

**ANNEXURE- III**  
**SYLLABUS**  
**PAPER-I**  
**GEOLOGY (POST GRADUATE DEGREE STANDARD)**

**Code No.240**

**UNIT I - GENERAL GEOLOGY AND GEOMORPHOLOGY**

Origin and age of the Earth - Interior of the Earth - Isostasy – Continental drift – Seafloor spreading – Plate tectonics - Volcanoes and earthquakes - Effects and causes – Seismic zonation of India.

Landforms - their types and developments - Classification of shorelines and their zsevolution – submarine canyons - Geosynclines - Island arcs.

**UNIT-II - STRATIGRAPHY**

Modern methods of stratigraphic correlation - Cretaceous - Tertiary (K/T) boundary problem with special reference to Tamil Nadu - Nature and age of the Deccan Traps - Cretaceous of Trichy - Classification and economic importance of Dharwar, Cuddapah, Vindhyan, Gondwana group – Palaeozoic formations - Jurassic of Kutch – Siwaliks.

**UNIT III - PALEONTOLOGY**

Evolution and stratigraphic importance of Ammonoids, Trilobites and Graptolites - Gondwana flora - their significance and paleoclimatic conditions - Field and laboratory techniques of micropaleontology - Application of micropaleontology in oil exploration.

**UNIT IV - STRUCTURAL GEOLOGY**

Mechanical properties of rocks - Mechanics and causes of folding and faulting - Classification of folds and faults - Recognition of folds and faults in the field - Joints - Types of unconformity and their recognition in the field.

**UNIT V MINERALOGY AND CRYSTALLOGRAPHY**

Physical, chemical and optical properties of Feldspars, Feldspathoids, Pyroxene, Amphibole, Olivine and Mica groups - Stereographic and Gnomonic projections of natural crystals of normal classes - Derivation of 32 classes of symmetry - Napier's theorem - Equations of a normal - Bragg's law - X-ray diffraction method.

**UNIT VI - IGNEOUS PETROLOGY**

Classification of Igneous rocks - Petrography and petrogenesis of Granites, Alkaline rocks, Anorthosites, Carbonatite, Ultramafics - Study of binary and ternary system of crystallisation - Bowen's reaction principle - Diversity of Igneous rocks – variation diagrams - Crystallisation of Basaltic magma.

**UNIT VII – SEDIMENTARY AND METAMORPHIC PETROLOGY**

Sedimentary depositional environments – Important clastic and non-clastic rocks – Lithification and Diagenesis – heavy minerals and provenance – Tectonics and sedimentation – Sedimentary basins of India – Paleocurrents and Basin Analysis. Classification of metamorphic rocks – Metamorphic grades and depth zones – Metamorphic facies – Metamorphic differentiation –Thermal – Cataclastic and Regional Metamorphism – Origin of Eclogites – Charnockitisation – Granitisation - Metasomatism.

**UNIT VIII - ECONOMIC GEOLOGY**

Classification of ore minerals - Geological thermometry - processes of ore formation - minerals used in cement, refractory and ceramic industries.

Origin, occurrence, distribution and uses ores of Iron, Manganese, Copper, Lead, Zinc and Aluminum - Barite, Graphite, Asbestos and Quartz - occurrence and origin of coal and petroleum in India - Beach placers.

**UNIT IX - HYDROGEOLOGY**

Hydrologic cycle - origin and vertical distribution of Groundwater – Aquifers – Porosity – specific yield and retention - Hydrological properties of important deposits and rocks - Groundwater provinces of India – Groundwater flow- Hydraulic conductivity - Darcy's Law – Tracer techniques – permeameter - pumping tests – Drilling methods - Estimates of groundwater recharge – Managed aquifer recharge – Seawater intrusion – Groundwater quality and pollution – Electrical methods of groundwater exploration.

**UNIT X - APPLIED GEOLOGY**

Electrical, magnetic, gravity and seismic methods of prospecting - Prospecting for radioactive minerals - Geochemical cycle - Geochemical prospecting – geochemical classification of elements and anomaly - Geological investigation pertaining to Dam foundation, tunnels and roads - Engineering properties of rocks - Types of sampling - ore reserve estimation - Mining methods - Environmental impacts due to mining and mineral processes - Renewable and non-renewable resources – Landslides – Geological hazards including tsunami – Remote sensing, GIS and GPS applications.

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**PAPER- II****GENERAL STUDIES (DEGREE STANDARD)****UNIT- I: GENERAL SCIENCE**

**Physics** Universe-General Scientific laws-Scientific instruments-Inventions and Discoveries - National scientific laboratories-Science glossary - Mechanics and properties of matter-Physical quantities, standards and units-Force, motion and energy-Electricity and Magnetism, Electronics and Communication -Heat, light and sound-Atomic and nuclear physics-Solid State Physics – Spectroscopy- Geophysics - Astronomy and space science.

**Chemistry** Elements and Compounds-Acids, bases and salts-Oxidation and reduction-Chemistry of ores and metals-Carbon, nitrogen and their compounds-Fertilizers, pesticides, insecticides-Biochemistry and biotechnology-Electrochemistry-Polymers and plastics.

**Botany** Main Concepts of life science-The cell-basic unit of life-Classification of living Organism -Nutrition and dietetics-Respiration-Excretion of metabolic waste- Bio-communication.

**Zoology** Blood and blood circulation-Endocrine system-Reproductive system-Genetics the science of heredity-Environment, ecology, health and hygiene, Bio- diversity and its conservation-Human diseases-Communicable diseases and non- communicable diseases-prevention and remedies- Alcoholism and drug abuse-Animals, plants and human life.

**UNIT- II: CURRENT EVENTS**

**History** Latest diary of events – National--National symbols-Profile of States-Defence, national security and terrorism-World organizations-pacts and summits-Eminent persons & places in news-Sports & games-Books & authors -Awards & honours-Cultural panorama-Latest historical events - India and its neighbours-- Latest terminology- Appointments-who is who?

**Political Science** 1.India's foreign policy-2. Latest court verdicts – public opinion-3. Problems in conduct of public elections - 4. Political parties and political system in India- 5. Public awareness & General administration- 6. Role of Voluntary organizations & Government.- 7. Welfare oriented Government schemes, their utility.

**Geography** Geographical landmarks-Policy on environment and ecology.

**Economics** Current socio-economic problems-New economic policy & govt. Sector.

**Science** Latest inventions on science & technology-Latest discoveries in Health Science- Mass media & communication.

**UNIT-III: GEOGRAPHY**

Earth and Universe-Solar system - Atmosphere hydrosphere, lithosphere- Monsoon, rainfall, weather and climate-Water resources - rivers in India- Soil, minerals & natural resources-Natural vegetation-Forest & wildlife - Agricultural pattern, livestock & fisheries-Transport including Surface transport & communication - Social geography – population density and distribution-Natural calamities – disaster management-Climate change - impact and consequences - mitigation measures-Pollution Control.

#### **UNIT-IV: HISTORY AND CULTURE OF INDIA**

Pre-historic events--Indus valley civilization-Vedic, Aryan and Sangam age- Maurya dynasty-Buddhism and Jainism-Guptas, Delhi Sultans, Mughals and Marathas-Age of Vijayanagaram and the bahmanis-South Indian history-Culture and Heritage of Tamil People - Advent of European invasion-Expansion and consolidation of British rule-Effect of British rule on socio-economic factors-Social reforms and religious movements-India since independence-Characteristics of Indian culture-Unity in diversity –race, colour, language, custom-India-as secular state-Organizations for fine arts, dance, drama, music- Growth of rationalist, Dravidian movement in TN-Political parties and populist schemes- Prominent personalities in the various spheres – Arts, Science, literature and Philosophy – Mother Teresa, Swami Vivekananda, Pandit Ravishankar , M.S.Subbulakshmi, Rukmani Arundel and J.Krishnamoorthy etc.

#### **Unit-V: INDIAN POLITY**

Constitution of India-. Preamble to the constitution- Salient features of constitution- Union, State and territory- Citizenship-rights amend duties- Fundamental rights- Fundamental duties- Human rights charter- Union legislature – Parliament- State executive- State Legislature - assembly- Status of Jammu & Kashmir- Local government – panchayat raj – Tamil Nadu - Judiciary in India – Rule of law/Due process of law- Indian federalism – center – state relations- Emergency provisions- Civil services in India- Administrative challenges in a welfare state- Complexities of district administration- Elections - Election Commission Union and State. Official language and Schedule-VIII- Amendments to constitution- Schedules to constitution-. Administrative reforms & tribunals- Corruption in public life- Anti-corruption measures – Central Vigilance Commission, lok-adalats, Ombudsman, - Comptroller and Auditor General of India- Right to information - Central and State Commission- Empowerment of women- Voluntary organizations and public grievances redressal- Consumer protection forums.

#### **UNIT-VI: INDIAN ECONOMY**

Nature of Indian economy-Need for economic planning-Five-year plan models-an assessment - Land reforms & agriculture-Application of science in agriculture- Industrial growth - Capital formation and investment-Role of public sector & disinvestment- Development of infrastructure - National income- Public finance & fiscal policy- Price policy & public distribution- Banking, money & monetary policy- Role of Foreign Direct Investment (FDI) - WTO-globalization & privatization - Rural welfare oriented Programmes - Social sector problems – population, education, health, employment, poverty-HRD - sustainable economic growth- Economic trends in Tamil Nadu -Energy Different sources and development- Finance Commission -Planning Commission- National Development Council.

#### **UNIT-VII: INDIAN NATIONAL MOVEMENT**

National Renaissance-Early uprising against British rule-1857 Revolt- Indian National Congress-Emergence of national leaders-Gandhi, Nehru, Tagore, Nethaji - Growth of militant movements -Different modes of agitations-Era of different Acts & Pacts-World war & final phase struggle-Communalism led to partition-Role of Tamil Nadu in freedom struggle - Rajaji, VOC, Periyar, Bharathiar & Others-Birth of political parties /political system in India since independence.

**Unit-VIII: APTITUDE & MENTAL ABILITY TESTS (SSLC Standard)**

Conversion of information to data - Collection, compilation and presentation of data - Tables, graphs, diagrams-Parametric representation of data - Analytical interpretation of data - Simplification - Percentage - Highest Common Factor (HCF) - Lowest Common Multiple (LCM) - Ratio and Proportion-Simple interest-Compound interest- Area - Volume - Time and Work - Behavioural ability - Basic terms, Communications in information Technology - Application of Information and Communication Technology (ICT) - Decision making and problem solving-Logical Reasoning-Puzzles - Dice-Visual Reasoning-Alpha numeric Reasoning-Number Series - Logical Number/Alphabetical/Diagrammatic Sequences.

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