GPS AND GIS

Paper Code: ETIT-422	**L**	**T/P**	**C**
Paper: GPS and GIS	**3**	**0**	**3**

INSTRUCTIONS TO PAPER SETTERS: **MAXIMUM MARKS: 75**

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be of 12.5 marks

Objectives: To study the fundamentals and scope of Global Information System and Global Positioning System.

UNIT- I

Global Information System (GIS): Introduction, scope and benefits of GIS; application areas of GIS; functional components and elements of GIS; geographic objects: scale, accuracy and resolution.

GIS Cartography and Maps: Digital cartography: selection, classification and simplification; exaggeration and symbolization for cartographic abstraction; Types of Maps; map elements: projection, direction, scale and co-ordinates; Geodatabases; GIS map outputs; Topographic mapping.

[T1,T2][No. of Hrs: 11]

UNIT- II

Geographic Data: Spatial and attribute data; vector and raster models; points, lines, polygon features; computed and associated attributes; grids, cells and image data; linking spatial and attributed data.

Geoprocessing: Geographic co-ordinate system: latitudes and longitudes; Geoids Spheroids ellipsoids and datum's; projections and transformations.

[T1,T2][No. of Hrs: 10]

UNIT- III

Global Positioning System (GPS): Introduction; GPS components: systems, scales and codes; error and accuracy of GPS observation; Differential GPS.

Fundamentals of Satellite Orbits: Orbital Mechanics, Constellation Design

Remote Sensing (RS): Introduction; application of RS; electromagnetic radiation; spectral signatures; aerial/satellite image characteristics: spatial, spectral, radiometric and temporal.

[T1,T2][No. of Hrs: 11]

UNIT- IV

Statistics: Spatial statistics; independent and dependent variables; continuous data: sampling, correlation, regression, frequency and descriptive analysis; discrete data.

Interpolation: Characteristic interpolators; deterministic interpolators; evaluating interpolators.

[T1,T2][No. of Hrs: 10]

Text Books:

Note: There is no single textbook for this course. Suggested Readings:

[T1] Burrough, P.A. and R.A. McDonnell, Principles of Geographic Information System, Oxford University Press, Oxford.

[T2] Chang, K.T., Introduction to Geographic Information System, Tata Mc Graw-Hill, New Delhi.

[T3] Heywood, I. et. al., An Introduction to Geographic Infomation Systems, Pearson Education, Delhi.

[T4] Clarke, K., Analytical and Computer Cartography. 2nd Ed., Upper Saddle River.

[T5] Garmin Corporation., GPS Guide for Beginners available at: http://www.garmin.com/manuals/gps4beg.pdf.

[T6] LLiffe, J.C., Datum and Map Projections for remote Sensing, GIS and Surveying. New York : CRC Press.

[T7] Curran,Paul J., Principles of Remote Sensing, Longman, London & New York.

[T8] Lillesand, T. and R. Kiefer, Remote Sensing and Image Interpretation, Wiley, New York.