CHENNAI PORT AUTHORITY

COMPETITIVE EXAMINATION FOR THE POST OF ASSISTANT MANAGER (EDP)

1. QUESTIONS RELATING TO SPECIALISATION

Memory and I/O Systems

Basic concepts of computer memory and storage

- Memory hierarchy – Cache, Main Memory (RAM), Secondary Storage
- Virtual memory – concept and purpose
- Cache memory – basic organization and usage
- Memory management basics (MMU – overview)
- Secondary storage devices – HDD, SSD, Optical storage
- Input and Output devices – basic concepts
- I/O interfaces and controllers
- Interrupts and Direct Memory Access (DMA) – basic understanding
- Peripheral devices and their functions

Data Structures:

- Arrays: 1D and 2D arrays
- Strings: Basic string operations
- Stacks: Concept, basic operations and applications
- Queues: Simple and Circular queues
- Linked Lists: Singly linked list (concepts and operations)
- Trees: Binary trees and Binary Search Trees (basics)
- Tree Traversals: Inorder, Preorder, Postorder
- Heaps: Basic concept of Min-heap and Max-heap
- Graphs: Basic representation and traversal concepts
- Hashing: Basic hashing concept and collision handling (overview)
- Process Management (Simplified)
- Process concept and life cycle
- Process creation and termination (overview)
- Threads and basic multithreading concepts
- Inter-process communication (shared memory and message passing – basics)
- CPU scheduling concepts and commonly used algorithms (FCFS, SJF, Priority, Round Robin)

Process Synchronization:

- Critical section concept
- Basic synchronization mechanisms (locks and semaphores)
- Common synchronization problems (conceptual understanding)
- Deadlock: concept, conditions, and basic handling methods

Topics Removed / De-emphasized

- (Not essential for Assistant Manager (EDP) level examination)
- Detailed PCB internals
- Multithreading models (theoretical classifications)
- Monitor constructs (advanced)
- Banker's algorithm (numerical/problem-oriented)
- Resource allocation graphs (theoretical analysis)
- Multilevel queue / feedback queue scheduling (advanced)

SQL (Structured Query Language)

- Basics of SQL
- DDL commands: CREATE, ALTER, DROP
- DML commands: INSERT, UPDATE, DELETE
- SELECT queries with WHERE clause
- JOINs (Inner, Left, Right – basic understanding)
- Aggregate functions: COUNT, SUM, AVG, MAX, MIN
- GROUP BY and HAVING (conceptual)
- Views and indexes (purpose & usage)
- (Triggers, stored procedures, complex subqueries – omitted)

Database Normalization

- Concept of **data redundancy & consistency**
- Functional dependency (basic idea)
- Normal forms: **1NF, 2NF, 3NF**
- Benefits of normalization
- Concept of denormalization (overview)

(BCNF, 4NF, 5NF, Armstrong axioms – omitted)

Transaction Management

- Transaction concept
- **ACID properties**
- Commit and rollback
- Concurrency issues (basic)
- Locking concept (overview)
- Deadlock concept (basic awareness)

(Serializability theory, timestamp protocols, optimistic control – omitted)

Recovery & Backup

- Database failures (system, transaction, media)
- Backup and restore concepts
- Logging and checkpointing (overview)
- Importance of database recovery

(ARIES algorithm, deferred/immediate update theory – omitted)

Database Storage & Performance

- Data storage concepts
- Indexing (purpose of B-Tree / Hash – overview)
- Query processing (high-level steps)
- Performance tuning concepts (basic awareness)

Modern Database Concepts

Centralized vs distributed databases (basic idea)

- NoSQL databases (types & use cases)
- Data warehouse concept
- **OLTP vs OLAP**
- Big data – high-level introduction

(Hadoop internals, NewSQL, object databases – omitted)

2. TEST OF REASONING

(Syllabus pattern equivalent to SBI PO level)

Logical Reasoning:

- Logical and analytical reasoning

- Statement and conclusions
- Statement and assumptions
- Statement and arguments
- Course of action
- Cause and effect
- Input-output problems

Arrangements:

- Seating arrangements: Linear, Circular, Rectangular, Square
- Scheduling and timing problems
- Grouping and team formation
- Floor-based arrangements
- Box-based arrangements

Relationships:

- Blood relations and family tree
- Coding-decoding: Letter, Number, Symbol coding
- Letter and number series
- Analogy and classification

Spatial Reasoning:

- Direction sense and distance calculations
- Position and ranking
- Mirror and water images
- Paper folding and cutting
- Cube and dice problems

Data Analysis:

- Data sufficiency
- Data arrangement and interpretation
- Comparison and ordering

Puzzles:

- Complex puzzles (5-10 variables)
- Floor-based puzzles
- Box-based puzzles
- Scheduling puzzles
- Pattern recognition

Syllogisms:

- Categorical syllogisms
- Venn diagram method
- Possibility-based syllogisms
- Either-or cases

Critical Reasoning:

- Inference and deduction
- Strengthening and weakening arguments
- Assumptions and implications
- Identifying valid conclusions

Mathematical Reasoning:

- Number and letter series
- Odd one out
- Missing number problems

3. QUANTITATIVE APTITUDE

Number Systems:

- Number theory and properties
- Simplification and approximation
- BODMAS rules
- HCF and LCM
- Divisibility rules
- Decimal fractions
- Surds and indices

Arithmetic:

- Percentages and percentage change
- Ratio and proportion
- Averages and weighted averages
- Mixtures and alligations
- Profit, loss and discount
- Simple interest and compound interest
- Partnership (simple and compound)

Time and Work:

- Work efficiency problems
- Pipes and cisterns
- Work and wages
- Negative work

Time, Speed and Distance:

- Relative speed
- Average speed
- Trains problems
- Boats and streams
- Races

Algebra:

- Linear equations in one and two variables
- Quadratic equations
- Polynomials and factorization
- Inequalities
- Sequences and series: AP, GP

Data Interpretation:

- Tables and charts interpretation
- Bar graphs (simple, grouped, stacked)
- Line graphs
- Pie charts
- Mixed graphs
- Data comparison and calculation
- Missing data DI
- Caselet-based DI

Advanced Topics:

- Probability: Basic concepts, addition and multiplication rules
- Permutations and combinations
- Mensuration: Areas and volumes of 2D and 3D figures
- Geometry: Lines, angles, triangles, circles

- Coordinate geometry basics
- Logarithms

4. GENERAL AWARENESS

Current Affairs:

- National and international events (last 6-12 months)
- Important days and dates
- Awards and honours (National and International)
- Books and authors
- Sports events, championships, and achievements
- Important appointments and resignations
- Summit and conferences
- Government schemes and initiatives
- Science and technology developments
- Defence and security updates

Information Technology Current Developments:

- Recent IT trends and innovations
- Technology conferences and events
- Major IT company developments
- Cybersecurity incidents and updates
- AI and ML breakthroughs
- Cloud computing developments
- IoT implementations
- Government IT initiatives (Digital India, e-Governance)
- IT policy updates
- Emerging technology trends

Indian Polity and Governance:

- Indian Constitution: Features and amendments
- Fundamental Rights and Duties
- Directive Principles
- Union and State government structure
- Parliament and State Legislatures
- Judiciary system
- Important bills and legislation
- Electoral system
- Governance and public policy
- Constitutional bodies and institutions

Indian Economy:

- Economic indicators: GDP, GNP, Inflation, Fiscal deficit
- Economic reforms and policies
- Banking sector: RBI, Commercial banks, Payment banks
- Financial sector: Stock markets, SEBI, Insurance

- Union Budget highlights (recent)
- GST and taxation
- Five-year plans and NITI Aayog
- Economic organizations: IMF, World Bank, WTO
- Digital payments and fintech

Indian Geography:

- Physical geography: Rivers, Mountains, Climate
- Economic geography: Agriculture, Industries, Minerals
- States and Union Territories
- Major cities and capitals
- National parks and wildlife sanctuaries
- Environmental issues: Climate change, Pollution, Conservation

World Geography:

- Continents and oceans
- Important countries and capitals
- Major international organizations: UN, WHO, UNESCO
- Global environmental issues

Indian History:

- Ancient India highlights
- Medieval India highlights
- Modern Indian history
- Indian freedom movement
- Post-independence India
- Important personalities and their contributions

Science and Technology:

- Basic science concepts: Physics, Chemistry, Biology
- Computer science and IT fundamentals
- Space technology: ISRO missions and achievements
- Defence technology developments
- Biotechnology and medical sciences
- Nanotechnology
- Renewable energy
- Scientific research organizations in India

Port and Maritime Sector:

- Major ports in India: 12 major ports - locations, features, cargo handled
- Chennai Port Authority: Detailed knowledge
    - History and organizational structure
    - Port facilities and terminals
    - Cargo operations and statistics
    - Container handling capacity

    - Future expansion projects
    - Port infrastructure
- Minor ports in India
- Sagarmala Project: Objectives, components, progress
- Maritime India Vision 2030 and 2047
- Shipping industry in India
- International Maritime Organization (IMO)
- Port modernization and automation
- Coastal shipping and inland waterways
- Logistics and supply chain in ports
- Port security and ISPS Code
- Green port initiatives

Information Technology in Governance:

- e-Governance initiatives in India
- Digital India programme
- National e-Governance Plan (NeGP)
- e-Office, e-Procurement
- Aadhaar and digital identity
- DigiLocker and digital documents
- UPI and digital payments
- National Digital Health Mission
- Smart Cities Mission
- BharatNet project
- Cyber security framework in India

Legal and Regulatory Framework:

- Information Technology Act, 2000 (amended 2008)
- Digital Personal Data Protection Act, 2023
- Right to Information Act, 2005
- Intellectual Property Rights (IPR)
- Copyright Act provisions
- Patent and Trademark laws
- Cyber laws and cyber crimes
- E-commerce regulations
- Data localization norms

Computer and IT Industry:

- Major IT companies in India and globally
- IT hubs in India: Bangalore, Hyderabad, Pune, Chennai
- IT exports and services
- NASSCOM and IT industry associations
- Software Technology Parks of India (STPI)
- IT sector employment trends
- Startup ecosystem in India

Books and IT Publications:

- Recent important publications on technology
- Technical journals and magazines
- Industry reports and white papers
- Standard textbooks and reference materials

Tamil Nadu Specific:

- Tamil Nadu government IT initiatives
- Tamil Nadu e-Governance programs
- IT industry in Tamil Nadu
- Software Technology Parks in Tamil Nadu
- Chennai as IT hub
- Tamil Nadu government schemes
- Administrative structure

General Knowledge:

- Important personalities: Scientists, Technologists, Business leaders
- Cultural heritage of India
- Indian art and literature
- Nobel Prize winners (especially in Science and Economics)
- Inventions and discoveries
- Abbreviations and acronyms (IT and General)
- Organizations: National and International

5. ENGLISH LANGUAGE

Reading Comprehension:

- Unseen passages (400-700 words)
- Technical and technology-themed passages
- General and business topics
- Multiple paragraphs
- Vocabulary in context
- Inference and interpretation questions
- Title and main idea identification
- Tone, purpose, and author's perspective
- Fact vs opinion
- Supporting details and evidence

Grammar:

- Error detection and correction: Spotting errors in sentences
- Sentence improvement and reconstruction
- Phrase replacement
- Fill in the blanks: Single and double blanks
- Active and passive voice conversion
- Direct and indirect speech

- Tenses: All forms and usage
- Subject-verb agreement
- Articles: Definite and indefinite
- Prepositions and their usage
- Conjunctions: Coordinating, Subordinating, Correlative
- Modifiers: Adjectives and adverbs

Vocabulary:

- Synonyms and antonyms
- One-word substitution
- Idioms and phrases
- Commonly confused words (homophones, homonyms)
- Contextual usage
- Word formation: Prefixes, suffixes
- Technical vocabulary (IT and computing terminology)
- Collocations

Sentence Organization:

- Para jumbles (4-6 sentences)
- Sentence rearrangement
- Coherence and cohesion in paragraphs
- Paragraph completion
- Sentence exclusion (odd one out)

Cloze Test:

- Fill in the blanks in passages (5-10 blanks)
- Contextual vocabulary
- Grammatical accuracy
- Logical flow maintenance

Sentence Connectors:

- Sentence completion using connectors
- Fillers (Therefore, However, Moreover, etc.)
- Logical connectors

Reading Skills:

- Sentence correction
- Paragraph writing awareness
- Formal and informal writing styles
- Business correspondence basics
- Technical writing principles

Verbal Ability:

- Sentence formation and construction
- Word order in sentences
- Redundancy and conciseness
- Clarity and precision in writing
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