

RAJASTHAN PUBLIC SERVICE COMMISSION, AJMER
SYLLABUS FOR COMPETITIVE EXAMINATION FOR THE POST OF
LECTURER IN COMPUTER SCIENCE FOR COLLEGE
EDUCATION DEPARTMENT
PAPER-I

1. Computer Organization and Architecture: Number representation and computer arithmetic (fixed and floating point). Logic functions, Minimization, Design and synthesis of combinational and sequential circuits; Machine instructions and addressing modes, ALU and data-path, CPU and control design, Memory interface, I/O interface (Interrupt and DMA mode), Instruction pipelining, Cache and main memory, Secondary storage.

2. Computer Programming: Programming in C: Functions, Recursion, Parameter passing, Scope, Binding; Abstract data types, Arrays, Stacks, Queues, Linked Lists, Trees, Binary search trees, Binary heaps, File handling. Object-oriented programming: Class, Object, inheritance, polymorphism and overriding, constructors & destructors, overloading, exception handling.

3. Software Engineering: Software development Life Cycle and different models, Information gathering, requirement and feasibility analysis, data flow diagrams, process specifications, input/output design, process life cycle, planning and managing the project, design, coding, testing, implementation, maintenance.

4. Operating System: Main functions and different types of OS. Processes, Threads, Inter-process communication, Concurrency, Synchronization, Deadlock, CPU scheduling, Memory management and virtual memory, File systems. The Unix system: file systems, process Management, Bourne shell, shell variable, command line programming, filters and Unix commands, system calls.

5. Computer Networks: LAN, MAN, WAN, Transmission Media: Guided and unguided, Multiplexing (TDM, FDM, SDM & WDM) and switching techniques, Routing algorithms, Network reference models: OSI Model, TCP/IP Model, TCP/UDP and Sockets, IPv4 / IPv6, DNS , Network Security: Symmetric & Asymmetric Cryptography, Message Digest, Block and Stream Ciphers, One time pad, IP Security, E-Mail Security: PGP, IDS, Firewall.

Note :- **Pattern of Question Paper**

1. Objective type paper
2. Maximum Marks : 75
3. Number of Questions : 150
4. Duration of Paper : Three Hours
5. All questions carry equal marks.
6. There will be Negative Marking.