Started on	Thursday, 22 May 2025, 12:35 PM
State	Finished
Completed on	Thursday, 22 May 2025, 12:54 PM
Time taken	19 mins 11 secs
Marks	19.00/20.00
Grade	**95.00** out of 100.00

Question **1**

Complete

Mark 1.00 out of 1.00

What does the Time To Live (TTL) field in an IP packet prevent?

Select one:

- **a. Packet loss**
- **b. Congestion**
- **c. Routing loops**
- **d. Packet duplication**

Question **2**

Complete

Mark 1.00 out of 1.00

Consider this method for solving N-Queens:

```
boolean isSafe(int board[][], int row, int col) {
   for (int i = 0; i < col; i++)
      if (board[row][i] == 1) return false;

   for (int i=row, j=col; i>=0 && j>=0; i--, j--)
      if (board[i][j] == 1) return false;

   for (int i=row, j=col; i<N && j>=0; i++, j--)
      if (board[i][j] == 1) return false;

   return true;
}
```

Which directions are checked?

Select one:

- **a. Right row, all diagonals**
- **b. Row, column, both diagonals**
- **c. Upper-right diagonal only**
- **d. Left row, upper-left diagonal, lower-left diagonal**

 Version 4.2

Question 3

Complete

Mark 0.00 out of 1.00

Which of the following uses UDP as the transport protocol?

Select one:

- a. DNS
- b. HTTP
- c. SMTP
- d. FTP

Question 4

Complete

Mark 1.00 out of 1.00

Which data structure best suits the following scenario?

"Implement a system that supports retrieving the k most frequent elements from a stream of integers."

Select one:

- a. Max-Heap with HashMap
- b. Deque and TreeMap
- c. Trie and ArrayList
- d. Stack and Queue

Question 5

Complete

Mark 1.00 out of 1.00

What is printed by this Java stream code?

```
Stream.of("dog", "deer", "dove")
    .filter(s -> s.startsWith("d"))
    .map(s -> s.length())
    .reduce((a, b) -> a + b)
    .ifPresent(System.out::println);
```

Select one:

- a. 11
- b. Compilation error
- c. 9
- d. 10

Question 6

Complete

Mark 1.00 out of 1.00

In UNIX, which system call is used to create a new process?

Select one:

- a. wait()
- b. fork()
- c. create()
- d. exec()

Question 7

Complete

Mark 1.00 out of 1.00

What is the output of the following recursive function?

```
static int mystery(int n) {
    if (n == 0) return 0;
    return n % 10 + mystery(n / 100);
}
Call: System.out.println(mystery(987654321));
```

Select one:

- a. 25
- b. 9
- c. 45
- d. 1

Question 8

Complete

Mark 1.00 out of 1.00

What type of testing focuses on verifying interactions between integrated components or systems?

Select one:

- a. Unit Testing
- b. Regression Testing
- c. Integration Testing
- d. Acceptance Testing

Question 9

Complete

Mark 1.00 out of 1.00

Which of the following statements about topological sorting of a Directed Acyclic Graph (DAG) is TRUE?

Select one:

- a. **The reverse of a topological order is always a valid topological order**
- b. **Topological sort can be applied on graphs with cycles**
- c. **Every DAG has at least one topological ordering**
- d. **Topological sort gives the shortest path between nodes in the graph**

Question 10

Complete

Mark 1.00 out of 1.00

Identify the time complexity of the function:

```
void foo(int n) {
   for (int i = 1; i <= n; i *= 2) {
      for (int j = 0; j < n; j++) {
         System.out.print("*");
      }
   }
}
```

Select one:

- a. **O(n log n)**
- b. **O(n²)**
- c. **O(log n)**
- d. **O(n)**

Question 11

Complete

Mark 1.00 out of 1.00

You are given a connected, unweighted graph:

0 ---1---2

| |

3 4

Which traversal order could be produced by DFS starting from node 0?

Select one:

- a. 0 1 2 4 3
- b. 0 1 4 2 3
- c. 0 3 1 4 2
- d. All of the above

Question 12

Complete

Mark 1.00 out of 1.00

Which of the following is not a black-box testing technique?

Select one:

- a. Boundary Value Analysis
- b. Equivalence Partitioning
- c. Statement Coverage
- d. Decision Table Testing

Question 13

Complete

Mark 1.00 out of 1.00

In software testing, what is regression testing used for?

Select one:

- a. Ensuring unchanged features still work after updates
- b. Load testing the system
- c. Testing the UI responsiveness
- d. Finding syntax errors

Question **14**

Complete

Mark 1.00 out of 1.00

Which of the following best describes thrashing in an operating system?

Select one:

- **a. Scheduling processes out of order**
- **b. Fragmentation in physical memory**
- **c. Deadlock caused by page faults**
- **d. Excessive swapping of processes between RAM and disk**

Question **15**

Complete

Mark 1.00 out of 1.00

Which layer of the OSI model is responsible for end-to-end delivery of data?

Select one:

- **a. Data Link Layer**
- **b. Network Layer**
- **c. Transport Layer**
- **d. Application Layer**

Question **16**

Complete

Mark 1.00 out of 1.00

You’re given a Directed Acyclic Graph (DAG) with the following edges:

5 → 0

5 → 2

4 → 0

4 → 1

2 → 3

3 → 1

Which of the following is a valid topological sort for this DAG?

Select one:

- **a. 5 4 1 0 2 3**
- **b. 0 5 2 3 4 1**
- **c. 5 4 2 1 3 0**
- **d. 5 2 3 4 1 0**

 Version 4.2

Question 17

Complete

Mark 1.00 out of 1.00

In Agile methodology, what is a sprint?

Select one:

- a. A security test
- b. A long-term project milestone
- c. A fixed-duration development cycle
- d. A debugging session

Question 18

Complete

Mark 1.00 out of 1.00

The primary purpose of the requirement analysis phase is to:

Select one:

- a. Perform system testing
- b. Design the system architecture
- c. Identify what the users need
- d. Write code modules

Question 19

Complete

Mark 1.00 out of 1.00

What does a Trie data structure primarily store?

Select one:

- a. A list of integers sorted in ascending order
- b. A graph representation for shortest paths
- c. A balanced binary search tree for numbers
- d. A set of strings with efficient prefix search

Question **20**

Complete

Mark 1.00 out of 1.00

Given this bit manipulation logic, what is output?

```
int n = 23;
n = n & (n - 1);
System.out.println(n);
```

Select one:

- **a. 0**
- **b. 19**
- **c. 22**
- **d. 21**