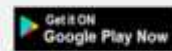




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GENERAL APTITUDE(GA)

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

Reading and comprehension

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, and series

Mensuration and geometry

Elementary statistics and probability

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



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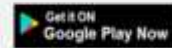
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GEOMATICS ENGG.(GE)

PART A: Common

Engineering Mathematics - Surveying measurements, Accuracy, Precision, Most probable value, Errors and their adjustments, Regression analysis, Correlation coefficient, Least square adjustment, Statistical significant value, Chi square test.

Remote Sensing - Basic concept, Electromagnetic spectrum, Spectral signature, Resolutions Spectral, Spatial, Temporal and Radiometric, Platforms and Sensors, Remote Sensing Data Products - PAN, Multispectral, Microwave, Thermal, Hyperspectral, Visual and digital interpretation methods

GNSS - Principle used, Components of GNSS, Data collection methods, DGPS, Errors in observations and corrections.

GIS - Introduction, Data Sources, Data Models and Data Structures, Algorithms, DBMS, Creation of Databases (spatial and non-spatial), Spatial analysis - Interpolation, Buffer, Overlay, Terrain Modelling and Network analysis.

PART B: Section I

Maps - Importance of maps to engineering projects, Types of maps, Scales and uses, Plotting accuracy, Map sheet numbering, Coordinate systems- Cartesian and geographical, map projections, map datum – MSL, Geoid, spheroid, WGS-84.

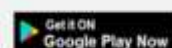
Land Surveying - Various Levels, Levelling methods, Compass, Theodolite and Total Station and their uses, Tachometer, Trigonometric levelling, Traversing, Triangulation and Trilateration.

Aerial Photogrammetry - Types of photographs, Flying height and scale, Relief (height) displacement, Stereoscopy, 3-D Model, Height determination using Parallax Bar, Digital Elevation Model (DEM), Slope.



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PART B: Section II

Data Quantization and Processing - Sampling and quantization theory, Principle of Linear System, Convolution, Continuous and Discrete Fourier Transform.

Digital Image Processing - Digital image characteristics: image histogram and scattergram and their significance, Variance-Covariance matrix, Correlation matrix and their significance.

Radiometric and Geometric Corrections – Registration and Resampling techniques.

Image Enhancement – Contrast Enhancement: Linear and Non-linear methods; Spatial Enhancement: Noise and Spatial filters Image Transformation – Principal Component Analysis (PCA), Discriminant Analysis, Color transformations (RGB - IHS, CMYK), Indices (Ratios, NDVI, NDWI).

Image Segmentation and Classification – Simple techniques.