

Syllabus for the post of Assistant Manager (MIS)

Part- A

General Knowledge, Mental Ability (Reasoning & Quantitative Technique), Child Development and Psychology, Hindi and English (Matric level) **(50 marks)**

Part- B

1. **Data Base Management Systems:** ER Diagram, data models- Relational and Object oriented databases.
2. **Data Base Design:** Conceptual data base design, Normalization Primitive and Composite data types, concept of physical and logical databases, data abstraction and data independence, data aggregation and Relational Algebra.
3. **Application Development using SQL:** Host Language interface, embedded SQL programming, Stored procedures and triggers and views, Constraints assertions.
4. **Internal of RDBMS:** Physical data organization in sequential, indexed random and hashed files. Inverted and multi list structures, B trees, B+ trees, Query Optimization, Join algorithm. Transaction Processing, concurrency control and recovery management. Transaction model properties and state serialisability. Lock base protocols, two phase locking. Different server multi user, multiprocessor operating systems and requirement for client interfaces in distributed application environments.
5. **Data Communication and Computer Networks:** Computer Network Architecture, Circuit switching, Packet and Message Switching, Network Structure. Physical Layer, Data Link Layer, Framing. Retransmission algorithms. Multiple access and Aloha. CSMA/CD and Ethernet. High Speed LANs and topologies. Broadcast routing and spanning trees. TCP/IP Stack. IP Networks and Internet. DNS and Firewalls. Intrusion Detection and Prevention. Transport layer and TCP/IP. Network Management and Interoperability.
6. **System concept:** Definition and characteristics, elements and boundaries, types of system development lifecycle, recognition of needs, feasibility study, prototyping, role of system analyst.
7. System planning and tools like DFD, data dictionary, decision trees, structured analysis and decision tables. IPO charts, structured walkthrough, input output form design, requirement and classification of forms, layout considerations form control, object oriented Design Concepts and methods. Software Life Cycle, Software Engineering paradigms.
8. **System analysis:** Feasibility study requirement analysis, Cost benefit analysis, Planning systems, Analysis tools and techniques.
9. **System Design:** design fundamentals, Modular Design, Data and procedural design, object oriented design.
10. **System Development:** Code documentation, Program design paradigms, Efficiency Consideration. Verification, Validation and Testing: testing methods, Formal Program Verification, Testing Strategies. **(50 marks)**