Sample Interview Questions

Engineering Mathematics

- How do you determine if a set of vectors is linearly dependent?
- If a matrix has more columns than rows, what can you say about its rank?
- If a matrix is diagonalizable, what does that tell you about its eigenvectors?
- Can a homogeneous system of equations Ax=0 have a unique nonzero solution? Why or why not?
- If I flip a fair coin three times, what is the probability of getting at least one head?
- Suppose a medical test for a rare disease is 99% accurate, but the disease only affects 1 in 10,000 people. If someone tests positive, should they be very worried? Why or why not?

Computer Networks:

- What are the different types of delay a packet will experience while traveling through a multi-hop path from source to destination?
- Why do we need error detection in different layers of a communication protocol stack?
- What is the difference between flow control and congestion control?

Database Systems:

- Why do we need normalization in a database?
- Provide one example to show that a relation is in 3NF but not in BCNF.
- What is the difference between 'Where' and 'Having' clauses?

Operating Systems:

- What is semaphore? How can we achieve Mutual Exclusion using a semaphore?
- How do you solve internal fragmentation issues in memory management?
- Does the Round Robin scheduling scheme provide fair distribution of processor time to processor-bound and I/O-bound processes?

Programming & Data Structure:

- Write a C program for Binary search in a given array of sorted elements.
- Write a program to insert/delete an element from a linked list.
- What is Min-Heap? Construct a Min-Heap from a given array of elements. What is the complexity of your Min-heap construction?
- Write the pseudo code for BFS and DFS.

Algorithms:

- Analyze binary search algorithm.
- Explain Prim's or Kruskal's algorithms for computing an MST and analyze.
- Explain when to use dynamic programming.
- Devising a greedy algorithm for a job scheduling problem.

.

Computer Architecture & Organization:

- What is the role of a decoder in a memory system?
- What is the difference between Moore and Mealy machines?
- What is the largest number that can be represented in an n-bit register in 2's complement form?
- What are the different stages of a 5-stage RISC instruction pipeline?
- How can you handle control hazards in an instruction pipeline?
- What is the importance of the tag field in cache memory?
- What is the difference between a write-back cache and a write-through cache?
- What is a vectored interrupt? How does it help in handling an interrupt?
- What is called bank-level interleaving in DRAM?

Digital Logic:

- How Gray code and K-map are linked conceptually?
- What is difference between min term and max term of a Boolean function?
- What is the major demerit of ripple carry adder?
- Represent behavior of JK flip flop using Moore FSM.
- Why multi function shift register use multiplexer?
- Why FSM modelling is not good for data dominated digital circuit?

Theory of Computation:

- State the pumping lemma.
- What are undecidable languages?
- Prove that the language consisting of all strings, which are palindromes over the alphabet {0,1} is context-free.

Note: These questions are just to show the pattern of Interview Questions. The level of difficulty or the type of questions asked in the Interview are fully decided by the Interview Panel Members.