AMMI-26 REMOTE SENSING AND GIS

UNIT-1 REMOTE SENSING PROCESS

1.1 Introduction to Remote Sensing,
1.2 Data acquisition and processing, sensor systems, applications
1.3 Radiation (EMR) and its characteristics,
1.4 Radiation principles, Planck"s Law
1.5 Electromagnetic, Stefan's Law, properties of solar radiant energy, atmospheric windows

UNIT-2 PHYSICAL BASIS OF REMOTE SENSING

2.1 Interaction in the atmosphere, nature of atmospheric interaction,
2.2 Atmospheric effects of visible, near infrared thermal and microwave wavelengths,
2.3 Ispectral characteristics of individual leaf
2.4 Interaction at ground surface, interaction with soils and rocks,
2.5 Effects of soil moisture, organic matter, particles, size a nd texture, interaction with vegetation,
2.6 Vegetation canopies, effect of leaf pigments, cell structure, radiation geometry

UNIT-3 PLATFORM AND SENSORS

3.1 Multi concept in remote sensing, general requirements of a platform,
3.2 Balloon aircraft, satellite platforms sun synchronous orbits, sensors for visible near infrared wavelengths, profilers, images, scanners, radiometers
3.3 optical mechanical and push button scanners, spectral, spatial,
3.4 Radiometric and temporal resolution, IFOV, FOV, geometric characteristics of scanners, V/H ratio,
3.5 Comparison of satellite/ aerial platforms and sensors and remote sensing data products, land sat and TM, SPOT, IRS, ERS etc

UNIT-4 VISUAL & DIGITAL IMAGE PROCESSING

4.1 Remote Sensing Data Products,
4.2 Elements of visual Image Interpretations,
4.3 Generation of Thematic Maps,
4.4 Digital Image Processing System, Image Enhancement,
4.5 Image Transformation, Image Classification

UNIT-5 GEOGRAPHICAL INFORMATION SYSTEM

5.1 Difference between image processing system geographical system (GIS),
5.2 Utility of GIS, various GIS packages and their salient features, essential components of a GIS, scanners and digitisers, raster and vector data storage, hierarchical data,
5.3 Network systems, relational database, data management,
5.4 Conventional database management systems,
5.5 Spatial database management data manipulation and analysis,
5.6 Reclassification and aggregation,

5.7 Geometric and spatial operation on data Syllabus for B.Tech (Mining Engineering) Rajasthan Technical University Kota management and statistical modeling,

5.8 Applications and Modern Trends of GIS in various natural resources and engineering applications

Reference Books:

1. Remote Sensing and GIS: B.Bhatta
2. Remote Sensing and Image Interpretation : T.M. Lillensand and R.W. Keifer
3. Principles of Remote Sensing : P.J. Curren
4. Principles of Geographical Information systems for land Resources Assessment : P.A. Baurrough
5. Manual of Remote Sensing, Vol.