



# CO-OPERATIVE SERVICE EXAMINATION BOARD

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## **EXAMINATION TO THE POST OF** **SYSTEM ADMINISTRATOR**

*(DETAILED SYLLABUS)*

SUBJECT	MARKS	DETAILED SYLLABUS
<b>I. GENERAL ENGLISH</b>	<b>10</b>	<p>(i) <b>English Grammar</b></p> <ol style="list-style-type: none"><li>1. Types of Sentences and Interchange of Sentences.</li><li>2. Different Parts of Speech.</li><li>3. Agreement of Subject and Verb.</li><li>4. Articles</li><li>5. Uses of Primary and Modal Auxiliary Verbs</li><li>6. Question Tags</li><li>7. Infinitive and Gerunds</li><li>8. Tenses</li><li>9. Tenses in Conditional Sentences</li><li>10. Prepositions</li><li>11. The Use of Correlatives</li><li>12. Direct and Indirect Speech</li><li>13. Active and Passive voice</li><li>14. Correction of Sentences</li><li>15. Degrees of Comparison</li></ol> <p>(ii) <b>Vocabulary</b></p> <ol style="list-style-type: none"><li>1. Singular &amp; Plural, Change of Gender, Collective Nouns</li></ol>

		<ol style="list-style-type: none"> <li>2. Word formation from other words and use of prefix or suffix</li> <li>3. Compound words</li> <li>4. Synonyms</li> <li>5. Antonyms</li> <li>6. Phrasal Verbs</li> <li>7. Foreign Words and Phrases</li> <li>8. One Word Substitutes</li> <li>9. Words often confused</li> <li>10. Spelling Test</li> <li>11. Idioms and their Meanings</li> <li>12. Expansion and meaning of Common Abbreviations</li> </ol>
<b>II. GENERAL KNOWLEDGE</b>	<b>20</b>	<ol style="list-style-type: none"> <li>(i) United Nations</li> <li>(ii) History of the Freedom struggle in India</li> <li>(iii) History of Travancore</li> <li>(iv) Social reform movements</li> <li>(v) Political History (India/Kerala)</li> <li>(vi) Indian Constitution</li> <li>(vii) Indian Five-Year Plans, Economic reforms</li> <li>(viii) Reorganization of States</li> <li>(ix) Governance, and Governance systems (India/Kerala)</li> <li>(x) Indian States &amp; their Characteristics</li> <li>(xi) Oceans, Continents, Global Warming</li> <li>(xii) Kerala's geography, districts, rivers</li> <li>(xiii) Agricultural crops, minerals, Green Revolution</li> <li>(xiv) Art, Sports, Literature, Culture (World, India, Kerala),</li> <li>(xv) Current Affairs</li> </ol>
<b>III. TEST of REASONING</b>	<b>10</b>	<p><b>(Basic arithmetic, mental ability, and observation skills assessment)</b></p> <ol style="list-style-type: none"> <li>(i) Numbers and Basic Operations</li> <li>(ii) Fraction and Decimal Numbers</li> <li>(iii) Percentage</li> </ol>

		<ul style="list-style-type: none"> <li>(iv) Profit and Loss</li> <li>(v) Simple and Compound Interest</li> <li>(vi) Ratio and Proportion</li> <li>(vii) Time and Distance</li> <li>(viii) Time and Work</li> <li>(ix) Average</li> <li>(x) Laws of Exponents</li> <li>(xi) Mensuration</li> <li>(xii) Progressions</li> <li>(xiii) Series</li> <li>(xiv) Problems on Mathematics Signs</li> <li>(xv) Position determination test</li> <li>(xvi) Analogy- Word Analogy, Alphabet Analogy, Number Analogy</li> <li>(xvii) Odd man out</li> <li>(xviii) Number review system</li> <li>(xix) Coding and De Coding</li> <li>(xx) Family Relations</li> <li>(xxi) Sense of Direction</li> <li>(xxii) Time and Angles</li> <li>(xxiii) Time in a clock and its reflection</li> <li>(xxiv) Date and Calendar</li> <li>(xxv) Clerical Ability</li> </ul>
<b>IV. CO-OPERATION &amp; BANKING</b>	<b>10</b>	<ul style="list-style-type: none"> <li>(i) Co-operative principles – Definition of ICA – values and ethics – Co-operative Common wealth – Evolution of Co-operative principles – Distinctive features of Co-operation – Co-operation and Joint stock company – Co-operations as a balancing factor between capitalism, Socialism and Communism.</li> <li>(ii) Evolution of Co-operative movement in India – before independence and after independence</li> <li>(iii) Committees and Commissions <ul style="list-style-type: none"> <li>(a) All India Rural credit survey Committee</li> </ul> </li> </ul>

		<p>(b) Committee on Co-operative credit (VL Metha)</p> <p>(c) All India Rural credit review committee</p> <p>(d) CRAFTCARD</p> <p>(e) Agricultural and Credit Review Committee</p> <p>(f) State aid to Co-operatives:- NCDC, NDDDB, NHB, NABARD etc</p> <p>(iv) Co-operative education and training – National Co-operative University, need and importance – ICA, NCUI, SCU, CCU, NCCT, NCCE, VAMNICOM, ICM, ACSTI, KICMA, CAPE, Co-operative week Celebrations, International Co-operative Day – Co-operative Flag.</p> <p>(v) Marketing and processing societies, Advantage of Co-operative marketing, Constitution and working of primary marketing societies and market fed. State Co-operative rubber marketing federation, Kerafed, Rubco, RAIDCO, CAMPCO.</p> <p>(vi) Risk Fund Scheme, Deposit Guarantee Scheme, Co-operative employees Self-Finance Pension Scheme, Kerala Co-operative Ombudsman Scheme, Member Relief Scheme, Consortium Lending Scheme, Kerala Co-operative Welfare and Development Scheme, Co-operative Employees Welfare Board.</p> <p>(vii) Banking System in India- Scheduled &amp; Non- Scheduled Banks, Commercial Banks, RRBs, Co-op: Banks, Foreign</p>
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<p><b>V. COMPUTER</b></p>	<p><b>50</b></p>	<p><b>1) DIGITAL ELETRONICS, COMPUTER ORGANISATION &amp; OPERATING SYSTEM</b></p> <p>(i) Number systems: Binary, Octal, Hexadecimal and conversions.</p> <p>(ii) Logic gates, Boolean algebra, simplification techniques.</p> <p>(iii) Combinational and sequential circuits: flip-flops, counters, multiplexers, registers.</p> <p>(iv) Functional units of a computer: ALU, control unit, CPU architecture.</p> <p>(v) Instruction cycle and addressing modes.</p> <p>(vi) Memory hierarchy: RAM, ROM, Cache, Virtual Memory.</p>

- (vii) Input/Output interfaces, bus systems, interrupt handling.
- (viii) Operating system types: batch, time-sharing, real-time.
- (ix) Process scheduling, synchronization, threads, deadlocks.
- (x) Memory management: paging, segmentation, virtual memory techniques.
- (xi) File systems, device drivers, system boot process (BIOS/UEFI)
- (xii) Windows and Linux server administration: user and group policies, services, disk quotas, cron jobs.
- (xiii) Concepts of system hardening and performance tuning.
- (xiv) Virtualization basics: Hypervisors (VMware, Hyper-V), virtual machines, snapshot and rollback concepts.
- (xv) Cloud fundamentals: IaaS, SaaS, PaaS models; private/public/hybrid clouds in BFSI; regulatory concerns over data localization.

## 2) DATA STRUCTURES & PROGRAMMING IN C

- (i) C programming fundamentals: data types, variables, operators, control flow
- (ii) Arrays, pointers, strings, functions, structures, file handling
- (iii) Data structures: linked lists (singly, doubly, circular), stacks, queues (linear, circular, priority)
- (iv) Trees: binary trees, BST, AVL trees.
- (v) Graphs: representation, traversal (BFS, DFS)
- (vi) Searching and sorting: linear, binary, bubble, merge, quick.
- (vii) Applications in handling transaction queue, ledger trees, and device

communication stacks (e.g., in POS/ATM systems)

### **3) OBJECT ORIENTED PROGRAMME IN C++/JAVA**

- (i) OOP concepts: encapsulation, inheritance, polymorphism, abstraction
- (ii) Classes, objects, constructors, destructors, function/operator overloading
- (iii) Interfaces and abstract classes
- (iv) Exception handling and file I/O
- (v) Templates (C++). Generics (Java), basic multithreading.
- (vi) Implementation of account/customer/transaction logic in banking applications using OOP principles.
- (vii) Secure class-based architecture used in ATM monitoring modules, POS device interfaces, and integration with APIs for banking operations (e.g., Aadhaar, PAN verification).

### **4) DATABASE MANAGEMENT SYSTEM**

- (i) Types of databases: Relational, Hierarchical, Network.
- (ii) ER models, relational schemas, keys and constraints.
- (iii) SQL : DDL, DML, DCL, TCL commands; joins, views, subqueries.
- (iv) Normalization (1NF-3NF), indexing, transactions and ACID properties.
- (v) Backup/recovery techniques and role-based access control (GRANT/REVOKE)
- (vi) Database security and performance in CBS environments; data audit trails in ATM, POS, SWIFT/RTGS/NEFT messaging and international settlements.

(vii) Auditing of transactional records and compliance with RBI record retention guidelines.

**5) CLIENT SERVER ARCHITECTURES & WEB PROGRAMMING**

- (i) Architecture models: 2-tier, 3-tier systems, n-tier systems.
- (ii) Protocols: HTTP, HTTPS, TCP/IP, FTP.
- (iii) Session and state management; secure communication.
- (iv) HTML, CSS, JavaScript: structure, styling, client-side validation, Web forms, cookies and secure login flow.
- (v) Server-side scripting (PHP, ASP.NET): basic concepts.
- (vi) Integration of web front-ends with backend CBS or MIS systems.
- (vii) Online banking interfaces, branch admin consoles, and secure web services for POS/ATM control.
- (viii) RESTful API interaction for third-party services (e.g., UPI, BBPS, CERSAI)

**6) COMPUTER NETWORK AND PROGRAMMING**

- (i) OSI and TCP/IP models: purpose and layers.
- (ii) Network topologies and types: LAN, WAN, VPN, VLAN.
- (iii) IPv4/IPv6 addressing, subnetting, routing, switching.
- (iv) Devices: hub, switch, router, firewall, load balancer.
- (v) Common protocols: HTTP, FTP, SMTP, DHCP, DNS.
- (vi) Basics of socket programming and client-server networking.

		<ul style="list-style-type: none"> <li>(vii) Branch connectivity models in banks using VPN/MPLS.</li> <li>(viii) Intrusion Detection/Prevention Systems (IDS/IPS).</li> <li>(ix) Endpoint security (e.g., antivirus, DLP, firewall settings).</li> <li>(x) ATM and POS network security: whitelisting, dual control, remote patching.</li> <li>(xi) SWIFT network architecture: message, transmission standards, logical partitioning, secure zones as per RBI cyber security guidelines.</li> </ul> <p><b>7) SOFTWARE ENGINEERING</b></p> <ul style="list-style-type: none"> <li>(i) SDLC models: Waterfall, Spiral, Agile, V-Model.</li> <li>(ii) Requirement gathering, feasibility analysis, design principles.</li> <li>(iii) Modelling tools: DFDs, UML diagrams (use-case, class, sequence)</li> <li>(iv) Software testing: unit, integration, system, acceptance.</li> <li>(v) Quality assurance, version control, defect tracking.</li> <li>(vi) Gantt charts, PERT, resource estimation.</li> <li>(vii) Risk assessment, project planning and documentation.</li> <li>(viii) Release and patch management in banking applications.</li> <li>(ix) Software lifecycle for Atm/POS firmware and CBS upgrades.</li> <li>(x) Compliance with RBI/NABARD – mandated documentation and audit readiness, DPDP Act.</li> </ul>
<b>TOTAL</b>	<b>100 MARKS</b>	

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