--Question Starting--
Match the following process scheduling algorithms with their key characteristic behaviors:
1. Preemptive Scheduling Characteristic
I. Round Robin A. Ensures the shortest process is selected next
II. Priority Scheduling B. Allows a process to be interrupted and moved to the ready queue
III. First Come First Serve C. Processes run to completion without interruption
IV. Shortest Job Next D. Processes are scheduled based on static or dynamic priority levels
Choose the correct answer from the options given below:
(1) I-D, II-B, III-C, IV-A
(2) I-C, II-D, III-A, IV-B
(3) I-B, II-A, III-D, IV-C
(4) I-A, II-C, III-B, IV-D
Answer Key: 2
Solution:
? Round Robin (RR): Uses a fixed time quantum and preemptively switches between processes, ensuring fairness and responsiveness.
? Priority Scheduling: Selects processes based on their priority; preemptive variants can interrupt lower priority processes.
? First Come First Serve (FCFS): Simple non-preemptive approach where processes run until completion.
? Shortest Job Next (SJN): Selects the process with the minimum expected execution time, optimizing average waiting time.
Hence, Option (2) is the right answer.

--Question Starting--
3. Match the following genetic algorithm components with their roles in the evolutionary cycle:
1. Encoding Strategies Role
I. Binary Encoding A. Provides a way to represent solutions as chromosomes
II. Permutation Encoding B. Encodes solutions as ordered sequences, suitable for scheduling problems
III. Real-valued Encoding C. Represents solutions with continuous variables
IV. Tree Encoding D. Encodes solutions as hierarchical structures
Choose the correct answer from the options given below:
(1) I-C, II-B, III-A, IV-D
(2) I-A, II-C, III-B, IV-D
(3) I-D, II-A, III-C, IV-B
(4) I-B, II-D, III-A, IV-C
Answer Key: 4
Solution:
? Binary Encoding: Represents solutions as strings of bits, suitable for problems like TSP or knapsack.
? Permutation Encoding: Represents solutions as sequences, ideal for ordering or scheduling tasks.
? Real-valued Encoding: Uses floating-point numbers to encode solutions, applicable in continuous optimization.
? Tree Encoding: Represents hierarchical or structured solutions, often used in genetic programming.
Hence, Option (4) is the right answer.