

NATIONAL INSTITUTE OF TECHNOLOGY KARNATAKA -SURATHKAL  
MANGALORE- 575025.

Advertisement No. No.: 5213-NITK-NTR/Admin.Estt./2025/B1

Date: 06<sup>th</sup> January 2025

Post: Principal Scientific Officer

Syllabus

PART – A

- General Awareness, Quantitative Aptitude, Numerical Ability, Data Interpretation and Logical Reasoning, Current Affairs, Constitution of India.

PART – B

**Administrative components**

- RTI act 2005
- Public financial management system
- Sexual harassment of Women at workplace act 2013
- NEP 2020
- Fire & Safety rules
- Letter/email drafting skills
- Data Communication skills
- Decent computer skills, including security, data transmission

**Technical components**

- AMC and CAMC of equipments
- Electrical requirements of equipments
- Sample life cycle assessment
- NABL accreditation requirements
- Vacuum creation and measurements
- Temperature measurements
- Data plotting and analysis (using MATLAB/ORIGIN, Image analysis.
- Basics of operation, data interpretation and technical details of (FEGSEM, XRD, AFM, GDOES, OES, NMR, HRLCMS, GCMS, Photo luminescence spectrometer, Metal 3D printer, Profilometer, UV Visible spectrometer)-
- Sample storage systems
- Sample preparation for (FEGSEM, XRD, AFM, GDOES, OES, NMR, HRLCMS, GCMS, Photo luminescence spectrometer, Metal 3D printer, Profilometer, UV Visible spectrometer)
- Liquid nitrogen systems
- Noting and Drafting

The Interview/personality test shall be conducted in such a manner that the candidate's suitability for the post is tested, among other things, through academic qualifications, experience, general awareness/knowledge, communication and problem-solving skills, and overall personality, etc.

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Post: Principal Technical Officer

Syllabus

1. Database Design & Architecture

- Database Fundamentals, Relational and non-relational databases, Design of efficient and scalable database schemas, SQL (queries, indexing, and optimisation, maintaining data integrity and availability).

2. Server Infrastructure

- Server setup, and maintenance, Web server infrastructure management, configuration and monitoring of Nginx, Strategies for horizontal and vertical scaling.

3. Security Management

- Managing Access Control, Data Protection Regulations and compliance standards, Handling security breaches and implementing preventive measures, Best practices for securing data at rest and in transit.

4. API Integration

- Understanding RESTful APIs, GraphQL, and SOAP, Techniques for integrating internal and external third- party services, Working with OAuth, API keys, and token-based authentication, Familiarity with tools like Postman and Swagger, API documentation.

5. Containerisation & Orchestration

- Docker (Basics of containerisation, creating Docker images, and managing containers), Kubernetes (architecture, deployment, and scaling applications), Continuous integration and deployment strategies (CI/CD).

6. Mobile Application Development

- Proficiency in Java and Kotlin programming languages, Android SDK and development tools like Android Studio, Flutter, UI/UX design principles, Android lifecycle management &state handling, Testing frameworks (Espresso, Junit).

7. Other skills

- Tools for System Performance Monitoring, Diagnosing and resolving backend and infrastructure issues, Log management, Optimising server and application performance.

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Post: Principal SAS Officer and SAS Officer

SYLLABUS

PART-A

English Language and Comprehension: English Grammar, Sentence Correction and Completion, Paragraph Summary, Reading Comprehension & Inferences, Verbal Analogy & Critical Reasoning.

Logical Reasoning: Number/Alphabet Series, Reasoning Analogy, Relations, Mathematics & Numerical Ability: Arithmetic, Numerical Computation, Numerical Reasoning, Data Reasoning and Data Interpretation.

General Awareness and Current Affairs: Constitution of India, Current National and International events, Higher & Technical Education in India, Various Policies of the MoE, NEP, NISP, NIRF

Computer Proficiency: Knowledge of MS Windows, MS Office (MS word, Power point, Excel), Internet, E-mail system, Basic Data security measures.

PART-B

History, Principles and foundation of Physical Education, Research Process in Physical Education and Sports Sciences, Principles and Methods of Sports Training, Tests, Measurement and Evaluation in Physical Education, Yogic Sciences, Sports Technology, Fitness, Wellness and Lifestyle Management, Applied Statistics in Physical Education and Sports, Physiology of Exercise, Sports Journalism and Mass Media, Sports Management, Sports Sponsorship, Contemporary trends in Physical Education and Sports, Olympic Movement.

Sports Psychology, Adaptive and Corrective Physical Education, Sports Medicine, Sports Biomechanics and Kinesiology, Sports Medicine, Physiotherapy and Rehabilitation, Sports Nutrition and Weight Management, Anatomy and Physiology, Health Education.

Value and Environmental Education, Sports Sociology, Information and Communication Technology (ICT) in Physical Education, Research and Statistics in Physical Education, Theory of sports and Game, Computer Applications in Physical Education, Sports Curriculum Design, Educational Technology and Methods of Teaching and Physical Education, Organisation and Administration, Contemporary issues in physical education, fitness and wellness, Officiating and Coaching.

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Post: Superintending Engineer / Executive Engineer  
Syllabus

**Building Planning and Construction**

Principles of building planning and design, integrated approach, building byelaws, building services such as vertical transportation, water supply, sanitation, thermal ventilation, lighting, acoustics, fire protection, and electrical fittings. Landscape Development, Signs and Outdoor Display Structures; Approach to Sustainability, SDG.

Different construction materials and their properties - different types of cement - grades of cements - tests on cement and other construction materials. Types of modern building materials such as ceramic products – glass - metals and plastics. Preparation of mortar and cement concrete. Different types of concretes. Types of foundations. Types of doors – windows - lintels - stairs. Types of floors - roofs. Different methods of pointing, plastering and termite proofing. Scaffolding - shoring - underpinning - form work. Procedure of colour washing - white washing - painting - varnishing.

Types of steel and reinforced cement concrete structures, floors, doors and windows, roofs, finishing works, waterproofing, modern construction materials, repair and rehabilitation, and maintenance of facilities. Structural Design Calculation for Loads, Forces and Effects; Soils and Foundations; Masonry; Concrete. Acoustics, sound insulation and noise control; Installation of lifts, escalators, and moving walks; information and communication enabled installations.

**Construction and Asset/Facility Management**

Construction project management fundamentals, building systems maintenance, asset lifecycle management, space planning, regulatory compliance, emergency preparedness, energy efficiency, financial management related to facilities, and operational procedures for maintaining building infrastructure.

**Water supply Engineering**

Sources of supply, design of intakes, pipe networks, estimation of demand, water quality standards, primary and secondary treatment, maintenance of treatment units, conveyance and distribution of treated water, rural water supply.

**Wastewater Engineering and Pollution Control**

Quantity, collection and conveyance and quality, disposal, design of sewer and sewerage systems, pumping, characteristics of sewage and its treatment, rural sanitation, sources and effects of air and noise pollution, monitoring, and standards. Recycling and Reuse of treated sewage water.

**General Civil Engineering**

Estimation and costing, Contracts and specifications, contract management, dispute resolution, arbitration, Tendering, GFR, Arbitration, RTI, GRIHA, green building concepts, Drainage Waste Management & Waste to Energy: Sources, classification, collection, treatment and disposal. Waste to Energy, regulations, CPCB and EPA guidelines. Purchase Rules and Regulations, GEM, CPWD Manuals and Building codes etc Disaster management: Prevention and mitigation, Labour Welfare: Working conditions - Regulation of Work hour including overtime, health & safety practices HRM: Conflict

Management Strategies & Techniques, Group and Team Management - Norm, Decision Making, Team Size, Team Effectiveness, Managerial Roles, Planning, Staffing, Coordinating and Controlling. Solid Waste Management, Underground Gas Supply Norms. Measurement of distance and elevation. Contouring. Total station. Landscape planning, development, and signages. Road Maintenances, road markings and traffic signages.

**Presentation by the Candidate:**

The candidate for the post of Superintendent Engineer is expected to make a comprehensive presentation (15 minutes) highlighting the following aspects from their own experience and expertise:

- Brief about the contracts/consultancy/project implementation works undertaken for their organization
- Own experience relevant to project implementation and campus maintenance
- Project planning and latest management technology / other relevant software
- Contract Management, Financial Management, GFR and Building codes etc.
- Liaison with Project implementation agencies like PWD, CPWD, MES etc.
- Vision/Plan for the estate management and campus improvement work of the Institute
- Noting and Drafting

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Date: 06<sup>th</sup> January 2025

Post: Assistant Registrar / Deputy Registrar

Syllabus

PART – A

- General Awareness, Quantitative Aptitude, English language proficiency, Comprehension, Numerical Ability, Data Interpretation and Logical Reasoning, Current Affairs, Constitution of India.

PART – B

- FR & SR covering Service matters, pay Fixation, TA Rules, LTC Rules, CCS (Leave) Rules, MACP, Foreign Service, Deputation, Lien, etc., CCS (Pension) Rules, CCS (CCA) Rules, CCS (Conduct) Rules, Provisions of Central Government Accounts (Receipts and Payments) Rules. Provisions of Delegation of Financial Powers Rules (DFPR), NEP 2020
- Recruitment & Reservation Rules
- GPF / NPS Rules & Regulations, Public Financial Management System (PFMS)
- Income Tax ACT 1961 along with the Finance Act
- Budget and Accounting in Autonomous Bodies
- General Financial Rules 2017
- Academic Administration, Ordinances for all academic / research programs
- NIT Act & Statutes, Conduct of Board of Governors Meetings, Finance Committee, Senate Meetings, BWC and other BSCs
- RTI Act 2005
- Sexual Harassment of Women at Workplace Act 2013
- Noting and Drafting

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Post: Assistant Librarian / Deputy Librarian

SYLLABUS

PART-A

- English Language and Comprehension: English Grammar, Sentence Correction and Completion, Paragraph Summary, Reading Comprehension & Inferences, Verbal Analogy & Critical Reasoning
- Logical Reasoning: Number/Alphabet Series, Reasoning Analogy, Relations, Mathematics & Numerical Ability: Arithmetic, Numerical Computation, Numerical Reasoning, Data Reasoning and Data Interpretation.
- General Awareness and Current Affairs: Constitution of India, Current National and International events, Higher & Technical Education in India, Various Policies of the MoE, NEP, NISP, NIRF.
- Computer Proficiency: Knowledge of MS Windows, MS Office (MS word, Power point, Excel), Internet, E-mail system, Basic Data security measures.

PART-B

- Introduction to Library and Information Science: History, Concepts and principles, Role and functions, Types of libraries, Information Organisation and Retrieval - Cataloguing and classification, Metadata standards, Information retrieval techniques, Information Sources and Services, Online databases and digital libraries, Open access and scholarly communication.
- Collection Development and Management: Selection policies and criteria, Acquisitions and budgeting, Collection assessment and weeding, Information Sources and Services, Reference services and information literacy, Online databases and digital libraries, Open access and scholarly communication, TQM, MIS.
- Information Technology and Systems: Library management systems (LMS), Information storage and retrieval systems, Emerging technologies, Digital Preservation and Archiving, Institutional Repositories, ROAR, DOAR, SHARPA-ROMIO, Content Management, Application of Artificial Intelligence, Expert Systems and Robotics in Libraries, Library Consortiums.
- Research Methods in Library and Information Science: Research design and methodologies, Data collection and analysis, Writing research proposals and reports, Information Ethics and Intellectual Property, Copyright and fair use, Privacy and confidentiality Ethical issues in information dissemination
- Bibliometrics, Scientometrics & Webometrics - Measuring Scientific Publications, Citations, h-Index, Impact Factor, Scientometric Indicators, Altmetrics etc. Future Trends and Challenges.

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Post: Medical Officer

SYLLABUS

PART - A

- Constitution of India, CCS (Conduct) Rules, RTI Act 2005, Sexual Harassment of Women at Workplace Act 2013.
- General Aptitude, Numerical Ability, Data Interpretation and Logical Reasoning, Current Affairs, Basic Computer Knowledge.

PART - B

- General medicine, Paediatrics, Surgery, Obstetrics & Gynaecology, Preventive & Community Medicine, Psychiatry.
- Administrative knowledge needed for a health center at NITs, Medical Health Insurance, Computer usage Skills and basic knowledge of computer, Medical services software, Noting and Drafting.

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