

## 1. General Aptitude

### Question:

If a train travels 60 km in 1.5 hours, what is its average speed?

### Answer:

Average speed = Total distance / Total time = 60 km / 1.5 hours = 40 km/h

---

## 2. Digital Logic

### Question:

What is the 2's complement of the binary number 1010?

### Answer:

1's complement of 1010 is 0101

Adding 1: 0101 + 1 = 0110

So, 2's complement is 0110

---

## 3. Computer Organization

### Question:

Which of the following is a non-volatile memory?

- a) RAM
- b) ROM
- c) Cache
- d) Register

### Answer:

b) ROM

---

## 4. Data Structures

### Question:

What is the time complexity of searching an element in a balanced binary search tree?

### Answer:

$O(\log n)$

---

## 5. Algorithms

### Question:

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

- a) Bubble Sort
- b) Insertion Sort
- c) Quick Sort
- d) Selection Sort

**Answer:**

c) Quick Sort

---

## 6. Theory of Computation

**Question:**

Which of the following languages is not regular?

- a) Strings with even number of 0's
- b) Palindromes over  $\{0,1\}$
- c) Strings ending with '01'
- d) Strings with at least one '1'

**Answer:**

b) Palindromes over  $\{0,1\}$

---

## 7. Compiler Design

**Question:**

In compiler design, which phase is responsible for syntax analysis?

**Answer:**

The parser performs syntax analysis.

---

## 8. Operating Systems

**Question:**

Which scheduling algorithm may cause starvation?

- a) FCFS
- b) Round Robin
- c) Shortest Job First
- d) Priority Scheduling

**Answer:**

d) Priority Scheduling

---

## 9. Databases

**Question:**

Which normal form eliminates transitive dependency?

**Answer:**

Third Normal Form (3NF)

---

## 10. Computer Networks

**Question:**

Which protocol is used to find the MAC address of a local device?

**Answer:**

ARP (Address Resolution Protocol)

---

**11. Software Engineering****Question:**

Which model is also known as the linear sequential model?

**Answer:**

Waterfall Model

---

**12. Discrete Mathematics****Question:**

What is the number of subsets of a set with  $n$  elements?

**Answer:**

$2^n$  subsets

---

**13. Engineering Mathematics****Question:**

What is the derivative of  $\sin(x)$ ?

**Answer:**

$\cos(x)$

---

**14. General Aptitude****Question:**

If  $5x - 3 = 2x + 9$ , find  $x$ .

**Answer:**

$$5x - 2x = 9 + 3$$

$$3x = 12$$

$$x = 4$$

---

**15. Digital Logic****Question:**

What is the output of a NAND gate if both inputs are 1?

**Answer:**

NAND gate outputs 0 when both inputs are 1.

---

## **16. Computer Organization**

### **Question:**

What does CPU stand for?

### **Answer:**

Central Processing Unit

---

## **17. Data Structures**

### **Question:**

Which data structure uses FIFO (First In First Out) principle?

### **Answer:**

Queue

---

## **18. Algorithms**

### **Question:**

What is the time complexity of binary search?

### **Answer:**

$O(\log n)$

---

## **19. Theory of Computation**

### **Question:**

Which machine recognizes regular languages?

### **Answer:**

Finite Automaton

---

## **20. Compiler Design**

### **Question:**

Which table is used by the lexical analyzer to store identifiers?

### **Answer:**

Symbol Table

---