**SDLC Questions**

1. **What does SDLC stand for?**  
   a) Software Development Life Cycle  
   b) System Design Logical Cycle  
   c) Software Design Lifecycle  
   d) Software Deployment Life Cycle  
   **Answer**: a) Software Development Life Cycle
2. **Which of the following is NOT a phase of SDLC?**  
   a) Requirement analysis  
   b) Deployment  
   c) Debugging  
   d) Maintenance  
   **Answer**: c) Debugging
3. **Which SDLC model emphasizes a linear progression through its phases?**  
   a) Agile  
   b) Waterfall  
   c) Spiral  
   d) RAD  
   **Answer**: b) Waterfall
4. **What is the main goal of the requirement analysis phase?**  
   a) Designing the software architecture  
   b) Identifying user needs  
   c) Coding the application  
   d) Testing the software  
   **Answer**: b) Identifying user needs
5. **Which SDLC model is iterative and risk-driven?**  
   a) Spiral  
   b) Waterfall  
   c) Agile  
   d) Prototype  
   **Answer**: a) Spiral
6. **What is the purpose of the maintenance phase in SDLC?**  
   a) To monitor and fix issues post-deployment  
   b) To develop software modules  
   c) To test the software  
   d) To gather user requirements  
   **Answer**: a) To monitor and fix issues post-deployment
7. **In which phase of SDLC is the feasibility study conducted?**  
   a) Design  
   b) Planning  
   c) Maintenance  
   d) Deployment  
   **Answer**: b) Planning
8. **Which of the following is an Agile methodology?**  
   a) Waterfall  
   b) Scrum  
   c) Spiral  
   d) V-Model  
   **Answer**: b) Scrum
9. **What is the main drawback of the Waterfall model?**  
   a) Too flexible  
   b) Difficult to manage  
   c) No room for changes during the process  
   d) Lack of documentation  
   **Answer**: c) No room for changes during the process
10. **What is the RAD model designed for?**  
    a) Sequential processes  
    b) Rapid development and delivery  
    c) Complex risk management  
    d) Systematic testing  
    **Answer**: b) Rapid development and delivery

**Algorithm Questions**

1. **What is an algorithm?**  
   a) A coding language  
   b) A step-by-step procedure to solve a problem  
   c) A software framework  
   d) A type of hardware  
   **Answer**: b) A step-by-step procedure to solve a problem
2. **Which of the following is a characteristic of a good algorithm?**  
   a) Ambiguity  
   b) Precision  
   c) Randomness  
   d) Infinite steps  
   **Answer**: b) Precision
3. **What is the time complexity of binary search?**  
   a) O(n)  
   b) O(n²)  
   c) O(log n)  
   d) O(1)  
   **Answer**: c) O(log n)
4. **Which sorting algorithm has the best average-case time complexity?**  
   a) Bubble Sort  
   b) Quick Sort  
   c) Merge Sort  
   d) Selection Sort  
   **Answer**: c) Merge Sort
5. **What is the space complexity of the merge sort algorithm?**  
   a) O(n)  
   b) O(log n)  
   c) O(n log n)  
   d) O(1)  
   **Answer**: a) O(n)
6. **Which algorithm is used to find the shortest path in a graph?**  
   a) DFS  
   b) BFS  
   c) Dijkstra’s Algorithm  
   d) Quick Sort  
   **Answer**: c) Dijkstra’s Algorithm
7. **What does “divide and conquer” refer to in algorithm design?**  
   a) Splitting the problem into smaller subproblems  
   b) Iterating through all possibilities  
   c) Testing all combinations  
   d) Working backwards from the solution  
   **Answer**: a) Splitting the problem into smaller subproblems
8. **What is the worst-case time complexity of Quick Sort?**  
   a) O(n log n)  
   b) O(n)  
   c) O(n²)  
   d) O(log n)  
   **Answer**: c) O(n²)
9. **Which data structure is used in a Depth-First Search (DFS)?**  
   a) Queue  
   b) Stack  
   c) Array  
   d) Linked List  
   **Answer**: b) Stack
10. **What is the time complexity of inserting an element in a heap?**  
    a) O(1)  
    b) O(log n)  
    c) O(n)  
    d) O(n log n)  
    **Answer**: b) O(log n)

**Additional SDLC Questions**

1. **Who interacts most with stakeholders during the SDLC process?**  
   a) Developers  
   b) Project Manager  
   c) Testers  
   d) System Administrator  
   **Answer**: b) Project Manager
2. **Which model is best suited for projects with unclear requirements?**  
   a) Agile  
   b) Waterfall  
   c) V-Model  
   d) Incremental  
   **Answer**: a) Agile
3. **In the Agile methodology, what is a "sprint"?**  
   a) A testing phase  
   b) A short, time-boxed development iteration  
   c) A documentation phase  
   d) A deployment process  
   **Answer**: b) A short, time-boxed development iteration
4. **Which phase of SDLC involves system testing?**  
   a) Design  
   b) Development  
   c) Testing  
   d) Maintenance  
   **Answer**: c) Testing
5. **What is the primary focus of the deployment phase?**  
   a) Code refactoring  
   b) User training and software delivery  
   c) Requirement gathering  
   d) Debugging  
   **Answer**: b) User training and software delivery

**Additional Algorithm Questions**

1. **Which algorithm design technique uses recursion heavily?**  
   a) Greedy  
   b) Divide and Conquer  
   c) Dynamic Programming  
   d) Backtracking  
   **Answer**: b) Divide and Conquer
2. **What is the main advantage of dynamic programming over recursion?**  
   a) Avoids redundant calculations  
   b) Simpler to implement  
   c) Reduces space complexity  
   d) Uses less memory  
   **Answer**: a) Avoids redundant calculations
3. **Which of the following is NOT a greedy algorithm?**  
   a) Kruskal’s Algorithm  
   b) Prim’s Algorithm  
   c) Dijkstra’s Algorithm  
   d) Merge Sort  
   **Answer**: d) Merge Sort
4. **What does "Big O" notation measure?**  
   a) Code readability  
   b) Algorithm performance  
   c) Data accuracy  
   d) Software usability  
   **Answer**: b) Algorithm performance
5. **Which algorithm is best for finding connected components in a graph?**  
   a) DFS or BFS  
   b) Kruskal’s Algorithm  
   c) Merge Sort  
   d) Quick Sort  
   **Answer**: a) DFS or BFS