Post: Programme/Project Executive

Educational Qualification: B.E/B.Tech/B.Sc Engg. /MCA/Equivalent

Experience: 1-2 Years of post-qualification experience.

Syllabus

PART-A

Digital Logic

Boolean algebra. Combinational and sequential circuits. Minimization. Number representations and computer arithmetic (fixed and floating point).

Computer Organization and Architecture

Machine instructions and addressing modes. ALU, data-path and control unit. Instruction pipelining, pipeline hazards. Memory hierarchy: cache, main memory and secondary storage; I/O interface (interrupt and DMA mode).

Programming and Data Structures

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

Algorithms

Searching, sorting, hashing. Asymptotic worst-case time and space complexity. Algorithm design techniques: greedy, dynamic programming and divide-and-conquer. Graph traversals, minimum spanning trees, shortest paths

Theory of Computation

Regular expressions and finite automata. Context-free grammars and Pushdown

Automata. Regular and Context-free languages, pumping lemma. Turing machines and Un- decidability.

Compiler Design

Lexical analysis, parsing, syntax-directed translation. Runtime environments. Intermediate code generation. Local optimization, Data flow analyses: constant propagation, liveness analysis, common subexpression elimination.

Operating System

System calls, processes, threads, inter-process communication, concurrency and synchronization. Deadlock. CPU and I/O scheduling. Memory management and virtual memory. File systems.

Databases

ER-model. Relational model: relational algebra, tuple calculus, SQL. Integrity constraints, normal forms. File organization, indexing (e.g., B and B+ trees). Transactions and concurrency control.

Computer Networks

Concept of layering: OSI and TCP/IP Protocol Stacks; Basics of packet, circuit and virtual circuit switching; Data link layer: framing, error detection, Medium Access Control, Ethernet bridging; Routing protocols: shortest path, flooding, distance vector and link state routing; Fragmentation and IP addressing, IPv4, CIDR notation, Basics of IP support protocols (ARP, DHCP, ICMP), Network Address Translation (NAT); Transport layer: flow control and congestion control, UDP, TCP, sockets; Application layer protocols: DNS, SMTP, HTTP, FTP, Email.

PART-B:

Introduction to Programme/Project Executive Role: Overview of Programme/Project Executive role, including Key responsibilities, skills, Competencies required typical goals, and objectives.

Project Management Methodologies: Brief introduction to traditional Waterfall and Agile project management methodologies and their advantages and disadvantages.

Effective Project Governance: Discussion of project governance models and best practices for ensuring effective oversight and decision-making throughout the project lifecycle.

Stakeholder Management: Strategies for identifying and managing stakeholder expectations, communication, and engagement.

Project Planning: Overview of the project planning process, including defining scope, objectives, deliverables, and timeline, and developing a project plan and schedule.

Business Case Development: Key components of a successful business case, including cost-benefit analysis, risk assessment, and stakeholder analysis.

Risk Management: Strategies and tools for identifying, assessing, and mitigating risks throughout the project lifecycle.

Project Monitoring and Control: Techniques for tracking progress against the project plan, managing change requests, and maintaining project documentation.

Quality Management: Best practices for ensuring that project outputs meet quality standards and customer requirements.

Performance Measurement: Overview of Earned Value Management methodology for measuring project performance and forecasting project outcomes.