Syllabus for Entrance Examination into M.Sc. (Geospatial Science & Technology) – 2014

Objective type 60 Questions – Duration of Exam 1 hour

UNIT I – MATHEMATICS

Elementaty Mathematics: Solution of simultaneous linear Equations – Quadratic equations – Progressions – Sum of n –natural numbers- permutations and combinations, Additions, Subtractions and Multiplications of Matrices – Inverse of matrix. Probability and Statistics, Definitions of Probability, addition theorem. Conditional probability, multiplication theorem, statistical independence of events. Collection of data classification of data (Mean, median and Mode) measure of dispersion (range, quartile deviation, mean deviation, standard deviation).

UNIT II – PHYSICS

Mechanics : Gravitation : Nature of gravity, fields and potentials, Newton's universal law of gravitation. Earths Gravity field. Fluid Motion : Properties of steady flow, Bernoulli's equation, Venturimeter, pitot tube, Waves and Oscillations : Simple Harmonic motion stress strain relations and relation between the elastic module viscous flow viscosity of fluids. Electromagnetic theory : Electromagnetic radiation, electromagnetic spectrum, wave length, blackbody radiation, Kirchoff's law, Wein's displacement law, Boltzman's law Earths radiation.

UNIT III – CHEMISTRY

Co-ordination chemistry, stereo chemistry, chemical kinetics, thermodynamics, electro chemistry, chemical bonding, P-block chemistry. Principles of analytical chemistry, d-block elements and f-block elements. Nomenclature of organic compounds, carboxylic acids and their derivaties, nitrogen compounds. Atomic structure, ionic equilibria, gaseous state, solutions, solids, phase rule colloids, and macromolecules.

UNIT IV – GEOLOGY

Earth and Planetary system : size, shape, internal structure and composition of the earth; continents and continental processes; Weathering; Soil formation; action of river, wind and glacier, oceans and oceanic feature; earthquakes, volcanoes, orogeny and mountain building; elements of structural geology; properties of rock forming minerals; Igneous rocks – classification, forms and textures; Metamorphism; controlling factors, metamorphic facies; sedimentary process and environments, sedimentary facies; development and evolution of landforms; slope and drainage;

processes on deep oceanic and near-shore regions, marine geology and ocean resources.

UNIT V – AGRICULTURE, FORESTRY AND BOTANY

Cropping patterns, concepts of multiple cropping, relay cropping and inter – cropping and their importance in relation to food production, crop production practices**.** Causes and classification of plant diseases and their control. Important features, scope and propagation of various types f forestry plantations, such as extension / social forestry, agroforestry and the management of natural forests. Plan Systematics; systems of classification, plant groups, plant anatomy, cell cycle, cell division, plant physiology, transport of minerals and solutes, stomatal physiology ,, N2 metabolism, photosynthesis, respiration.

UNIT VI – ECOLOGY AND ENVIRONMENTAL SCIENCE.

Introduction to ecology and ecological factors, basic concepts of ecology; biosphere, ecosystem,ecotone, ecotype, biome and biomass; various branches and its relations to other sciences; fundamental concepts of ecosystem; food chains; energy flow, tropic levels; physical factors-temperature, light, water, their effects on organisms, adaptations of organisms to these factors; Ecological succession and population ecology; Environmental pollution, atmosphere – air pollution, Hydrosphere – water pollution Lithosphere – soil pollution and their health effects.