भारत सरकार GOVERNMENT OF INDIA
अंतरिक्ष विभाग DEPARTMENT OF SPACE
भारतीय अंतरिक्ष अनुसंधान संगठन INDIAN SPACE RESEARCH ORGANISATION
राष्ट्रीय सुदूर संवेदन केंद्र NATIONAL REMOTE SENSING CENTRE
बालानगर, हैदराबाद BALANAGAR, HYDERABAD 500 037

No: NRSC-RMT-1-2025/25

Syllabus for Written Test

Advertisement No	:	NRSC-RMT-1-2025 dated 10.05.2025
Name of the post	:	Scientist/ Engineer 'SC'
Post Code	:	**25**
Specialization	:	**Water Resources**
Essential Qualification	:	M.E/ M.Tech in Civil Engineering (with specialization in Water resources/ Hydrology/ Soil & Water Conservation) (Or) Agriculture Engineering (with specialization in Water resources/ Hydrology/Soil & Water Conservation)/ (Or) Water Resources Engineering (with specialization in Water resources/ Hydrology/Soil & Water Conservation) With B.E/ B.Tech in Civil Engineering / Agriculture Engineering
Number of Posts	:	05

The syllabus for the above posts is given below. Candidates may note that it is not exhaustive but indicative only. Refer above advertisement for pattern of the examination.

Part-A: Area/ Discipline Specific part (75 Minutes, 60 Marks, 60 Multiple Choice Questions)

Surface Water Hydrology:

Surface Hydrology: Hydrologic cycle, Hydrometeorology, Hydrographs, Unit Hydrograph theory Precipitation, Infiltration, Evapotranspiration, Soil-Water-Infiltration, Rainfall-Runoff, Routing, flood frequency analysis, Hydrologic Statistics, Hydrological Modelling

Groundwater Hydrology:

Groundwater Hydraulics; Confined and unconfined Aquifers; Saline Water Intrusion into aquifers; Groundwater Management and Conjunctive Use; Groundwater Assessment

Dams & Reservoirs:

Types of Dams/Weirs, Reservoir site selection, Reservoir Sedimentation, Catchment area treatment

Open Channel Hydraulics:

Open channel flow & concepts, Measurement of discharge, Sediment transport in channels, Regime flow theories, gradually varied flow, rapidly varied flow, hydraulic jump, Design of stable channels

Fluid Mechanics:

Properties of fluids, Continuity, Momentum and energy equations and their applications, Laminar and turbulent flow, Flow in pipes, pipe networks; Concepts of boundary layer

Irrigation:

Irrigation concepts, methods, crop & irrigation requirement, Duty, delta, Evapotranspiration estimation, Soil Water Plant Relationship, Irrigation efficiencies, System Performance & Bench marking, Irrigation structures, soil salinity/alkalinity, Irrigation Management

Soil & Water Conservation:

Soil Types & Properties, Infiltration, Water conservation methods, Ground water development, Command area development, soil erosion & control, sediment transport, hydraulic structures planning & design

Environmental Engineering:

Water and Waste Water Quality parameters; Physical, chemical and biological parameters; Water and Waste Water Treatment; Municipal Solid Waste Management

Surveying:

Principles of surveying; coordinate system; Leveling principles & methods; Traversing and triangulation survey, Maps – scale, coordinate system

Surface Water Quality Modelling:

Governing equations for flow and transport in surface waters; Water Quality and Mathematical Interpretation; River Hydrology; Lake Morphometry; Eutrophication and Temperature - Numerical Modelling

Integrated Water Resources Management:

Concepts of IWRM; Economics of Water resources planning & management, Reservoirs planning, Sustainable development of water resources, Flood mitigation and management

Mathematics:

Probability and Statistics: Sampling theorems; Descriptive statistics Distributions; Regression methods; Numerical Methods: Error analysis. Numerical solutions; numerical differentiation

Systems Analysis:

System Concepts, Linear Programming, Dynamic Programming, Simulation; Optimization & simulation techniques, Optimal planning and operation of single and multiple reservoirs

Remote Sensing and GIS:

Concepts of remote sensing – Optical, Microwave, Hyperspectral, Thermal remote sensing; Remote sensing sensors; Digital image Processing concepts; Photogrammetry; Geographic Information System (GIS); Global Navigation Satellite System (GNSS) concepts and applications; Remote sensing and GIS applications in natural resource management, especially in water resource studies

Part-B: Aptitude/Ability tests (30 Minutes, 20 Marks, Maximum of 15 Multiple Choice Questions)

Topics: Numerical Reasoning; Logical Reasoning; Diagrammatic Reasoning; Abstract Reasoning; Deductive Reasoning.

Part-C: Descriptive questions (30 Minutes, 20 Marks)

Technical questions from topics as given under Part-A relevant to the '**specialization'** mentioned in the advertisement.