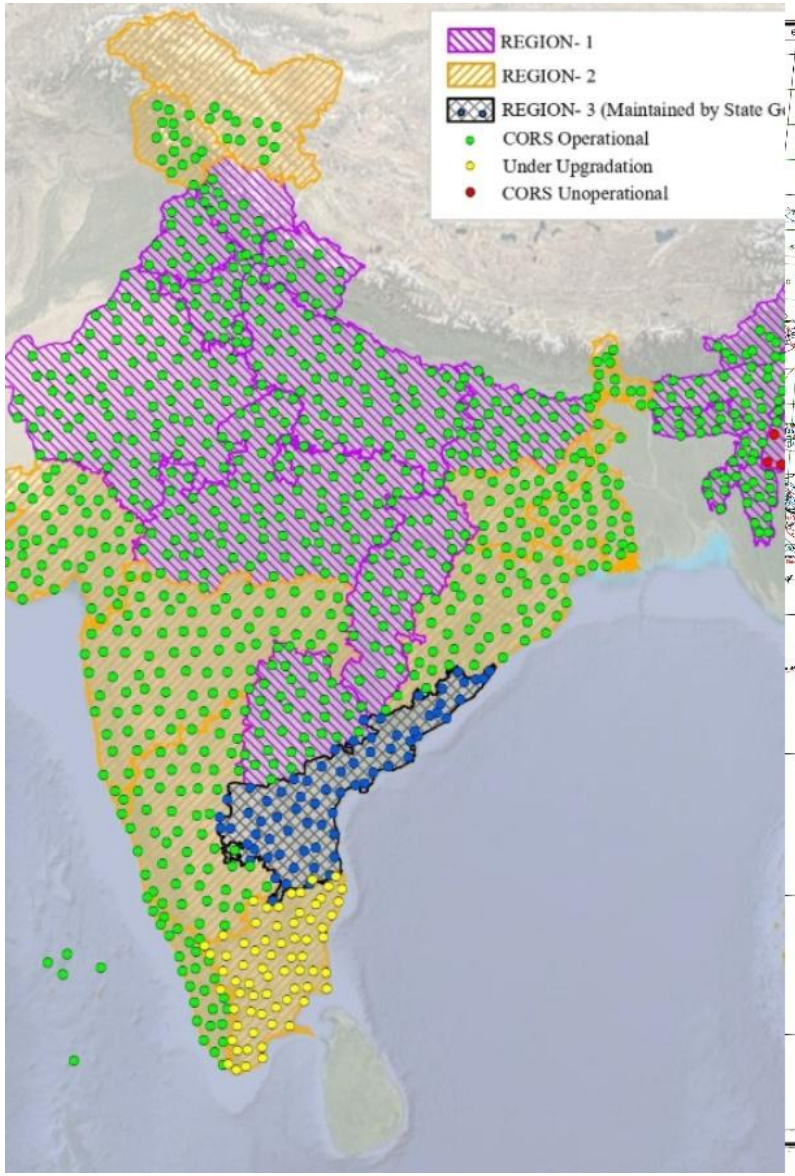
DATA COLLECTION

DATA PROCESSING

DATA PRESENTATION

Fundamentals of Surveying

1. **Working from Whole to Part**: This fundamental principle involves creating a framework of control points that ensures accuracy and minimizes errors. The framework helps contain any errors within specific control points
2. **Locating New Stations**: Surveyors establish new stations by taking at least two measurements—either linear or angular—from established reference points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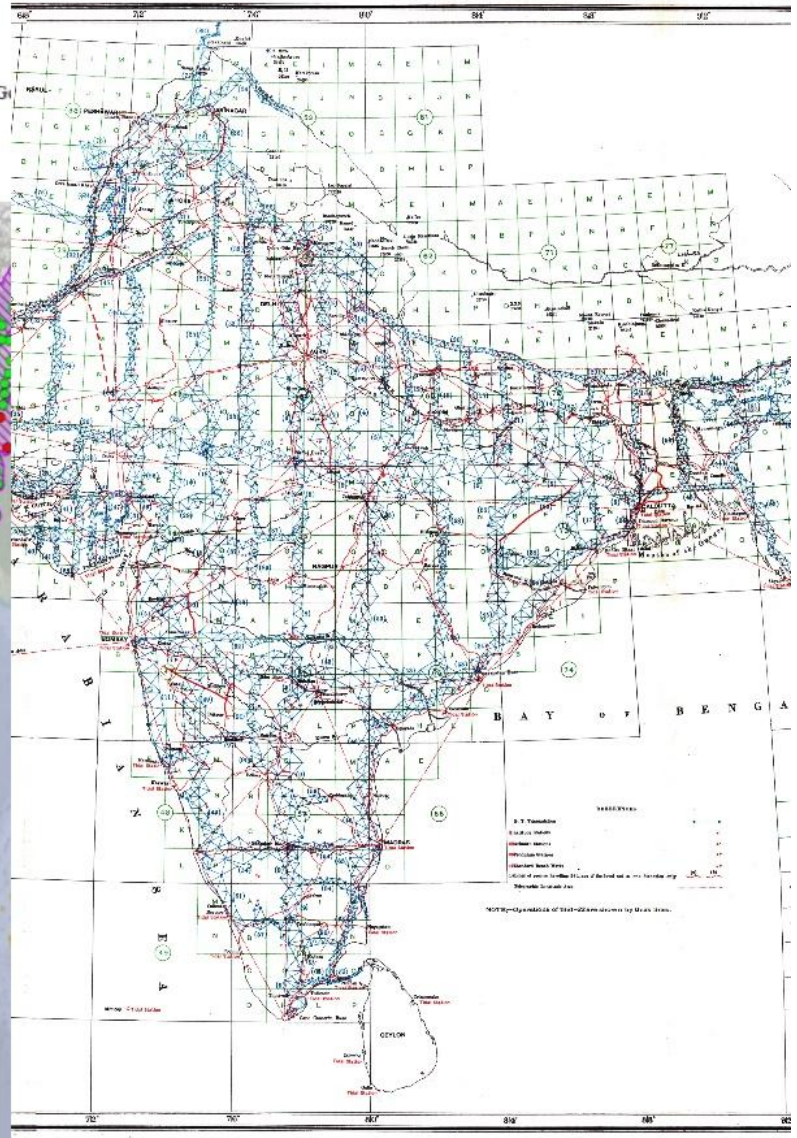
REGION- 2
REGION- 3 (Maintained by State G
CORS Operational
Under Upgradation
CORS Unoperational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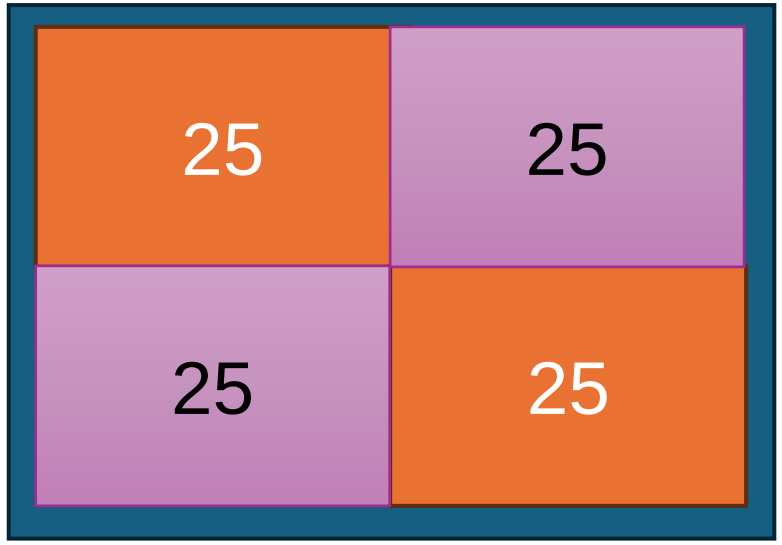
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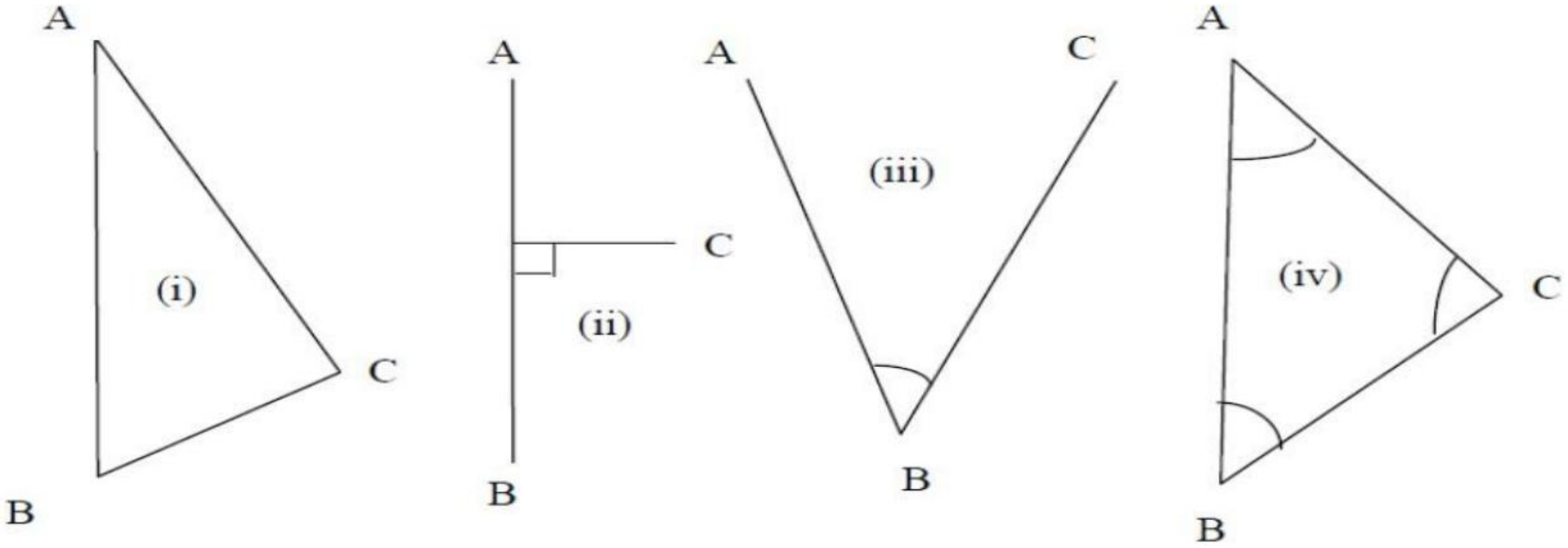
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Other Key Consideration

- Redundancy of Measurement
- Independent Check
- Consistency
- Economy of Survey

Types of Survey

- Plane
- Geodetic Survey

Difference between Plane and Geodetic Survey

The main differences between plane surveying and geodetic surveying lie in their assumptions about the Earth's surface, the scale of application, and the level of accuracy required. Here's a detailed comparison:

1. Assumption of Earth Surface
2. Scale of Application
3. Accuracy and Instrument
4. Triangles formed
5. Cost and Complexity

Classification of Surveying

Classification of surveying refers to categorizing surveys based on different criteria such as purpose, method, or nature of the field. Common classifications include:

- By Purpose:
  - Topographic Survey: Maps natural and man-made features.
  - Cadastral Survey: Establishes land boundaries.
  - Geological Survey: Maps geological features.
- By Method:
  - Plane Surveying: Assumes the Earth's surface is flat.
  - Geodetic Surveying: Accounts for the Earth's curvature.
- By Nature of Field:
  - Land Surveying: Focuses on land surfaces.
  - Marine or Hydrographic Surveying: Conducted in bodies of water

- Thank You