

21072 REMOTE SENSING AND GIS (ELECTIVE THEORY I)

DETAILED SYLLABUS

Unit I FUNDAMENTALS OF REMOTE SENSING

Basics of Remote Sensing: Definitions and its components – Energy Sources and Radiation principles – electromagnetic radiation (EMR) – spectrum – wavelength regions important to remote sensing – Atmospheric scattering, absorption – Atmospheric windows – spectral signature concepts – typical spectral reflective characteristics of water, vegetation and soil. characteristic of real remote sensing system, platforms, orbit types, sensors, resolution concept satellite,-Pay load description of important Indian Earth Resources and Meteorological satellites

Unit II PHOTOGRAMMETRY

Geometric elements of a vertical photograph – Stereoscopic plotting instruments, Ortho photos, Flight planning

Unit III IMAGE INTERPRETATION AND ANALYSIS

Fundamentals of Air-photo interpretation - Elements of image interpretation, concepts of digital image processing image Rectification and Restoration, Image enhancement, Image classification, Application of Remote sensing in Civil Engineering

Unit IV FUNDAMENTALS OF GIS

Basic Concepts of GIS – Basic spatial concepts –Coordinate Systems: Definitions - History of development of GIS - Components of GIS: Hardware, Software, Data, People and Methods – Proprietary and open source Software - Types of data – Spatial, Attribute data- types of attributes – scales/ levels of measurements -Data Base Management Systems (DBMS).

Unit V GIS - DATA ENTRY, STORAGE AND ANALYSIS

Data models - Vector and raster data – data compression – data input by digitization and scanning, data storage – attribute data analysis – integrated data analysis- mapping concept - development of map overlay, overlay operation - Errors and quality control. Land Information System (LIS)– Various GIS applications in Civil Engineering. REVISION AND TEST

Reference Book : □ Lo & Yeung (2005), Geographic Information Systems, Prentice of India. □ Anji Reddy.M. (1998), Remote Sensing and Geographical information systems. □ Lillesand, T.M. & Kiefer R.W. (1998), Remote Sensing and image interpretation, John Wiley & Sons, Newyork. □ Burrough P.A. (2000),