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| --- | --- | --- |
| **Remote Sensing and GIS** | | |
| **Sr. No.** | **Core Areas** | **Percentage** |
| 1. | Optical Remote Sensing | 10% |
| 2. | Microwave Remote Sensing | 10% |
| 3. | Photogrammetry | 10% |
| 4. | Cartography | 10% |
| 5. | Land Surveying | 10% |
| 6. | Geographic Information Science | 10% |
| 7. | Geospatial Data Analysis and Modelling | 10% |
| 8. | Positioning Navigation and Timing Services | 10% |
| 9. | Web GIS | 10% |
| 10. | Applications of Remote Sensing and GIS | 10% |
|  | **Total** | **100%** |

1. **Optical Remote Sensing\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_10%**
   1. Definitions, Structure, Sensors
   2. Types of Sensors and Platforms
   3. Image Interpretation and Exploration
   4. Image Processing and Analysis
   5. Image Segmentation and Classification
2. **Microwave Remote Sensing\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_10%**
   1. History and Development
   2. Concepts and Foundation of Microwave Remote Sensing
   3. Passive and Active Microwave Remote Sensing
   4. Image Processing and Analysis
   5. Polarimetry
   6. Lidar and Radar Altimetry
   7. Atmospheric Sounding
3. **Photogrammetry\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_10%**
   1. Principles and Methods
   2. Methodologies for Scanning of Photos
   3. Aerial Triangulation
   4. Wave Measurement
   5. UAV Photogrammetry
4. **Cartography \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_10%**
   1. Evolution of Cartography
   2. Concepts and Foundation of Cartography
   3. Data Acquisition and Map Characteristics
   4. Map Design and Production
   5. Cartographic Data Analysis
   6. Techniques for Geo-visualization
5. **Land Surveying\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_10%**
   1. Topographic Surveying
   2. Cadastral Surveying
   3. Measurement Precision and Accuracy
   4. Surveying Equipment
6. **Geographic Information Science \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_10%**
   1. Raster Data Model
   2. Vector Data Model
   3. Data Acquisition Techniques
   4. Data Transformation
   5. Visualization of spatial data,
   6. Projections and Symbolization
7. **Geospatial Data Analysis and Modelling \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_10%**
   1. Geospatial Data Infrastructure
   2. Spatial Relationships
   3. Exploratory Spatial Data Analysis
   4. Spatial Autocorrelations and Regression
   5. Network and Locational Analysis
   6. Geocomputational methods and modelling
8. **Positioning Navigation and Timing Services \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_10%**
   1. Global Positioning System (GPS)
   2. Global Navigation Satellite System (GNSS)
   3. Global Navigation Satellite System (GLONASS)
   4. BeiDou Navigation Satellite System
   5. European Global Navigation Satellite System (Galileo)
9. **Web GIS \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_10%**
   1. Evolution of Web GIS
   2. Fundamental Component of Web Technologies
   3. Programming Languages for Web GIS; Python, HTML, JavaScript
   4. Web Servers
   5. Client-Side Geoprocessing
10. **Applications of Remote Sensing (RS) and GIS\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_10%**
    1. RS and GIS for Hydrology
    2. RS and GIS for Climatology
    3. RS and GIS for Glaciology
    4. RS and GIS for Urbanization
    5. RS and GIS for Oceanography
    6. RS and GIS for Land Use Land Cover Changes