4120
M.A. (Previous) Geography
Practical - II: Air Photo Interpretation and Remote Sensing

Unit - I

a) Definition, Scope and Development of air photo interpretation techniques.
b) Types and quality of aerial photographs; factors affecting quality of aerial photographs.
c) Tools and geometry of air photographs: Pocket and mirror stereoscope; geometry of aerial photographs.
d) Aerial camera, lens and filters.
e) Stages of production of aerial photographs.

Unit - II

a) Construction of sterograms and steotriplets; mosaics: types and their characteristics.
b) Basic air photo measurements: Photographic scale and flying height; measuring height of objects.
c) Displacement: relief and tilt.
d) Calculation of area, number of strips and number of air photos; measuring angles, shutter speed and exposure interval.
e) Parallax: slope measurement.

Unit – III

a) Basic concepts and historical development of Remote Sensing techniques.
b) Process and stages of remote sensing.
c) Electromagnetic spectrum, properties of electromagnetic waves, energy interaction in the atmosphere and earth surface features.
d) Basic principles of thermal Remote Sensing: properties, characteristics of India remote sensing imageries.
e) Remote sensing platforms, sensors and resolution.

Unit - IV

a) Data analysis: Ground truth collection, concept of signatures, data processing and digital processing.
b) Satellite remote sensing platforms - Landsat, SPOT, IRS, INSAT; principal characteristics and geometry of scanner.
c) Orbital characteristics and data production: MSS, TM, LISS, I, LISS II and LISS III, HMR.
d) Equipment and their uses: Optical reflecting projector; diazo printer; overhead reflecting projector; analog image analyzer.
e) Working of above equipment.

Unit - V

a) Elements of object identification.
b) Comparisons of maps, air photos and imageries.
c) Mapping and interpretation of natural and cultural landscapes, field checking with air photos and imageries.
d) Application of remote sensing in geomorphic, agricultural, forestry, resource management, and environmental studies.
e) Computer based analysis of remote sensing data; GIS data model and structure; GIS and remote sensing integration.

Practical Exercises

1. Based on Aerial Photographs:
2. Object identification by Pocket Steoscope.
3. Indexing of aerial photographs Interpretation of the following:

   Topographical aspects: General physiography, drainage orders and basins, vegetation, surface materials. (One exercise of each aspect).

   Cultural aspects: Landuse-land covers (agricultural and general), field patterns settlement and transportation lines. (One exercise of each aspect).

   Based on Satellite Imageries: (One exercise of each aspect)

a) Landuse-land covers.
b) Urban settlement pattern.
c) Forest: types and density.
d) Drainage order and basins.
e) Settlement and transportation lines.
f) Topographical aspects.

Distribution of Marks **Total Marks 50**

Practical – Assessed by Internal Examiner

Part - Air photo Interpretation and remote sensing 50 marks A.- Test paper Lab exercise – 30 marks (20+10),

a) Practical exercise shall be of three hours duration and of 20 marks and candidates will be required to attempt any 2 exercises out of 4.
b) The identification of objects (at least 10) on the air photo pairs shall be of 30 minutes duration and will carry 10 marks

B -Record work – 10 marks
C -Viva-voce – 10 marks

Suggested Readings:

- American Society of Photogrammetry: Manual of Remote Sensing, ASP, Falls Church, VA, 1983.
- Avery, T.E., Interpretation of Aerial Photographs, Burges.
- Barrett, E.C. and L.F. Curtis, Fundamentals of Remote Sensing and Air Photo Interpretation, Macmillan, New York, 1992.
- Compbell, J., Principles of Remote Sensing, Longman, London, 1985.
- Hord, R.M., Digital Image Processing of Remotely Sensed Data, Academic, New York, 1989.
- Robert, G. Reeves et al, Manual of Remote Sensing, Vol. I and II.
- Smith, H.T.V., Aerial Photographs and their Applications, Appleton Century Crofts.
- Talbutt, A., Essentials of Aerial Surveying and Photo Interpretation
- चौनियाल, देवीदत्त, सुदूर संवेदन एवं भौगोलिक सूचना प्रणाली के सिद्धांत, शारदा पुस्तक भवन, इलाहाबाद