

THE MARINE PRODUCTS EXPORT DEVELOPMENT AUTHORITY

KOCHI - 36

Syllabus for the post of System Analyst

Syllabus (200 Marks)

1. Systems Analysis and Design

- System Development Life Cycle
- Feasibility Study
- Requirement Analysis and Specifications
- Structured System Analysis and Design
- Object-Oriented Analysis and Design
- UML Diagrams
- Software Architecture
- Design Patterns
- System Integration Techniques
- SRS documentation

2. Database Management Systems

- DBMS Concepts
- Relational Database Design
- Normalization and Denormalization
- ER Modeling
- SQL and Advanced SQL
- Stored Procedures, Functions and Triggers
- Transaction Management
- Database Security
- Backup and Recovery
- Performance Tuning

RDBMS Platforms

- MS SQL Server
- MySQL
- PostgreSQL

3. SQL Queries and Database Optimization

- Complex Queries
- Joins and Subqueries
- Views and Materialized Views
- Indexing Techniques
- Query Execution Plans
- Query Optimization
- Partitioning
- Replication Concepts
- Data Migration Techniques

4. Programming and Application Development

NET Technologies

- C#
- ASP.NET
- ASP.NET MVC
- ASP.NET Core
- Entity Framework
- LINQ

PHP Technologies

- PHP Programming
- Security Best Practices
- Session and State Management

Python Programming

- Core Python
- Python Libraries

5. Web Technologies and API Development

- HTML5
- CSS3
- JavaScript
- AJAX
- JSON and XML
- REST APIs
- Web Services
- API Security

6. Software Testing

- Testing Methodologies
- Unit Testing
- Integration Testing
- System Testing
- User Acceptance Testing
- Test Automation Concepts
- Defect Management
- Quality Standards

7. Cyber Security and Information Security

- Cyber Security Fundamentals
- OWASP
- Secure Coding Practices
- Authentication and Authorization
- Identity and Access Management
- Encryption and PKI
- Network Security
- Vulnerability Assessment and Penetration Testing
- Security Incident Response

- Cyber Crisis Management
- CERT-In Guidelines
- Information Security Standards (ISO 27001)

8. Cloud Computing and Infrastructure Management

- Cloud Service Models
- Virtualization
- Containerization
- Linux and Windows Administration
- Web and Application Servers
- High Availability and Disaster Recovery
- Storage and Backup Solutions
- Government Cloud Initiatives

9. Artificial Intelligence, Big Data and Analytics

- AI Fundamentals
- Machine Learning Concepts
- Supervised and Unsupervised Learning
- Generative AI Basics
- Big Data Concepts
- Data Analytics and Visualization

10. E-Governance and Digital Government Initiatives

- E-Governance Framework
- Digital India Programme
- National e-Governance Plan (NeGP)
- Government Enterprise Architecture
- Open Government Data
- Aadhaar Ecosystem
- DigiLocker
- API Setu

- UMANG
- Digital Signature and e-Sign
- Government Procurement and IT Project Management

11. IT Project Management and Governance

- Project Planning and Estimation
- Risk Management
- Change Management
- IT Service Management
- SLA Management
- Procurement and Vendor Management
- IT Governance Frameworks
- Audit and Compliance

12. Emerging Technologies

- Internet of Things (IoT)
- Blockchain Fundamentals
- Edge Computing
- Robotic Process Automation (RPA)
- GIS Applications
- DevOps Concepts
- Enterprise Integration Platforms

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