

Syllabus for JTS and ASE positions in CSE and Systems

Quantitative Aptitude and Reasoning

Data interpretation, Percentages, Time and Work, Numbers and Letter Series, and Puzzles.

Computer Organization and Architecture

Number representations and computer arithmetic (fixed and floating point), machine instructions and addressing modes, ALU, data-path and control unit, instruction pipelining, memory hierarchy: cache, main memory, and secondary storage, I/O interface (interrupt and DMA mode).

Programming, Data Structures and Algorithms

C programming, recursion, arrays, stacks, queues, linked lists, trees, graphs, searching, sorting, hashing.

Operating Systems

Processes, threads, inter-process communication, concurrency and synchronization, deadlocks, CPU scheduling, memory management and virtual memory, file systems.

Databases

ER model, relational model, integrity constraints, normal forms, file organization, indexing such as B and B+ trees, transactions and concurrency control.

Computer networks

OSI layers, basic network performance metrics such as delays, throughput, goodput, and efficiency, LAN technologies, flow and error control techniques, switching, IPv4/IPv6, routing, TCP/UDP, congestion control, sockets, application layer protocols such as DNS, SMTP, POP, FTP, HTTP, and DHCP, WiFi, Network security.

Skill based topics

Basic understanding of the following concepts shall be tested for both JTS and ASE, in common:

- Linux-based systems and networking commands, utilities, and scripts such as BASH, AWK, Perl, and Python. Web technologies: Client and server side scripting languages. Database: SQL. Authorization/authentication tools: LDAP and AD. Version control: Git.

Important note: JTS candidates shall be tested on their advanced understanding in a stream of their choice namely, Systems or Networks. ASE candidates shall be tested on the advanced concepts both in Systems and Networks. The advanced-levels include hands-on topics in platforms such as Ubuntu, RedHat Linux, and VMWare for Systems stream, and hands-on topics in Cisco IOS for Networks stream.