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QUESTION BOOKLET – ADVANCED TEST FOR RECRUITMENT TO TECHNICAL CADRE POSTS

Post:	Technician
Department	CDIS
Advt.:	01/2026 dated 09.01.2026
Date of Exam:	08-08-2026
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. In the OSI model, which layer is responsible for end-to-end delivery, error control, and flow control?
A. Data Link Layer
B. Network Layer
C. Transport Layer
D. Session Layer

Q2. Which storage class specifier makes a local variable retain its value between multiple function calls?
A. auto
B. extern
C. register
D. static

Q3. Which declaration correctly creates a pointer to a constant integer?
A. int * const p;
B. const int *p;
C. int const p*;
D. const *int p;

Q4. Which feature is supported in C++ but not in C?
A. Structures
B. Pointers
C. Function Overloading
D. Arrays

Q5. Which statement regarding constructors is correct?
A. Return int
B. Cannot overload
C. Automatically invoked when object is created
D. Inherited

Q6. Which loop executes at least once?
A. for
B. while
C. do-while
D. Nested for

Q7. After two PUSH and one POP on empty stack (TOP=-1), TOP becomes:

```
void modify(int x[]) {
   x[0] = 99;
}
int main() {
   int arr[4] = {1,2,3,4};
   modify(arr);
   printf("%d", arr[0]);
   return 0;
}
```

A. 1
B. 99
C. Compilation Error
D. Runtime Error

Q8. BST traversal which produces the output in ascending order?
A. Preorder
B. Postorder
C. Inorder
D. Level Order

Q9. Which DS is used for recursion?
A. Queue
B. Stack
C. Linked List
D. Graph

Q10. Linked list is preferred because:
A. No memory
B. Insert/delete without shifting
C. Fastest search
D. Contiguous memory

Q11. Which memory fasted and directly accessed by CPU among the options givn?
A. Cache
B. Secondary Storage
C. Optical Disk
D. Registers

Q12. Binary equivalent of decimal 45?
A. 101011
B. 110101
C. 101101
D. 111001

Q13. Which among the following gate is also known as Universal gate?
A. XOR
B. AND
C. NAND
D. OR

Q14. Which of the following option is equivalent to A + A'B.
A. A
B. A+B
C. A×B
D. B

Q15. What is the primary function of a Firewall?
A. To detect and remove viruses
B. To monitor and control incoming and outgoing network traffic
C. To encrypt all data on the network
D. To store backup copies of data

Q16. Which among the following sorting algorithm is stable?
A. Selection
B. Heap
C. Quick
D. Merge

Q17. Which CPU scheduling algorithm gives the minimum average waiting time when the burst times of all processes are known in advance?
A. FCFS
B. Round Robin
C.SJF
D. Priority

Q18. Which of the following is NOT a necessary condition for deadlock as per Coffman's conditions?
A. Mutual Exclusion
B. Hold and Wait
C. Circular Wait
D. Time Sharing

Q19. Which of the following is a mandatory property of a Primary Key in a relational database?
A. Duplicates allowed
B. NULL allowed
C. Unique values
D. Must be float

Q20. Which protocol is used to automatically assign IP addresses to devices on a network?
A. FTP
B. DHCP
C. SMTP
D. ARP

Q21. Which keyword is used to terminate a switch case in C?
A. stop
B. break
C. exit
D. return

Q22. Which operator cannot be overloaded in C++?
A. +
B. <<
C. ::
D. [ ]

Q23. What is the output of strlen("COMPUTER")?
A. 7
B. 8
C. 9
D. 10

Q24. Which header file is required for malloc()?
A. string.h
B. stdlib.h
C. math.h
D. conio.h

Q25. Which search technique works efficiently on sorted arrays?
A. Linear Search
B. Binary Search
C. DFS
D. BFS

Q26. The worst-case time complexity of Linear Search is:
A. O(1)
B. O(log n)
C. O(n)
D. O(n log n)

Q27. Which data structure is best suited for Breadth First Search?
A. Stack
B. Queue
C. Array
D. Tree

Q28. In a circular queue, overflow occurs when:
A. front==rear
B. (rear+1)%size==front
C. rear==size
D. front==-1

Q29. The ALU of a computer performs:
A. Storage
B. Logical and arithmetic operations
C. Input
D. Networking

Q30. 1 KB equals:
A. 1000 bytes
B. 100 bytes
C. 1024 bytes
D. 2048 bytes

Q31. Which flip-flop toggles its output state when both of its inputs are HIGH (1)?
A. SR Flip-Flop
B. D Flip-Flop
C. JK Flip-Flop
D. T Flip-Flop

Q32. What is the hexadecimal equivalent of binary 11111111 is:
A. EF
B. FF
C. FE
D. AF

Q33. Which sorting algorithm repeatedly selects the smallest element?
A. Selection Sort
B. Merge Sort
C. Quick Sort
D. Radix Sort

Q34. Recursion must always have:
A. Pointer
B. Base condition
C. Array
D. Queue

Q35. Which component of the Operating System manages the main memory (RAM)?
A. Scheduler
B. Memory Manager
C. Spooler
D. Shell

Q36. Process that is currently waiting for an I/O operation to complete is in which state?
A. Running
B. Ready
C. Waiting
D. Terminated

Q37. Which SQL keyword ensures that duplicate values are not returned in the result set?
A. ORDER BY
B. UNIQUE
C. DISTINCT
D. GROUP BY

Q38. Which normal form removes partial dependency?
A. 1NF
B. 2NF
C. 3NF
D. BCNF

Q39. Which protocol is used to translate domain names into IP addresses?
A. DHCP
B. DNS
C. HTTP
D. TCP

Q40. Which attack attempts to trick users into revealing passwords through fake websites?
A. Sniffing
B. Phishing
C. Spoofing
D. Flooding

Q41. What is the output of: int a=10; printf("%d", a>>1);
A. 20
B. 10
C. 5
D. 2

Q42. Which C function compares two strings?

```
#include <stdio.h>
int main() {
    int arr[] = {10, 20, 30, 40, 50};
    int *p = arr + 1;
    *p++ += 5;
    printf("%d, %d", arr[1], *p);
    return 0;
}
```

A. 20, 20
B. 25, 30
C. 25, 20
D. 20, 30

Q43. Which keyword prevents inheritance in C++?
A. private
B. final
C. static
D. virtual

Q44. Which tree is always height-balanced?
A. Binary Tree
B. BST
C. AVL Tree
D. Expression Tree

Q45. Deleting from the front of a queue is called:
A. Push
B. Pop
C. Enqueue
D. Dequeue

Q46. Which binary tree traversal algorithm allows you to safely free/delete all nodes from memory bottom-up without losing pointer references to child subtrees?
A. Inorder
B. Preorder
C. Postorder
D. Level order

Q47. Which CPU register holds the memory address of the next instruction to be fetched and executed?
A. IR (Instruction Register)
B. PC (Program Counter)
C. MAR (Memory Address Register)
D. MDR (Memory Data Register)

Q48. What is the smallest, most fundamental unit of digital information in computer systems?
A. Byte
B. Word
C. Bit
D. Nibble

Q49. Which logic gate produces an output of 1 (HIGH) if and only if its inputs have different logic levels?
A. XOR
B. XNOR
C. NAND
D. NOR

Q50. How many total unique binary combinations can be represented using 4 input bits?
A. 4
B. 8
C. 16
D. 32

Q51. Average-case complexity of Quick Sort is:
A. $O(n^2)$
B. O(n log n)
C. O(log n)
D. O(n)

Q52. Which algorithm is used to find the shortest path in a weighted graph without negative edges?
A. Prim
B. Kruskal
C. Dijkstra
D. DFS

Q53. A system shows very high CPU utilization and processes seem to make progress, but response times are extremely slow and the disk is constantly busy with page transfers. What is the most likely explanation?
A. The file system cache is disabled, causing more disk reads
B. The system has too many CPU-bound processes and too few I/O-bound processes
C. The system is experiencing thrashing due to excessive paging
D. The CPU scheduler is using a non-preemptive algorithm

Q54. Which Linux command is used to list the currently running processes?
A. ls
B. ps
C .cd
D. mkdir

Q55. Which SQL statement is used to permanently delete an entire table from a database?
A. DELETE
B. REMOVE
C. DROP
D. CLEAR

Q56. In a relational database, a foreign key is primarily used to?
A. Sort records
B. Create indexes
C. Establish relationships
D. Encrypt data

Q57. Transmission Control Protocol (TCP) is classified as a?
A. Connection-oriented protocol
B. Connectionless protocol
C. Routing protocol
D. Application protocol

Q58. Which port number is used by HTTP by default?
A. 21
B. 25
C. 80
D. 443

Q59. Which SDLC model is most suitable when requirements are clear, fixed, and well understood from the beginning?
A. Waterfall
B. Spiral
C. Prototyping
D. Agile

Q60. In a Linux shell, which special variable holds the exit status of the most recently executed command?
A. $$
B. $0
C. $?
D. $#

Q61. Which function should be used to allocate memory for an array of 100 integers at runtime, without initializing the allocated memory?
A. calloc()
B. malloc()
C. realloc()
D. free()

Q62. What is the primary purpose of the virtual keyword when applied to member functions in C++?
A. Dynamic binding
B. Memory allocation
C. File handling
D. Exception handling

Q63. Which data structure is commonly used to evaluate postfix expressions?
A. Queue
B. Stack
C. Graph
D. Array

Q64. Which type of graph is connected and contains no cycles?
A. Complete graph
B. Weighted graph
C. Tree
D. Directed graph

Q65. In which addressing mode is the actual data (operand) specified directly inside the instruction itself, rather than giving a memory address?
A. Direct
B. Immediate
C. Indirect
D. Indexed

Q66. How many bits make up a single nibble?
A. 2 bits
B. 4 bits
C. 8 bits
D. 16 bits

Q67. Which logic gate is functionally equivalent to an inverted OR gate (an OR gate followed by a NOT gate)?
A. NAND
B. XNOR
C. NOR
D. XOR

Q68. What is the simplified form of the Boolean expression $(A \cdot 1)+(A \cdot 0)$?
A. 0
B. 1
C. A
D. A'

Q69. Which algorithm is best suited for finding a Minimum Spanning Tree?
A. Dijkstra
B. Kruskal
C. Binary Search
D. BFS

Q70. The worst-case complexity of Bubble Sort is:
A. O(n)
B. O(log n)
C. O(n log n)
D. $O(n^2)$

Q71. Context switching occurs when:
A. CPU changes from one process to another
B. Memory is formatted
C. File is deleted
D. Compiler runs

Q72. Which page replacement algorithm replaces the oldest page?
A. LRU
B. FIFO
C. Optimal
D. Clock

Q73. Which SQL clause is used to filter records after grouping has been performed?
A. WHERE
B. HAVING
C. ORDER BY
D. DISTINCT

Q74. Which SQL JOIN type returns only the rows that have matching values in both tables?
A. LEFT JOIN
B. RIGHT JOIN
C. INNER JOIN
D. FULL JOIN

Q75. Which device forwards packets based on IP addresses?
A. Hub
B. Switch
C. Router
D. Repeater

Q76. Which network protocol is used securely transfer web pages over the internet?
A. HTTP
B. FTP
C. HTTPS
D. TELNET

Q77. In the Spiral software model, each iteration begins with:
A. Coding
B. Risk analysis
C. Testing
D. Deployment

Q78. In the awk text-processing language, which built-in variable holds the number of fields (columns) in the current record?
A. NR
B. NF
C. FS
D. RS

Q79. Which symbol is used in Perl to prefix a scalar variable (a single value like a number or string)?
A. @
B. %
C. $
D. &

Q80. Which security mechanism verifies the identity of a user?
A. Authentication
B. Authorization
C. Accounting
D. Backup

Q81. Which of the following is a public-key (asymmetric) encryption algorithm?
A. AES
B. DES
C. RSA
D. RC4

Q82. Which security attack involves an adversary intercepting and actively modifying data packets while they travel between two communicating parties?
A. Phishing
B. Man-in-the-Middle Attack
C. Brute Force Attack
D. Port Scanning

Q83. What is the primary purpose of Equivalence Partitioning in software testing?
A. Reduce test cases while maintaining coverage
B. Increase execution speed
C. Improve documentation
D. Measure complexity

Q84. Which software quality attribute measures how easily a software system can be modified, updated, or fixed?
A. Reliability
B. Portability
C. Maintainability
D. Integrity

Q85. What does the shell command `grep "^A" students.txt` display?
A. Lines containing A
B. Lines ending with A
C. Lines beginning with A
D. Blank lines

Q86. In Perl, which operator concatenates two strings?
A. +
B. .
C. ::
D. #

Q87. Which IPv4 address belongs to Class C?
A. 100.10.20.1
B. 172.16.5.4
C. 192.168.10.5
D. 15.25.100.20

Q88. Which SQL query correctly displays employee names with salary > 50000?
A. SELECT name FROM Employee WHERE salary > 50000;
B. SELECT name IF salary > 50000;
C. DISPLAY name FROM Employee;
D. GET name FROM Employee WHERE salary > 50000;

Q89. Which synchronization mechanism allows only one process into the critical section?
A. Paging
B. Semaphore
C. Swapping
D. Spooling

Q90. Consider: int a=12; if(a & 1) printf("Odd"); else printf("Even"); Output?
A. Odd
B. Even
C. 12
D. Compilation Error

Q91. Which C function is used to deallocate dynamically allocated memory?
A. malloc()
B. calloc()
C. realloc()
D. free()

Q92. Which traversal of an expression tree produces the postfix expression?
A. Inorder
B. Preorder
C. Postorder
D. Level order

Q93. Which algorithm guarantees the shortest path in an unweighted graph?
A. DFS
B. BFS
C. Prim
D. Kruskal

Q94. Two's complement representation of -1 in an 8-bit system is:
A. 11111111
B. 10000000
C. 00000001
D. 01111111

Q95. Which flip-flop is commonly used as a frequency divider?
A. SR
B. D
C. JK
D. T

Q96. Which Linux command displays the present working directory?
A. ls
B. pwd
C. cd
D. who

Q97. Which SQL aggregate function ignores NULL values while calculating the average?
A. COUNT(*)
B. AVG()
C. SUM()
D. MAX()

Q98. Which protocol is responsible for reliable end-to-end communication?
A. IP
B. UDP
C. TCP
D. ICMP

Q99. Which testing technique is performed without executing the program?
A. Unit Testing
B. Integration Testing
C. White-box Testing
D. Static Testing

Q100. Which security principle ensures that information is accessible only to authorized users?
A. Availability
B. Integrity
C. Confidentiality
D. Non-repudiation

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