



ગુજરાત બાયોટેકનોલોજી યુનિવર્સિટી

Gujarat International Finance Tec (GIFT)-City, Gandhinagar

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Syllabus of Elimination Test Part-1 for

1. Account Officer, 2. ICT Officer, 3. Assistant Engineer (Civil) 4. Assistant Engineer- (Electrical))

Medium: English

Total Marks-25

1. Geography, History and Cultural heritage of India with special reference to Gujarat
2. Indian Economy and Planning
3. Indian Polity and the Constitution of India
4. General Mental Ability
5. General Science, Environment, and Information Communication Technology
6. English language and Grammar
7. Gujarati language and Grammar
8. Matters related to Higher Education
9. New Education Policy with special focus on Higher Education, Constitutional and statutory provisions related to Higher Education, statutory councils such as UGC, AICTE, Central and Gujarat Government policies related to higher education, topics related to Centre of Excellence, institute of National importance, military or social activities being undertaken at higher education level.
10. Laws and rules Governing Administration of Public Entity
11. Office manual of Gujarat Government (Gujarat purchase policy, 2016, General Financial Rules- 2017, procurement of Equipment's and services (with emphasis on GeM), Gujarat Govt. Reservation Policy, Gujarat Civil Service Rules, Retirement benefits to Employees including that of New Pension Scheme and Contributory Provident fund, Right to Information Act-2005, tendering and purchase procedure of Govt. of Gujarat
12. General Administration related to University Functioning, UGC, Gujarat Biotechnology policy, Gujarat Biotechnology University act, 2018.

Syllabus of Elimination Exam Part-2
(01) Syllabus of Account officer

Medium: English

Total Marks: 75

1. Financial Matters including Finance of Public Entity such as General Financial Rules 2017 issued by Govt. of India, Ministry of Finance, Procurement of Equipment's and services (with special emphasis on GeM), GCSR Govt. General conditions of Services (Rules related to pay, deputation, Lien, LTC, Leave, CGHS), Retirement benefits to Gujarat Govt.
2. Employees including that of New Pension Scheme and Contributory Provident fund
Financial Accounting Methods/ Audit/ Tally & Accounting related Software, Financial Management related to Institution like University, RTI Act, University & UGC Acts, etc., GST, IT rules, Banking and Financial Institutions and their functioning.
3. **Financial accounting:**
Basic accounting concepts, Principals-assumptions, Types of Accounts and their Rules, Process of accounts, Capitals and Revenue Accounts, Accounting Books and Trial Balance, Final Accounts, Rectification of Errors, Bank Reconciliation Statement, Financial statements, Partnership Accounts- Admission, Retirement, Death, Dissolution and Piecemeal Distribution of Cash Company accounts as Per Companies Act-2013; issue and Forfeiture of Shares, Accounting of underwriting Commission, Purchase of Business, Liquidation, Amalgamation, Absorption and Reconstruction, Holding Company Accounts Valuation of Shares and Goodwill, Bank Accounts Accounting Standards: Issued by ICAI and Ministry of Corporate Affairs, AS-1 to AS - 34 (ICAI), International Accounting Standards (IAS) International Financial Reporting Standards (IFRS), Indian Accounting Standards (Ind-AS)
4. **Auditing:**
Meaning & Basic Elements-Characteristics-Objectives-Types-Advantages Internal Control, Investigation, Internal Audit, Vouching -Meaning-Objectives-Types, Valuation of Assets and Liabilities, Duties and Responsibility of an Auditor, Appointment of an Auditor, Company Audit- Provisions of Companies Act-2013, Auditor's Report & Certificate, Tax Audit, Cost Audit, Audit Program
5. **Cost and Management Accounting:**
The concept of cost, types of cost, Marginal Cost, Sunk Cost, Relevant Cost, Differential Cost, Opportunity Cost, Historical Cost, Period Cost, Fixed, Variable and Semi-Variable Cost, Cost Accounting and Cost Ascertainment, Direct Labour, Direct Material, Direct Expenses, Prime Cost, Factory Cost, Cost of Production, Cost of Sales, Stock Register, FIFO, LIFO, Weighted Average Method, Uniform Costing, Different methods of Costing-Unit Costing, Process Costing, Batch and Job Costing, Cost Accounting Standards Managements Accounting: Meaning, Characteristics, Nature, Ratio Analysis, Funds Flow Analysis, Cash Flow Analysis, Marginal Costing and Break Even Analysis, Decision making, Standard Costing, Budgetary Control, Types of Budgets, Cash Budget, Flexible Budget, Zero Base Budgeting.
6. **Financial Management:**
Capital Structure, Financial and Operating Leverage, Cost of Capital, Capital Budgeting, Working Capital Management, Dividend Policy. Money Market and Capital market, working of Stock Exchanges in India NSE, Regulatory Authorities: SEBI, rating agencies, Computer Applications in Accounting and Finance.
7. **Goods and Services Tax:**
GST Concept and GST laws: An Introduction Including Constitutional aspect, salient features of GST, Benefits of GST, Overview of GST Acts

8. **Income-tax law:**
Basic concept, tax incidence, Definitions in Indian Income Tax Act-1961, exempted incomes, Residential Status, computation of taxable income under various heads, Deductions and Reliefs, computation of taxable income of individuals and firms, deductions of tax, filling of returns, different types of assessment; defaults and penalties, Tax planning, tax evasion and tax avoidance.
9. **Introduction and Basic Concepts of Economics:**
Definition - Nature and Scope of Economics, Economic Goods v/s Free Goods, Price and value, Want and Demand
Demand: Meaning of Demand, Determinants of Demand, Law of Demand, Difference between Change in Demand and Change in Quantity Demanded, Demand Forecasting
Supply: Meaning of supply, Factors affecting supply, Law of supply, Assumption of law of supply, Exceptions of law of supply, Change in supply, Concepts of elasticity of supply, Price elasticity of supply, Income elasticity of supply, Cross elasticity of supply, Methods to measure Elasticity of supply.
10. **International Trade:**
Introduction, Meaning, needs and factors leading to international trade, Advantages and disadvantages of international trade, Foreign exchange, World Trade Organization - its functions and policies, Structure of India's foreign trade: composition and direction, EXIM Bank, EXIM policy of India, Regulation and promotion of foreign trade, International Economic Institutions-IMF, WORLD BANK, IFC, IDA, ADB, Multinational corporations- joint ventures, India and WTO, intellectual property rights, Balance of payments, Methods to correct disequilibrium.
11. **Financial Administration:**
Monetary and Fiscal policies, Public Debt, Budget- types and forms; Budgetary process; financial accountability; Public accounts and audit, budget as a political, instrument; Parliamentary Control of Public Instrument; Parliamentary Control of Public Expenditure; Role of finance ministry in monetary and fiscal area
12. **Business Statistics & Data Processing:**
Data types, data collection and analysis, sampling, need and methods of sampling, Probability theory, Probability Distribution, analysis and interpretation of data. Index numbers, Statistical quality control, correlation and regression, Linear Programming
Data processing - elements, data entry, data processing and computer application, Computer application to functional areas- Accounting, Inventory Control, Business Reporting & fundamentals of XBRL (extensible Business Reporting Language)
13. **Banking and Financial Institution:**
Importance of Banking to business, meaning and function - function of commercial banks, Types of Banks and their functions: Reserve Bank of India, NABARD and Rural Banking, Banking Sector Reforms in India, E-Banking, Development of Banking: IDBI, IFCI, SFCs, UTI, SIDBI, Introduction to New Banking Institutions- Payment Banks, MUDRA Bank, Mahila Bank.

(02) Syllabus of ICT Officer

Syllabus of Part-2

Medium: English

Total Marks: 75

1. Data Structures:

Programming and Data Structures Programming in C. Recursion. Arrays, stacks, queues, linked lists, trees, binary search trees, binary heaps, graphs.

2. Discrete Mathematics:

Propositional and first order logic. Sets, relations, functions, partial orders and lattices. Groups. Graphs: connectivity, matching, coloring. Combinatorics: counting, recurrence relations, generating functions.

3. Algorithms:

Analysis, Asymptotic notation, Space and Time Complexity, Worst case and average analysis, Divide and conquer, tree and graph traversals, Searching, sorting & hashing Algorithms, Algorithm

design techniques: greedy, dynamic programming and divide-and-conquer. Graph search, minimum spanning trees, and shortest paths.

4. Databases:

Integrity constraints, Normal forms, File organization, Indexes, B and B+ trees, Transaction processing, various types of schedules, concurrency control.

5. Operating Systems:

Operating System Processes, threads, inter-process communication, concurrency and synchronization. Deadlock. CPU scheduling. Memory management and virtual memory. File systems.

6. Computer Networks:

Computer Networks Concept of layering. LAN technologies (Ethernet). Flow and error control techniques, switching. IPv4/IPv6, routers and routing algorithms (distance vector, link state). TCP/UDP and sockets, congestion control. Application layer protocols (DNS, SMTP, POP, FTP, HTTP). Basics of Wi-Fi. Network security: authentication, basics of public key and private key cryptography, digital signatures and certificates, firewalls.

7. Analytics:

Descriptive and predictive analytics, OLAP, differences between OLTP and OLAP systems, Data Cubes, Data Warehousing, star, snowflake and fact constellation schema models, overview data mining techniques, in-database Analytics, Advanced SQL.

NoSQL

8. Databases:

Differences between SQL and NoSQL, Different representation of NoSQL data types, CAP theorem, properties of NOSQL Databases.

9. Data Centre:

Data storage, Data availability, Data management; Cloud Infrastructure, Virtualization, Pipelining; Public cloud, private cloud, hybrid cloud; Businessdata/ service scalability, reliability.

10. Mobile Application:

Mobile platforms, Phones, PDAs, Cellular Technologies- @G, 3G, 4G, GSM, CDMA networks, App Development, UI design.

11. Software Engineering:

Software engineering principles, Agile Programming, Software Testing and project management, SLA, SCADA, Software quality.

12. Cyber Security:

Threats, Vulnerabilities and attacks, data security, data privacy, data protection, Ethical hacking, DoS attacks, WiFi hotspot, Botnet, IT security and risk management, CERT-In roles and functions, National Cyber Security Policy-2013, Cyber Laws, Roles and Responsibilities of CISO (Chief Information Security Officer), IT Act 2000.

13. E-Governance:

Roles of Electronic Commerce ©, Business (B), Governance (G) in Digital India; G2G, C2C, C2B, C2G, B2C; Collaborative APIs; Collaborative application development; Collaborative digital platforms; Electronic Data Interchange (EDI); Enterprise resource planning (ERP), Citizen Relationship Management; IT/ITeS usage policy devising for organization and enterprise application; familiarity in COBIT5; Smart villages and smart cities; e-Utilities to citizens, Services on demand; e-Empowerment, e-Employment; e- Learning, various modes of digital payments, digital libraries; Public safety, ethics and social responsibilities.

14. General awareness of IT Projects:

Mission Mode Projects, Digitization India Platform (DIP), Digital locker, GI CLOUD (MEGHARA), E-KRANTHI etc., E-governance policies and programmes, Gujarat IT/ITeS policy 2016-21, Various organization of Union and State Government related to Information and Technology, Science, Technology and Innovation Policy of Gujarat, Legislative framework in our Country in the field of IT.

15. Current Trends and Recent Advancement in the field of Information Technology.

(03) Syllabus of Assistant Engineer- Civil

Medium: English

Total Marks: 75

1. Building Materials:

Stone, Lime, Glass, Plastics, Steel, FRP, Ceramics, Aluminum, Fly Ash, Basic Admixtures, Timber, Bricks and Aggregates: Classification, properties and selection criteria; Cement: Types, Composition, Properties, Uses, Specifications and various Tests; Lime & Cement Mortars and Concrete: Properties and various Tests; Design of Concrete Mixes: Proportioning of aggregates and methods of mix design.

2. Solid Mechanics:

Elastic constants, Stress, plane stress, Strains, plane strain, Mohr's circle of stress and strain, Elastic theories of failure, Principal Stresses, Bending, Shear and Torsion.

3. Structural Analysis:

Basics of strength of materials, Types of stresses and strains, Bending moments and shear force, concept of bending and shear stresses; Analysis of determinate and indeterminate structures; Trusses, beams, plane frames; Rolling loads, Influence Lines, Unit load method & other methods; Free and Forced vibrations of single degree and multi degree freedom system; Suspended Cables; Concepts and use of Computer Aided Design.

4. Design of Steel Structures:

Principles of Working Stress methods, Design of tension and compression members, Design of beams and beam column connections, built-up sections, Girders, Industrial roofs, Principles of Ultimate load design. Design of Concrete and Masonry structures:

Limit state design for bending, shear, axial compression and combined forces; Design of beams, Slabs, Lintels, Foundations, Retaining walls, Tanks, Staircases; Principles of pre-stressed concrete design including materials and methods; Earthquake resistant design of structures; Design of Masonry Structure.

5. Construction Practice, Planning and Management:

Construction - Planning, Equipment, Site investigation and Management including Estimation with latest project management tools and network analysis for different Types of works; Analysis of Rates of various types of works; Tendering Process and Contract Management, Quality Control, Productivity, Operation Cost; Land acquisition; Labour safety and welfare.

6. Building Construction:

Brick and stone masonry walls, types of masonry, cavity walls, reinforced brickwork, building services, detailing of floors, roofs, ceilings, stairs, doors and windows, finishing, formwork, ground water control techniques, cofferdams, functional planning of building, orientations of buildings, low cost housings.

7. Flow of Fluids, Hydraulic Machines and Hydro Power:

Fluid Mechanics, Open Channel Flow, Pipe Flow:

Fluid properties; Dimensional Analysis and Modeling; Fluid dynamics including flow kinematics and measurements; Flow net; Viscosity, Boundary layer and control, Drag, Lift, Principles in open channel flow, Flow controls. Hydraulic jump; Surges; Pipe networks.

Hydraulic Machines and Hydro power:

Various pumps, Air vessels, Hydraulic turbines - types, classifications & performance parameters; Power house - classification and layout, storage, pondage, control of supply.

8. Hydrology and Water Resources Engineering:

Hydrological cycle, Ground water hydrology, Well hydrology and related data analysis; Streams and their gauging; River morphology; Flood, drought and their management; Capacity of Reservoirs.

Water Resources Engineering: Multipurpose uses of Water, River basins and their potential; Irrigation systems, water demand assessment; Resources - storages and their yields; Water logging, canal and drainage design, Gravity dams, falls, weirs, Energy dissipaters, barrage Distribution works, Cross drainage works and head-works and their design; Concepts in canal design, construction & maintenance; River training, measurement and analysis of rainfall.

9. Environmental Engineering:

a) Water Supply Engineering:

Sources, Estimation, quality standards and testing of water and their treatment; Rural, Institutional and industrial water supply; Physical, chemical and biological characteristics and sources of water, Pollutants in water and its effects, Estimation of water demand; Drinking water Standards, Water Treatment Plants, Water distribution networks.

b) Waste Water Engineering:

Planning & design of domestic waste water, sewage collection and disposal; Plumbing Systems. Components and layout of sewerage system; Planning & design of Domestic Waste-water disposal system; Sludge management including treatment, disposal and re-use of treated effluents; Industrial waste waters and Effluent Treatment Plants including institutional and industrial sewage management.

Geo-technical Engineering and Foundation Engineering:

c) Geo-technical Engineering:

Soil exploration - planning & methods, Properties of soil, classification, various tests and interrelationships; Permeability & Seepage, Compressibility, consolidation and Shearing resistance, Earth pressure theories and stress distribution in soil; Properties and uses of geo-synthetics.

d) Foundation Engineering:

Types of foundations & selection criteria, bearing capacity, settlement analysis, design and testing of shallow & deep foundations; Slope stability analysis, earthen embankments, Dams and Earth retaining structures: types, analysis and design, Principles of ground modifications.

10. Surveying and Geology:

a. Surveying:

Classification of surveys, various methodologies, instruments & analysis of measurement of distances, elevation and directions; Field astronomy, Global Positioning System; Map preparation; Photogrammetry; Remote sensing concepts; Survey Layout for culverts, canals, bridges, road/railway alignment and buildings, Setting out of Curves.

b. Geology:

Basic knowledge of Engineering geology & its application in projects.

c. Bridge Engineering:

Fundamentals of Bridge Engineering , Bridge Site Investigations and Planning, Bridge Hydrology, Standards of Loadings for Bridge Design, Different Types of Bridges, Bridge Superstructure, Bearings and Substructure Design, Design of Bridge Foundations, Bridge Approaches, River Training Work & Protection Work, Methods of Bridge Construction, Inspection, maintenance & Repair of Bridges, Testing of Bridges, Bridge Architecture. Civil Engineering in Gujarat- Important Buildings, Monuments and Construction- Historical as well as Modern. Important Reservoir-Its Storage, Catchment and Command Area, Technical features and important characteristics.

d. Current Trends and Recent Advancements in the Above Fields.

(04) Syllabus of Assistant Engineer (Electrical)

Syllabus of Preliminary Exam Part-2

Medium: English

Total Marks: 75

1. Basic Electrical Engineering

DC circuits, AC circuits, Transformers, Electrical Machines, Power Converters, and Electrical Installations.

Electrical Circuit Analysis--

Network Theorems, Solution of First and second order networks, Sinusoidal steady state analysis, Electrical Circuit Analysis Using Laplace Transforms, Two Port Network and Network Functions, Analog Electronic Circuits

2. Electrical Machines:

Magnetic fields and magnetic circuits, Electromagnetic force and torque: DC machines, DC machine -motoring and generation, Transformers, Fundamentals of AC machine windings, Pulsating and revolving magnetic fields, Induction Machines, Single-phase induction motors, Synchronous machines.

3. Electromagnetic Fields:

Review of Vector Calculus, Static Electric Field, Conductors, Dielectrics and Capacitance, Static Magnetic Fields, Magnetic Forces, Materials and Inductance, Time Varying Fields and Maxwell's Equations, Electromagnetic Waves.

4. Digital Electronic:

Fundamentals of Digital Systems and logic families, Combinational Digital Circuits: Sequential circuits and systems, A/D and D/A Converters, Semiconductor memories and Programmable logic devices.

5. Power Electronics:

Power switching devices, Thyristor rectifiers, DC-DC buck converter, DC-DC boost converter, Single-phase voltage source inverter, Three- phase voltage source inverter. Signals and Systems

Introduction to Signals and Systems, Behavior of continuous and discrete-time LTI systems, Fourier, Laplace and z- Transforms, Sampling and Reconstruction.

6. Power Systems:

Basic Concepts, Generation, Power System Components, Transformers, Synchronous Machines, Over-voltages and Insulation Requirements, Generation of Over-voltages, Fault Analysis and Protection Systems, Switchgear, Introduction to DC Transmission & Renewable Energy Systems, Power Flow Analysis, Stability Constraints in synchronous grids, Control of Frequency and Voltage, Monitoring and Control, Power System Economics and Management. Power System Protection: Introduction and Components of a Protection System, Faults and Over-Current Protection, Equipment Protection Schemes, Digital Protection, Modeling and Simulation of Protection Schemes, System Protection

7. Control Systems:

Introduction to control problem, Feedback Control, Time Response Analysis, Concept of Stability, Frequency-response analysis, Introduction to Controller Design, State variable Analysis, Introduction to Optimal Control and Nonlinear Control.

8. Microprocessors:

Fundamentals of Microprocessors, the 8051 Architecture, Instruction Set and Programming, Addressing modes. Memory and I/O expansion buses, control signals, memory wait states. Interfacing of peripheral devices such as General Purpose I/O, ADC, DAC, timers, counters, and memory devices.

9. HVdc Transmission Systems:

dc Transmission Technology, Analysis of Line Commutated and Voltage Source Converters, Control of HVdc Converters, Components of HVdc systems, Stability Enhancement using HVdc Control, MTdc Links, Electrical Energy Conservation and Auditing, Energy Scenario, Basics of Energy and its various forms, Energy Management & Audit, Energy Efficiency in Electrical Systems, Energy Efficiency in Industrial Systems, Energy Efficient Technologies in Electrical Systems, Energy wheeling and Energy Banking.

10. Industrial Electrical Systems:

Electrical System Components, Residential and Commercial Electrical Systems, Illumination Systems, Industrial Electrical Systems I and II, Industrial Electrical System Automation.

11. Non-Conventional Sources of Energy, Bureau of Energy Efficiency, Gujarat Energy Development Agency, Gujarat Solar Power Policy- 2021, Waste to Energy Policy-2016, Gujarat Wind Power Policy- 2016, Gujarat Wind Solar Hybrid Power Policy 2018-19, Gujarat Small Hydel Policy-2016.-

12. Electricity Act, 2003; Indian Electricity Rules, 1956; Gujarat Electricity Industry (Reorganization & Regulation) Act, 2003; Tariff and functions of Electricity Regulatory Commission.

13. Current Trends and Recent Advancements in the field of Electrical Engineering.

Syllabus of Elimination test for Section officer

Part-1

Medium: English and Gujarati

Total Marks-25

1. Geography, History and Cultural heritage of India with special reference to Gujarat.
2. Indian Economy and Planning.
3. Indian Polity and the Constitution of India:
4. English language and Grammar
5. Gujarati language and grammar
6. General Mental Ability and Reasoning Ability: Includes questions relating to both verbal and non-verbal types, analogies, similarities, differences, space visualization, problem solving, analysis, judgment, decision making, visual memory, discrimination, observation, relationship, concepts, arithmetical reasoning, verbal and figure classification, arithmetical number series etc.
7. General Science, Environment and Information & Communication Technology
8. Quantitative Aptitude- Includes questions relating to Simplification, Decimals, Fractions, L.C.M., H.C.F., Ratio & Proportion, Percentage, Average, Profit & Loss, Discount, Simple & Compound Interest, Mensuration, Time & Work, Time & Distance, Tables & Graphs, etc.

Part-2

Medium: English and Gujarati

Total Marks-75

1. The Gujarat Civil Services Classification and Recruitment (General) Rules, 1967
2. Gujarat Civil Services (Additions to Pay) Rules, 2002
3. The Gujarat Civil Services (Pension Rules) Rules, 2002
4. The Gujarat Civil Services (Joining Time, Foreign Service, Deputation Out of India, Payment during Suspension) Rules, 2002
5. The Gujarat Civil Services (Pay) Rules, 2002
6. The Gujarat Civil Services (Leave) Rules, 2002
7. The Gujarat Civil Services (Travelling Allowance) Rules, 2002
8. Office Procedure (Non-Secretariat)
9. Gujarat Civil Services (Conduct) Rules-1971
10. Gujarat Civil Services (D&A) Rules-1971
11. Existing Purchase Policy of the State Government PURCHASE POLICY- 2016
12. Gujarat (Right of Citizens to Public Services) Act, 2013 and time to time Provisions
13. Right to information act 2005
14. Transparency Accountability in Public Administration
15. Importance of training in public administration and for improvement in public administration
16. Statutory, regulatory and quasi-judicial institutions
17. Lokpal and Lokayukta
18. Current trends and recent advancements in the field of public administration
19. Emotional intelligence, concept, its usefulness in administration and governance
20. Issues and challenges related to ethics- corruption, Lokpal, Lokayukta
21. Matters related to Higher Education
22. New Education Policy with special focus on Higher Education, Constitutional and statutory provisions related to Higher Education, statutory councils such as UGC, AICTE, Central and Gujarat Government policies related to higher education, topics related to Centre of Excellence, institute of National importance, military or social activities being undertaken at higher education level
23. Laws and rules Governing Administration of Public Entity

24. Office manual of Gujarat Government (Gujarat purchase policy, 2016, General Financial Rules- 2017, procurement of Equipment's and services (with emphasis on GeM), Gujarat Govt. Reservation Policy, Gujarat Civil Service Rules , Retirement benefits to Employees including that of New Pension Scheme and Contributory Provident fund, Right to Information Act-2005, tendering and purchase process of Govt. of Gujarat
25. General Administration related to University Functioning, UGC.