## ****🔹 SET 1: Technical MCQs****

### **Programming Concepts (OOPs, DSA, SQL, OS)**

1. What is the output of the following Java code?

class A {

int x = 10;

}

class B extends A {

int x = 20;

}

public class Test {

public static void main(String args[]) {

A obj = new B();

System.out.println(obj.x);

}

}

a) **10**

b) 20

c) Compilation Error

d) Runtime Error

1. What is the worst-case time complexity of inserting an element into a Binary Search Tree (BST)?

a) O(log n)

**b) O(n)**

c) O(n log n)

d) O(1)

1. Which data structure is used for implementing recursion?

a) Queue

**b) Stack**

c) Linked List

d) Tree

1. Which of the following is a self-balancing binary tree?

a) BST

**b) AVL Tree**

c) Heap

d) B-Tree

1. Which sorting algorithm has the best average-case time complexity?

a) Bubble Sort

b) Quick Sort

**c) Merge Sort**

d) Insertion Sort

1. In an object-oriented programming language, which concept refers to restricting direct access to an object’s data?

**a) Encapsulation**

b) Abstraction

c) Inheritance

d) Polymorphism

1. What does **ACID** stand for in databases?

**a) Atomicity, Consistency, Isolation, Durability**

b) Access, Control, Integrity, Database

c) Alter, Commit, Insert, Delete

d) Add, Create, Index, Drop

1. What is the purpose of an **index** in SQL?

a) To enforce referential integrity

**b) To optimize queries for faster retrieval**

c) To prevent duplicate entries

d) To manage relationships between tables

1. What is **denormalization** in databases?

a) Splitting tables to avoid redundancy

**b) Combining tables to improve performance**

c) Removing duplicate data from a table

d) Converting relational data to JSON format

1. Which of the following is a **preemptive scheduling algorithm**?

a) First Come First Serve (FCFS)

b) Shortest Job Next (SJN)

**c) Round Robin (RR)**

d) Priority Scheduling

1. What is **paging** in an operating system?

**a) Dividing physical memory into fixed-size blocks**

b) Swapping a process from disk to memory

c) Allocating memory dynamically

d) Managing CPU scheduling

1. **Which of the following OS components manages hardware resources?**

**a) Kernel**

b) Shell

c) File System

d) Process Scheduler

### **Networking & Cybersecurity**

1. The **Transport Layer** in the OSI model is responsible for:

a) Routing

**b) End-to-end communication**

c) Physical connection

d) Encryption

1. A **firewall** is used to:

a) Detect malware

**b) Block unauthorized network access**

c) Speed up internet browsing

d) Manage DNS queries

1. Which layer of the OSI model is responsible for **IP addressing**?

a) Transport

**b) Network**

c) Data Link

d) Application

1. What does **VPN** stand for?

a) Virtual Process Network

**b) Virtual Private Network**

c) Verified Protection Network

d) Virtual Packet Node

1. Which encryption method is **asymmetric**?

a) AES

**b) RSA**

c) DES

d) Blowfish

1. What is the purpose of an **SSL certificate**?

**a) To authenticate a website**

b) To block malware

c) To increase internet speed

d) To store passwords

1. A **man-in-the-middle (MITM) attack** is:

a) A brute force attack

**b) Intercepting communication between two parties**

c) Injecting malware into a system

d) Overloading a server with traffic

1. What is **two-factor authentication (2FA)?**

**a) A security mechanism requiring two forms of verification**

b) A method of encrypting data twice

c) A way to bypass passwords

d) A networking protocol

### **Cloud Computing**

1. What is **SaaS** in cloud computing?

**a) Software as a Service**

b) Security as a Service

c) Storage as a Service

d) System as a Service

1. **Which cloud provider offers EC2 instances?**

a) Google Cloud

**b) AWS**

c) Azure

d) IBM Cloud

1. **Which cloud service model provides hardware resources like virtual machines?**

**a) IaaS**

b) PaaS

c) SaaS

d) DaaS

1. What is the primary advantage of **cloud computing**?

a) Increased latency

**b) Scalability**

c) Requires physical infrastructure

d) Decreased security

1. **Which cloud deployment model offers both private and public cloud benefits?**

a) Private Cloud

**b) Hybrid Cloud**

c) Community Cloud

d) Local Cloud

1. **What is a Virtual Machine (VM)?**

a) A physical server in a data center

**b) A software-based emulation of a computer system**

c) A network security protocol

d) A database management tool

1. **What is the main advantage of using containers over traditional VMs?**

**a) Containers use less memory and are faster to start**

b) Containers need dedicated hardware

c) Containers replace operating systems

d) Containers work only with AWS

1. **Which of the following best describes Kubernetes?**

a) A programming language

b) A cloud-based database

**c) A container orchestration tool**

d) A web hosting service

1. **Which cloud computing service is best suited for hosting a web application?**

a) IaaS

**b) PaaS**

c) SaaS

d) DaaS

1. **Which of the following cloud providers is NOT owned by Google, Microsoft, or Amazon?**

**a) Oracle Cloud**

b) IBM Cloud

c) Alibaba Cloud

d) Google Cloud