

Test Code: DUAT06

Programme: MSc Data Science and Geoinformatics

Question type	Syllabus
General Aptitude 20 Marks	<p>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.</p> <p>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</p>
	<p>Analytical Aptitude- Logic: Deduction and induction, analogy, numerical relations, and reasoning</p> <p>Spatial Aptitude-Transformation of shapes: Translation, rotation, scaling, mirroring, assembling, grouping, paper folding, cutting, and patterns in 2 and 3 dimensions.</p>
BSc level Mathematics 10 Marks	<p>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.</p>

<p>BSc level questions</p> <p>20 Marks</p>	<p>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.</p> <p>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.</p> <p>Natural resources and Management: Natural Resources-Forest, Land and Water Resources, Minerals, Marine, Energy (Renewable and Non-renewable) - Sources, Threats, Conservation and Management.</p> <p>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.</p>
<p>BSc level questions</p> <p>10 Marks</p>	<p>Computer Basics: Organization of a computer, Central Processing Unit (CPU), structure of instructions in CPU, input/output devices, computer memory, and back-up devices.</p> <p>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 diagram</p>