--Question Starting--
Match the following Linux kernel components with their primary functions:
1. Kernel Modules A. Provides an abstraction layer for hardware devices
2. Process Scheduler B. Manages the execution order and time slicing of processes
3. Memory Management Unit C. Handles virtual memory, paging, and segmentation
4. File System Interface D. Supports dynamic loading and unloading of kernel functionalities
Choose the correct answer from the options given below:
(1) 1-D, 2-B, 3-C, 4-A
(2) 1-A, 2-C, 3-D, 4-B
(3) 1-D, 2-B, 3-D, 4-A
(4) 1-B, 2-D, 3-C, 4-A
Answer Key: 2
Solution:
? Kernel Modules (1): They are loadable components that extend kernel functionalities without rebooting, hence support dynamic loading/unloading, linking to D.
? Process Scheduler (2): Its primary role is to determine which process runs at what time, managing process execution, linking to B.
? Memory Management Unit (3): Handles virtual memory, including paging and segmentation, hence C.
? File System Interface (4): Provides an abstraction for file operations and hardware interaction, matching A.
Hence, Option (2) is the right answer.

--Question Starting--
3. Match the following graph algorithms with their core characteristics:
1. Breadth-First Search (BFS) A. Finds shortest path in unweighted graphs
2. Depth-First Search (DFS) B. Explores as far as possible along each branch before backtracking
3. Shortest Path Algorithm (Dijkstra's Algorithm) C. Uses a priority queue to efficiently find minimal distances
4. Maximum Flow Algorithm (Ford-Fulkerson) D. Computes the maximum feasible flow in a network
Choose the correct answer from the options given below:
(1) 1-A, 2-B, 3-C, 4-D
(2) 1-B, 2-A, 3-D, 4-C
(3) 1-A, 2-B, 3-D, 4-C
(4) 1-B, 2-A, 3-C, 4-D
Answer Key: 1
Solution:
? BFS (1): It systematically explores neighboring nodes level by level, finding shortest paths in unweighted graphs, linking to A.
? DFS (2): It explores along one path to its end before backtracking, characteristic B.
? Dijkstra's Algorithm (3): It uses a min-priority queue to select the next node with the smallest tentative distance, matching C.
? Max Flow (4): Implements augmenting path algorithms to compute maximum flow from source to sink, corresponding to D.
Hence, Option (1) is the right answer.

--Question Starting--
--Question Starting--
Match the following computer architecture concepts with their descriptions:
1. Stored Program Organization A. Uses memory to hold instructions and data simultaneously
2. Instruction Cycle B. The process of fetching, decoding, and executing instructions
3. Computer Registers C. Small, fast storage locations inside the CPU
4. Memory-Reference Instructions D. Instructions that directly specify memory addresses
Choose the correct answer from the options given below:
(1) 1-A, 2-B, 3-C, 4-D
(2) 1-B, 2-A, 3-D, 4-C

(3) 1-A, 2-C, 3-B, 4-D
(4) 1-D, 2-B, 3-A, 4-C
Answer Key: 1
Solution:
? Stored Program Organization (1): It indicates that instructions and data are stored in memory, enabling program execution, linking to A.
? Instruction Cycle (2): The sequence of fetch, decode, and execute steps for processing instructions, matching B.
? Computer Registers (3): Small, fast storage units within CPU, essential for quick data access, linked to C.
? Memory-Reference Instructions (4): These instructions include addresses in memory explicitly, linking to D.
Hence, Option (1) is the right answer.