VINAYAKA MISSION'S RESEARCH FOUNDATION, SALEM

(Deemed to be University under section 3 of the UGC Act 1956)

Ph.D Entrance Test – November – 2025

Faculty of Engineering & Technology / CSE

Instructions / Note:

1. Answer all the questions. Each question carries one mark.
2. No negative marks for wrong answers.
3. Read each question carefully and answer in the OMR sheet provided for each question with only blue/ black pen to fill the circles in the OMR Sheet.
4. Question number 1 - 35 questions belong to Research Methodology component and Question number 36-70 questions belong to the subject at PG level
5. Return the question paper along with the OMR sheet.

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36. Multiprogramming improves CPU utilization by _____
    A. Running one job at a time
    B. Using larger cache
    C. Increasing clock speed
    D. Holding multiple jobs in memory

37. A process in the ready queue is waiting for _____
    A. CPU allocation
    B. I/O operation
    C. Completion
    D. Deadlock recovery

38. External fragmentation occurs in _____
    A. Paging
    B. Segmentation
    C. Contiguous allocation
    D. Demand paging

39. Page fault occurs when _____
    A. Page is in TLB
    B. Page is not in memory
    C. Page is swapped out
    D. Cache misses

40. The CPU scheduling method that gives shortest burst time priority is ____
    A. FCFS
    B. Round Robin
    C. SJF
    D. Priority (non-preemptive)

41. In ER diagrams, a weak entity is identified by _____
    A. Its own key
    B. Partial key + owner entity
    C. Foreign key only
    D. Composite attributes

42. Referential integrity ensures _____
    A. No orphan records
    B. Unique attributes
    C. Functional dependencies
    D. Joins are optimized

43. SQL query COUNT (DISTINCT column) returns _____
    A. Number of rows
    B. Grouped data
    C. Sum of values
    D. Number of unique values

44. Metadata means _____
    A. Raw data
    B. Deleted data
    C. Data about data
    D. Noisy data

45. OSI model's transport layer handles _____
    A. Routing
    B. Encryption
    C. End-to-end delivery
    D. Bit encoding

46. Stop-and-Wait protocol allows _____
    A. Multiple frames at once
    B. One frame at a time
    C. No acknowledgment
    D. Random retransmission

47. Public key encryption uses _____
    A. Same key for both operations
    B. Only hash functions
    C. No key
    D. Two different keys

48. Agile methodology emphasizes _____
    A. Heavy documentation
    B. Rigid planning
    C. Incremental delivery
    D. Waterfall sequencing

49. In C, the storage class "extern" refers to _____
    A. Global variable defined elsewhere
    B. Local variable
    C. Static variable
    D. Register variable

50. Strcmp() function returns 0 when _____
    A. Strings mismatch
    B. Strings differ in case
    C. Error occurs
    D. Strings are equal

51. Worst-case time complexity of quicksort _____
    A. $O(n^2)$
    B. O(n log n)
    C. O(log n)
    D. O(n)

52. Binary search requires _____
    A. Unsorted data
    B. Sorted data
    C. No array
    D. Linked list

53. Circular linked lists allow _____
    A. Infinite traversal
    B. No insertion
    C. Only deletion
    D. No head pointer

54. Prim's algorithm is used for _____
    A. Sorting
    B. Spanning tree
    C. Shortest path
    D. Load balancing

55. Go-Back-N retransmits _____
    A. Entire window
    B. Only corrupted frame
    C. Last frame
    D. No frame

56. A class diagram includes _____
    A. Data flow
    B. Schedules
    C. Attributes and operations
    D. Memory tables

57. High cohesion implies _____
    A. Unrelated functionalities
    B. Strong functional relationship
    C. High coupling
    D. More dependencies

58. A deadlock situation requires _____
    A. Circular wait
    B. No memory
    C. No paging
    D. Single resource only

59. If bandwidth = 5 MHz and SNR = 31, max channel capacity using Shannon's formula is _____
    A. 5 Mbps
    B. 25 Mbps
    C. 32 Mbps
    D. 50 Mbps

    (log2(1+31)=5)

60. Aging in page replacement helps reduce _____
    A. Thrashing
    B. Page hits
    C. Fragmentation
    D. Swapping time

61. Minimum number of spanning tree edges for a graph with 20 nodes _____
    A. 19
    B. 21
    C. 40
    D. 18

62. Two-phase locking ensures _____
    A. No deadlocks
    B. Serializability
    C. Lower communication
    D. Referential integrity

63. In dynamic programming, overlapping subproblems occur in _____
    A. Merge sort
    B. Counting sort
    C. Fibonacci computation
    D. Heapify

64. A digital signature ensures _____
    A. Confidentiality
    B. Authentication & integrity
    C. Compression
    D. Fragmentation

65. Paging eliminates _____
    A. External fragmentation
    B. Internal fragmentation
    C. Page faults
    D. Thrashing

66. Which algorithm selects minimum weight edge connecting tree to outside vertex?
    A. Kruskal
    B. Prim
    C. Dijkstra
    D. Bellman-Ford

67. Memory access time formula (effective access) _____
    A. Hit-rate × Miss-rate
    B. TLB only
    C. Tc – Tm
    D. h×Tc + (1–h)×Tm

68. A SELECT with GROUP BY always produces _____
    A. Sorted data
    B. Aggregated groups
    C. Cartesian product
    D. Duplicate rows

69. In segmentation, each segment has _____
    A. Fixed size
    B. Only 1 page
    C. Variable size
    D. No base address

70. The greedy solution is valid for _____
    A. Fractional knapsack
    B. 0/1 knapsack
    C. Merge sort
    D. Quick sort