राष्ट्रीय प्रौद्योगिकी संस्थान वरंगल
वरंगल – 506004, तेलंगाना, भारत
NATIONAL INSTITUTE OF TECHNOLOGY WARANGAL
WARANGAL – 506004, Telangana, INDIA

QUESTION BOOKLET – ADVANCED TEST FOR RECRUITMENT TO TECHNICAL CADRE POSTS

Post:	Sr. Technician
Department	CDIS
Advt.:	01/2026 dated 09.01.2026
Date of Exam:	07-08-2026
Duration:	2 Hours
Total Marks:	200 (100 Q X 2 M each)
No. of Questions:	100 (MCQs)
Negative Marking:	1/4th mark for every wrong answer

INSTRUCTIONS TO THE CANDIDATES

1. This is an Advanced Test comprising 100 Multiple Choice Questions (MCQs), to be conducted in MCQ mode only.
2. The duration of the test is 2 hours.
3. Answers must be marked on the OMR Answer Sheet using a blue or black ballpoint pen only. Use of pencils is not permitted.
4. Candidates must write/mark their Roll Number, Post applied for, and other required details in the designated space on the OMR Answer Sheet.
5. Answers marked on the Question Booklet or on any sheet other than the OMR Answer Sheet will not be evaluated.
6. For each question, darken the circle corresponding to the correct answer completely and clearly on the OMR Answer Sheet.
7. Each question carries equal marks. There will be a negative marking of ¼ th mark for every wrong answer. No marks will be deducted for questions not attempted.
8. Mark only one answer for each question. Marking more than one circle for a question will be treated as a wrong answer.
9. Overwriting, cutting, or erasing that leaves the OMR Answer Sheet unclear may result in the answer not being evaluated.
10. No candidate shall leave the examination hall during the test.
11. Any attempt to copy, use unfair means, or communicate with others will result in immediate disqualification.
12. The use of electronic gadgets, calculators, mobile phones, smart watches, or any written/printed material is strictly prohibited.
13. Rough work, if any, should be done only on the separate sheet provided for the purpose.
14. Ensure that the OMR Answer Sheet is duly filled and handed over to the Invigilator before leaving the examination hall.
15. Failure to submit the OMR Answer Sheet will result in cancellation of candidature.
16. All material provided, including rough sheets, must be returned before leaving the examination hall.

Q1. What is the output of the following C program?

```
#include <stdio.h>
int main() {
int x = 7, y = 2;
int *p = &x, *q = &y;
*p = *p + *q;
printf("%d", x);
return 0;
}
```

(A) 7
(B) 2
(C) 9
(D) Compilation error

Q2. Which of the following function definitions correctly swaps two integers using pointers?

(A)

```
void swap(int a, int b) {
int t = a;
a = b;
b = t;
}
```

(B)

```
void swap(int *a, int *b) {
int t = *a;
*a = *b;
*b = t;
}
```

(C)

```
void swap(int a, int b) {
int *t = &a;
a = b;
b = *t;
}
```

(D)

```
void swap(int *a, int *b) {
*a = *b;
}
```

Q3. What does the expression *(arr + i) represent, where arr is the name of an array and i is a valid array index?

(A) arr[i-1]
(B) arr[i]
(C) &arr[i]
(D) arr[i+1]

Q4. What is the output of the following C program?

```
int x = 100;
int *p = &x;
*p = 200;
printf("%d %d", x, *p);
```

(A) 100 100
(B) 200 200
(C) 100 200
(D) 200 100

Q5. What is the output of the following C program?

```
void f(int *p) {
*p = *p * 2;
}
int main() {
int x = 6;
f(&x);
printf("%d", x);
}
```

(A) 6
(B) 12
(C) 0
(D) Compilation error

Q6. What is the output of the following C program?

```
int x = 10;
int *p = &x;
int **q = &p;
printf("%d", **q);
```

(A) Address of x
(B) 10
(C) Address of p
(D) Compilation error

Q7. What is the output of the following C program?

```
int a[4] = {10, 20, 30, 40};
printf("%d", *(a + 1) + *(a + 2));
```

(A) 30
(B) 50
(C) 20
(D) 40

Q8. Which of the following statements correctly allocates memory dynamically for an array of 10 integers in C?

(A) int *p = malloc(10);
(B) int *p = malloc(10 * sizeof(int));
(C) int p[10] = malloc();
(D) int *p = new int[10];

Q9. What is the output of the following C program?

```
int a = 1, b = 2, c = 3;
int *arr[3] = {&a, &b, &c};
printf("%d", *arr[1] + *arr[2]);
```

(A) 3
(B) 5
(C) 2
(D) Compilation error

Q10. In C++, a mechanism allows multiple functions to be defined with the same identifier but with different function signatures. The compiler selects the appropriate function implementation during compilation based on the number, type, and order of arguments passed. Which C++ feature provides this capability?

(A) Function Overriding
(B) Function Overloading
(C) Virtual Function Mechanism
(D) Dynamic Binding

Q11. Consider the following C++ program. What will be the output when the program is executed?

```
#include <iostream>
using namespace std;
class A {
public:
~A() { cout << "A "; }
};
class B : public A {
public:
~B() { cout << "B "; }
};
int main() {
A *ptr = new B();
delete ptr;
return 0;
}
```

(A) B A
(B) A B
(C) A
(D) B

Q12. In Java, what is the default value assigned to an uninitialized instance variable of primitive data type int?
(A) 0
(B) null
(C) Garbage value
(D) 1

Q13. Consider the following Java program. What will be the output when the program is executed?

```
class Parent {
static void print() { System.out.print("Parent "); }
}
class Child extends Parent {
static void print() { System.out.print("Child "); }
}
public class Main {
public static void main(String[] args) {
Parent p = new Child();
p.print();
}
}
```

(A) Child
(B) Parent
(C) Compilation Error
(D) Runtime Exception

Q14. Which one of the following Python data types is mutable?
(A) tuple
(B) str
(C) list
(D) int

Q15. Consider the following Python code. What will be the output of the program?

```
a = [1, 2, 3]
b = a
b.append(4)
print(a)
```

(A) [1, 2, 3]
(B) [1, 2, 3, 4]
(C) [4]
(D) Attribute Error

Q16. Consider the following Python code. What will be the output of the program?

```
x = 10
def outer():
x = 20
def inner():
nonlocal x
x += 5
print(x, end=" ")
inner()
print(x, end=" ")

outer()
print(x)
```

(A) 25 25 10
(B) 15 20 10
(C) 25 20 10
(D) 25 25 25

Q17. What is the worst-case time complexity of inserting a new node immediately after a given node pointer p in a singly linked list?
(A) O(1)
(B) O(log n)
(C) O(n)
(D) O(n log n)

Q18. What is the maximum number of nodes possible in a binary tree of height h, where the root node is considered to be at height 0?
(A) 2^h
(B) $2^h - 1$
(C) $2^{(h+1)} - 1$
(D) h^2

Q19. In a circular singly linked list, which condition indicates that the traversal has completed when starting from the head node?
(A) When current pointer becomes NULL
(B) When current pointer equals head again
(C) Circular lists cannot be traversed
(D) When current->next->next is NULL

Q20. A circular queue is implemented using an array of size 6. If FRONT=2 and REAR=5, and one element is enqueued (with wraparound), what is the new REAR?
(A) 6
(B) 0
(C) 5
(D) 1

Q21. What is the output when the postfix expression '5 3 + 2 *' is evaluated using a stack?
(A) 16
(B) 13
(C) 10
(D) 11

Q22. What is the worst-case time complexity of searching for a key in a self-balancing Binary Search Tree (BST), such as an AVL tree, containing n nodes?
(A) O(1)
(B) O(log n)
(C) O(n)
(D) O(n log n)

Q23. A Binary Search Tree (BST) is constructed by inserting the keys 40, 20, 60, 10, 30 in the given order. What is the preorder traversal of the resulting BST?
(A) 10 20 30 40 60
(B) 40 20 10 30 60
(C) 40 60 20 10 30
(D) 20 10 40 30 60

Q24. What is the postfix expression corresponding to the infix expression A*(B+C) using a stack-based infix-to-postfix conversion algorithm?
(A) ABC+*
(B) A*BC+
(C) AB+C*
(D) ABC*+

Q25. A B-Tree of order m is widely used for database indexing primarily because it:
(A) Minimizes disk I/O by keeping the tree height very small even for large n
(B) Is simpler to implement than a BST
(C) Works only for in-memory data
(D) Requires more comparisons per node than a BST

Q26. Huffman coding, which is used to construct an optimal prefix-free code for lossless data compression, is based on which of the following algorithmic paradigms?
(A) Dynamic Programming
(B) Greedy algorithm
(C) Divide and Conquer
(D) Backtracking

Q27. The *optimal substructure* property, which is required for dynamic programming and many greedy algorithms, implies that:
(A) The problem has no valid solution unless brute-forced
(B) An optimal solution to the problem contains optimal solutions to its subproblems
(C) The problem must be solved iteratively, never recursively
(D) Only applies to graph problems

Q28. What is the worst-case time complexity of Binary Search on a sorted array containing n elements?
(A) O(n)
(B) O(log n)
(C) O(n log n)
(D) O(1)

Q29. What is the worst-case time complexity of Depth-First Search (DFS) traversal of a graph with V vertices and E edges when the graph is represented using an adjacency list?
(A) O(V)
(B) O(E)
(C) O(V + E)
(D) O(VE)

Q30. Which one of the following greedy strategies yields an optimal solution for the Fractional Knapsack problem?
(A) Pick items with the highest total value first, ignoring weight
(B) Pick items with the highest value-to-weight ratio first, taking fractions as needed
(C) Pick the heaviest items first
(D) Pick items randomly until capacity is full

Q31. Consider the recurrence relation

$$T(n) = 2T\left(\frac{n}{2}\right) + O(n).$$

Using the Master Theorem, what is the asymptotic time complexity of $T(n)$?

(A) O(n)
(B) O(n log n)
(C) $O(n^2)$
(D) O(log n)

Q32. What is the time complexity of the Floyd–Warshall algorithm for computing the shortest paths between all pairs of vertices in a graph with V vertices?
(A) $O(V^2)$
(B) $O(V^2 \log V)$
(C) $O(V^3)$
(D) O(VE)

Q33. What is the length of the Longest Common Subsequence (LCS) of the strings 'ABCBDAB' and 'BDCABA'?
(A) 3
(B) 4
(C) 5
(D) 6

Q34. Which one of the following CPU components is primarily responsible for performing arithmetic and logical operations?
(A) Control Unit (CU)
(B) Arithmetic Logic Unit (ALU)
(C) Memory Management Unit (MMU)
(D) Program Counter (PC)

Q35. Which one of the following CPU register stores the address of the next instruction to be fetched?
(A) Instruction Register (IR)
(B) Memory Address Register (MAR)
(C) Memory Buffer Register (MBR)
(D) Program Counter (PC)

Q36. In a RISC pipeline, when an instruction depends on the result produced by a previous instruction that has not yet completed execution, which type of hazard occurs?
(A) Structural Hazard
(B) Control Hazard
(C) Data Hazard
(D) Branch Hazard

Q37. In Direct Memory Access (DMA), which transfer mode allows the DMA controller to take complete control of the system bus and transfer an entire block of data continuously until the transfer is completed?
(A) Cycle Stealing Mode
(B) Burst Transfer Mode
(C) Handshaking Mode
(D) Interrupt-Driven Mode

Q38. A 2-way set-associative cache has a total capacity of 16 KB and a block size of 32 bytes. How many sets are present in the cache?
(A) 256
(B) 512
(C) 1024
(D) 128

Q39. A memory system has a cache hit ratio of 80%. The cache access time is 10 ns and the main memory access time is 100 ns. Assuming that the cache is searched first and main memory is accessed only on a cache miss, what is the Average Memory Access Time (AMAT)?
(A) 20 ns
(B) 28 ns
(C) 30 ns
(D) 18 ns

Q40. IEEE 754 single-precision floating-point representation uses 1 sign bit, 8 exponent bits (with bias = 127), and 23 fraction bits. What decimal value is represented by the hexadecimal bit pattern 0x41400000?

(A) 12.0

(B) 24.0

(C) 6.0

(D) 3.0

Q41. A 4-stage pipeline has stage delays of 150 ps, 120 ps, 180 ps, and 160 ps. Each pipeline register introduces an additional delay of 20 ps. What is the total time required to execute 100 instructions in this pipeline?

(A) 20,600 ps

(B) 20,000 ps

(C) 18,400 ps

(D) 16,800 ps

Q42. A processor uses a 32-bit virtual address space with a page size of 4 KB. How many bits are used for the Virtual Page Number (VPN) in each virtual address?

(A) 12 bits

(B) 20 bits

(C) 16 bits

(D) 24 bits

Q43. Which of the following digital logic gates is a universal gate?

(A) AND gate

(B) OR gate

(C) NOR gate

(D) XOR gate

Q44. According to De Morgan's Laws, the expression $\overline{A \cdot B}$ is logically equivalent to:

(A) $\overline{A} \cdot \overline{B}$

(B) $\overline{A} + \overline{B}$

(C) $A + B$

(D) $\overline{A + B}$

Q45. How many select lines are required for a 32-to-1 multiplexer?

(A) 4

(B) 5

(C) 6

(D) 32

Q46. The Boolean expression $Y = A \oplus B \oplus C$ represents the output of which arithmetic circuit component?

(A) Carry-out of a Full Adder

(B) Sum-out of a Full Adder

(C) Borrow-out of a Full Subtractor

(D) Output of a 2-bit Priority Encoder

Q47. Simplify the following Boolean expression into its minimum Sum-of-Products (SOP) form:

$$F = \overline{A}\overline{B}C + \overline{A}BC + A\overline{B}C + ABC$$

(A) C

(B) $A + B$

(C) AB

(D) $A + C$

Q48. Two 4-bit numbers $A = 1011$and $B = 1101$are represented in 2's complement form and added using a 4-bit binary adder. Which statement correctly describes the overflow condition?

(A) Overflow occurs because carry-in to MSB is different from carry-out from MSB

(B) No overflow occurs because both numbers are negative and the result has a negative sign bit

(C) Overflow occurs because the result exceeds 15

(D) No overflow occurs because $A + B = 0$

Q49. Consider a 4-variable K-map. How many essential prime implicants are present in $F(A, B, C, D) = \Sigma m(0, 2, 5, 7, 8, 10, 13, 15)$?

(A) 1

(B) 2

(C) 3

(D) 4

Q50. What is a thread in the context of an Operating Systems?

(A) A heavyweight process with its own address space

(B) A lightweight unit of CPU utilization within a process

(C) A collection of related processes executing simultaneously

(D) A memory management technique used in virtual memory

Q51. Which of the following is NOT one of the Coffman necessary conditions for the occurrence of a deadlock in an operating system?

(A) Mutual Exclusion

(B) Hold and Wait

(C) Preemption

(D) Circular Wait

Q52. In a demand-paged virtual memory system, a page fault occurs when:
(A) A page currently in physical memory becomes corrupted
(B) The referenced page is not present in the main memory and must be fetched from secondary storage
(C) The processor attempts to execute an invalid instruction
(D) The page table exceeds the available physical memory

Q53. Banker's Algorithm in an Operating System is used for:
(A) Deadlock Prevention
(B) Deadlock Avoidance
(C) Deadlock Detection and Recovery
(D) Virtual Memory Allocation

Q54. A counting semaphore S is initialized to 7. Subsequently, 20 wait (P) operations and 15 signal (V) operations are successfully executed (assuming no process blocks indefinitely). What is the final value of S?
(A) 2
(B) 12
(C) 0
(D) 7

Q55. Which disk scheduling algorithm may cause starvation for requests that are consistently far from the current head position?
(A) FCFS
(B) SSTF (Shortest Seek Time First)
(C) SCAN
(D) C-SCAN

Q56. Consider the following page reference string:
1, 2, 3, 4, 1, 2, 5, 1, 2, 3, 4, 5.
Using the FIFO (First-In, First-Out) page replacement algorithm with 3 initially empty page frames, how many page faults occur?
(A) 9
(B) 10
(C) 7
(D) 12

Q57. A system has 4 processes (P_0, P_1, P_2, P_3) and 3 resource types (R_1, R_2, R_3). The total instances available in the system are $(10, 5, 7)$. Currently allocated instances are:

$$P_0: (0, 1, 0)$$
$$P_1: (2, 0, 0)$$
$$P_2: (3, 0, 2)$$
$$P_3: (2, 1, 1)$$

What is the current Available resource vector?
(A) (3,3,2)
(B) (3,3,4)
(C) (10,5,7)
(D) (7,2,3)

Q58. Accessing a page in a virtual memory system with a Translation Lookaside Buffer (TLB) takes 20 ns on a TLB hit and 100 ns on a TLB miss (assuming a single-level page table in main memory). If the TLB hit ratio is 90%, what is the Effective Memory Access Time (EMAT)?
(A) 28 ns
(B) 38 ns
(C) 20 ns
(D) 10 ns

Q59. A superkey that contains no redundant attributes (i.e., a minimal superkey) is called a:
(A) Primary Key
(B) Foreign Key
(C) Candidate Key
(D) Alternate Key

Q60. Which property of the ACID model ensures that either all operations of a transaction are performed successfully or none of them are performed?
(A) Atomicity
(B) Consistency
(C) Isolation
(D) Durability

Q61. A foreign key constraint in a relational database is used to enforce which type of integrity?
(A) Entity Integrity
(B) Referential Integrity
(C) Domain Integrity
(D) User-Defined Integrity

Q62. A relation $R(A, B, C, D)$ has functional dependencies $F = \{A \rightarrow B, B \rightarrow C, C \rightarrow A, D \rightarrow B\}$. What highest normal form does R satisfy?
(A) 1NF
(B) 2NF
(C) 3NF
(D) BCNF

Q63. In a B+ Tree index, data records (or pointers to data records) are stored in:
(A) Root node only
(B) Internal nodes only
(C) Leaf nodes only
(D) Both internal and leaf nodes equally

Q64. Consider two relations $R(A, B)$ with 10 tuples and $S(B, C)$ with 20 tuples. What is the maximum possible cardinality of the natural join R ⋈ S?
(A) 20
(B) 10
(C) 200
(D) 30

Q65. A relation $R(A, B, C, D, E)$ has functional dependencies $F = \{A \rightarrow BC, CD \rightarrow E, B \rightarrow D, E \rightarrow A\}$. Which of the following is NOT a candidate key for R?
(A) A
(B) E
(C) BC
(D) BD

Q66. Which layer of the OSI model is responsible for routing packets across multiple networks?
(A) Data Link Layer
(B) Network Layer
(C) Transport Layer
(D) Session Layer

Q67. What is the default subnet mask for a Class B IP address?
(A) 255.0.0.0
(B) 255.255.0.0
(C) 255.255.255.0
(D) 255.255.255.255

Q68. In the Ethernet (IEEE 802.3) protocol, which medium access control (MAC) method is used?
(A) CSMA/CA
(B) CSMA/CD
(C) Token Passing
(D) ALOHA

Q69. Which application-layer protocol uses port number 53 to resolve domain names into IP addresses?
(A) HTTP
(B) DNS
(C) SMTP
(D) FTP

Q70. In a Selective Repeat ARQ protocol, if sequence numbers are represented using m bits, what is the maximum sender window size W_s to avoid sequence number ambiguity?
(A) 2^m
(B) 2^{m-1}
(C) $2^m - 1$
(D) $m/2$

Q71. The Distance Vector Routing algorithm (e.g., RIP) suffers from which major problem during link failures?
(A) Count-to-Infinity problem
(B) Heavy link-state flooding overhead
(C) OSPF area boundary bottleneck
(D) Out-of-order packet delivery

Q72. Which routing protocol uses Dijkstra's shortest path algorithm to compute routing tables?
(A) RIP (Routing Information Protocol)
(B) OSPF (Open Shortest Path First)
(C) BGP (Border Gateway Protocol)
(D) EGP (Exterior Gateway Protocol)

Q73. A message polynomial $M(x) = x^5 + x^3 + x + 1$ (101011) is transmitted using CRC with the generator polynomial $G(x) = x^3 + x + 1$ (1011). What is the remainder polynomial (CRC checksum) appended to the message?
(A) 100
(B) 011
(C) 111
(D) 001

Q74. In a Token Ring topology, if the token holding time is T_h, the total ring propagation delay is T_p, and there are Nstations on the ring, what is the maximum time a station may have to wait before it gets an opportunity to transmit a frame (i.e., the worst-case access delay)?
(A) $N \times (T_h + T_p)$
(B) $(N - 1) \times T_h + T_p$
(C) $N \times T_p$
(D) $T_h + N \times T_p$

Q75. A leaky bucket receives bursty traffic at 12 Mbps for 2 seconds. If the bucket's output rate is 4 Mbps, what is the minimum bucket capacity required to prevent packet loss during the burst?
(A) 16 Megabits
(B) 8 Megabits
(C) 24 Megabits
(D) 12 Megabits

Q76. White-box testing techniques are primarily concerned with testing:
(A) System requirements and functional specifications without looking at source code
(B) Internal logic, control structures, and source code paths
(C) User interface responsiveness and layout
(D) Third-party database integration performance

Q77. In the COCOMO (Constructive Cost Model), software development effort is primarily estimated based on:
(A) Lines of Code (KLOC) / Function Points
(B) Number of UML diagrams created
(C) Total CPU clock cycles needed
(D) Database table count

Q78. In UML (Unified Modelling Language), which diagram represents the static structure of a software system by describing classes, their attributes, operations, and relationships among classes?
(A) Sequence Diagram
(B) Class Diagram
(C) Use Case Diagram
(D) Statechart Diagram

Q79. Boundary Value Analysis (BVA) is a test design technique that belongs to which testing paradigm?
(A) White-Box Testing
(B) Black-Box Testing
(C) Mutation Testing
(D) Static Code Analysis

Q80. What does CMMI Level 3 ("Defined") indicate about an organization's process maturity?
(A) Processes are ad-hoc and chaotic
(B) Processes are standard, documented, and integrated across the organization
(C) Processes are quantitatively measured using statistical control
(D) Processes focus on continuous improvement and optimization

Q81. In object-oriented software metrics, the Depth of Inheritance Tree (DIT) of a class refers to:
(A) The total number of children classes inheriting from it
(B) The maximum length from the root class to that specific class in the inheritance hierarchy
(C) The total number of methods overridden by the class
(D) The number of interfaces implemented by the class

Q82. Mutation Testing evaluates:
(A) The quality and adequacy of a test suite by introducing small intentional faults (mutants) into the program
(B) The hardware resilience against cosmic ray memory bit flips
(C) The speed of execution of recursive algorithms
(D) System scalability under heavy concurrent traffic loads

Q83. Consider a control flow graph G with P predicate (decision) nodes, where each predicate node has an out-degree of 2. What is the formula for Cyclomatic Complexity V(G)?
(A) $P + 1$
(B) $P - 1$
(C) $2P + 1$
(D) $P/2$

Q84. What is the output of executing the following Bash code snippet?

```
x=5
echo '$x + 2'
```

(A) 7
(B) 5 + 2
(C) $x + 2
(D) Syntax Error

Q85. What is the primary difference between $* and $@ when enclosed in double quotes ("$*" vs. "$@"), considering positional arguments a, b, and c?

(A) "$*" expands to three separate words "a", "b", and "c", whereas "$@" expands to a single combined string "a b c"
(B) "$*" expands to a single string "a b c", whereas "$@" expands to separate words "a" "b" "c"
(C) Both expand to identical single strings "a b c"
(D) "$*" ignores positional arguments beyond $9

Q86. Consider the following Bash script snippet:

```
trap 'echo "Cleanup"' EXIT
func() {
exit 0
}
func
```

What will be printed when the script runs?

(A) Nothing (script exits immediately silently)
(B) Cleanup
(C) Syntax Error: trap cannot be used inside functions
(D) Infinite loop of Cleanup

Q87. What does the Here-Document (<<) construct do in a shell script?

```
cat << 'EOF'
$VAR
EOF
```

(A) Appends $VAR to a file named EOF
(B) Reads input block line-by-line treating $VAR literally without variable substitution because 'EOF' is quoted
(C) Evaluates $VAR and sends it to standard output as a background process
(D) Causes a runtime error due to missing input files

Q88. What does the AWK statement awk -F':' '{print $1, $3}' /etc/passwd specify?

(A) Searches for lines containing -F
(B) Sets the input field separator to : and prints the 1st and 3rd fields of each line
(C) Prints lines where column 1 equals column 3
(D) Filters lines with 1 to 3 colons

Q89. Given a file scores.txt containing lines with Name and Marks, what does the following AWK script compute?
awk '{sum += $2} END {print sum/NR}' scores.txt
(A) Total sum of all marks
(B) Maximum mark in the file
(C) Average (mean) of the marks across all records
(D) Count of records where marks are non-zero

Q90. Which sigil are used to declare an array and a hash in Perl respectively?
(A) @ for arrays, % for hashes
(B) % for arrays, @ for hashes
(C) $ for arrays, @ for hashes
(D) & for arrays, * for hashes

Q91. What is the output of executing the following Perl code snippet?
my $val = 3 + "7 apples";
print $val;

(A) 37 apples
(B) 10
(C) 3
(D) Syntax Error

Q92. In HTTP methods, what distinguishes a POST request from a GET request?
(A) GET includes data in the HTTP request body; POST appends data to the URL query string
(B) GET appends parameters in the URL query string; POST transmits data within the HTTP request body
(C) POST requests are idempotent whereas GET requests are non-idempotent
(D) GET requests cannot be cached by web browsers

Q93. How does a web cookie differ from Local Storage in HTML5 client-side storage?
(A) Cookies store up to 5MB per domain; Local Storage stores only 4KB
(B) Cookies are automatically sent to the server with every HTTP request header; Local Storage data stays on the client and is never transmitted to the server automatically
(C) Cookies persist indefinitely across browser restarts; Local Storage expires as soon as the session tab closes
(D) Local Storage can be accessed across different domains

Q94. In JavaScript, what is the key difference between the == and === equality operators?
(A) == checks address references; === checks primitive values
(B) == performs type coercion before comparison; === evaluates equality without type coercion (strict equality)
(C) === is used only for object comparisons
(D) There is no functional difference in modern ES6+ engines

Q95. Which Agile framework emphasizes limiting Work in Progress (WIP) through the use of visual boards?
(A) Scrum
(B) Extreme Programming (XP)
(C) Kanban
(D) Dynamic Systems Development Method (DSDM)

Q96. What is the primary purpose of a Sprint Retrospective meeting?
(A) To demonstrate working software to stakeholders
(B) To inspect team performance during the sprint and identify process improvements for the next sprint
(C) To estimate story points for the Product Backlog
(D) To assign individual daily tasks to developers

Q97. What is the "Definition of Done" (DoD) in Scrum?
(A) A formal agreement declaring that a User Story meets all required quality standards, tests, and documentation to be considered releasable
(B) The contract signed between the Product Owner and the Client before starting the project
(C) The final date of project delivery
(D) The completion of the initial database design phase

Q98. What is the primary difference between a Sprint Backlog and a Product Backlog?
(A) The Product Backlog is owned by the Scrum Master; the Sprint Backlog is owned by the Client
(B) The Product Backlog contains a dynamic, prioritized list of all desired system features; the Sprint Backlog is a subset of Product Backlog items selected specifically for execution in the current Sprint
(C) The Sprint Backlog is fixed for the lifetime of the project; the Product Backlog changes daily
(D) The Product Backlog contains bug reports only; the Sprint Backlog contains new features only

Q99. What is the primary purpose of a firewall in a computer network?
(A) To accelerate packet routing speeds between subnets
(B) To inspect and filter incoming/outgoing network traffic based on security rules
(C) To assign dynamic IP addresses to internal network hosts
(D) To automatically decrypt incoming encrypted traffic

Q100. In public-key cryptography (e.g., RSA), if User A wants to send a confidential message to User B, which key should User A use for encryption?
(A) User A's Private Key
(B) User A's Public Key
(C) User B's Public Key
(D) User B's Private Key

***