Test Code:DUAT06

Programs: MSc Data Analytics and GIS

Question type	Marks	Syllabus
General Aptitude	20	**Unit I** **Verbal Aptitude:** Basic English grammar: Tenses, articles, adjectives, prepositions, conjunctions, verb-noun agreement, and other parts of speech. Basic vocabulary: Words, idioms, and phrases in context. Narrative sequencing. **Quantitative Aptitude:** Data interpretation: Data graphs (bar graphs, pie charts, and other graphs representing data), 2- and 3- dimensional plots, maps, and tables. Numerical computation and estimation: Ratios, percentages, powers, exponents and logarithms, permutations and combinations, summations and series. Mensuration and geometry **Analytical Aptitude:** Logic: Deduction and induction, analogy, numerical relations, and reasoning **Spatial Aptitude:** Transformation of shapes: Translation, rotation, scaling, mirroring, assembling, and grouping, paper folding, cutting, and patterns in 2 and 3 dimensions.
BSc level Mathematics	10	**Unit II** **Statistics and Probability**: Measure of Central tendency, Measure of dispersion, skewness and Kurtosis, Elementary analysis of data. Probability and properties, conditional probability, multiplication rule. Total probability. Bayes' theorem and independence of events.

BSc level questions	20	**Unit III**
		Earth Sciences: Structure and composition of Environment-Atmosphere, Hydrosphere and Lithosphere, Earth Processes, Mineral and Power Resources in India, Biogeochemical Cycles, Meteorology, Climate Change, Origin and evolution of earth, Mineral and Power Resources in India. Agriculture Land Use/ Land Utilization Systems.
		Ecology and Environment: Biosphere, Organizational levels of biosphere, Ecosystem: Structure and Types, Food Chain and Energy Flow, Population and Community Ecology, Biodiversity and its Conservation.
		Natural resources and Management: Natural Resources-Forest, Land and Water Resources, Minerals, Marine, Energy (Renewable and Non-renewable) - Sources, Threats, Conservation and Management.
		Remote sensing and GIS: Electro Magnetic Spectrum, Components and types of remote sensing, Resolutions (Spectral, Spatial, Temporal & Radiometric), Platforms. GIS: components of GIS, Spatial data, Vector and Raster Data, GIS Data Model and Data Structure - Projection and coordinate Systems.
BSc level questions	10	**Unit IV**
		Computer Basics: Organization of a computer, Central Processing Unit (CPU), structure of instructions in CPU, input/output devices, computer memory, and back-up devices.
		Data Representation: Representation of characters, integers and fractions, binary and hexadecimal representations, binary arithmetic: addition, subtraction, multiplication, division, simple arithmetic and two's complement arithmetic, floating-point representation of numbers, Boolean algebra, truth tables, Venn diagrams.