100 Multiple Choice Questions - Software Engineering

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Section 1: Conceptual Foundations (Questions 1-25)

1. Which of the following is NOT a challenge of learning software engineering? - A) Complexity of software systems - B) Abstract nature of software - C) Static technology landscape - D) Team dependency

2. What is a key success factor in software development? - A) Changing requirements frequently - B) Clear and frozen requirements - C) Minimal user involvement - D) Immature technology adoption

3. Which factor commonly leads to software development failure? - A) Strong stakeholder involvement - B) Realistic schedules - C) Scope creep - D) Proper planning

4. In traditional Waterfall methodology, when does testing occur? - A) Throughout development - B) At the beginning - C) At the end - D) During requirements phase

5. Which characteristic describes Modern Agile development? - A) Linear phases - B) Rigid requirements - C) Iterative development - D) Documentation-driven

6. What does "Shift-Left Testing" mean? - A) Testing only at the end - B) Testing early and often - C) Moving testers to different teams - D) Postponing testing

7. Which is an attribute of high-quality software? - A) High resource consumption - B) Difficult to modify - C) Maintainability - D) Platform-specific only

8. Software validity refers to: - A) Building the product right - B) Building the right product - C) Testing without failures - D) Code efficiency

9. Software reliability is identified through: - A) User acceptance testing only - B) Stress testing and MTBF tracking - C) Requirements reviews - D) Design documents

10. Which is a key characteristic of a professional software engineer? - A) Working in isolation - B) Resisting new technologies - C) Lifelong learning - D) Avoiding communication

11. What is technical debt? - A) Money owed to developers - B) Cost of choosing easy solutions over better approaches - C) Budget overruns - D) Hardware expenses

12. Which testing type is manual testing good for? - A) Load testing - B) Regression testing - C) UI/UX and exploratory testing - D) Automated scripts

13. What is a functional requirement? - A) System performance specification - B) What the system does - C) How fast the system runs - D) Security standards

14. A non-functional requirement example is: - A) User can reset password - B) System has a login button - C) Password reset email sent within 5 seconds - D) Database stores user data

15. Which method measures software size? - A) Lines of Code (LOC) - B) Number of developers - C) Project budget - D) Meeting frequency

16. Function Points estimate based on: - A) Only lines of code - B) Inputs, outputs, inquiries, files, and interfaces - C) Team size alone - D) Project duration

17. Verification asks: - A) Are we building the right product? - B) Are we building the product right? - C) Is the product profitable? - D) Is the product innovative?

18. Validation asks: - A) Are we building the product right? - B) Are we following standards? - C) Are we building the right product? - D) Are we on budget?

19. Which is a non-functional testing type? - A) Unit testing - B) Integration testing - C) Load/Performance testing - D) Acceptance testing

20. What is scope creep? - A) Fixed requirements - B) Unrealistic or changing requirements - C) Clear project boundaries - D) Proper planning

21. Automated testing is best for: - A) One-time exploratory tests - B) Ad-hoc UI testing - C) Regression and load testing - D) Initial user experience evaluation

22. What is a code smell? - A) Well-written code - B) Indicator of potential problems in code - C) Code comments - D) Version control

23. A "Long Method" code smell means: - A) A function doing too many things - B) A well-optimized function - C) A short, concise function - D) Properly documented code

24. Input validation helps prevent: - A) Code optimization - B) SQL Injection and XSS attacks - C) User engagement - D) Database design

25. Static analysis tools are used for: - A) Running the application - B) Auto-scanning for vulnerabilities - C) User interface design - D) Database management

Section 2: Development Methodologies (Questions 26-45)

26. Scrum has how many core roles? - A) Two - B) Three - C) Four - D) Five

27. Who is responsible for maximizing product value in Scrum? - A) Scrum Master - B) Developer - C) Product Owner - D) Tester

28. What does the Scrum Master focus on? - A) Writing code - B) Process facilitation - C) Business value - D) Testing

29. A Sprint Backlog contains: - A) All future work - B) Plan for current sprint - C) Completed features - D) Bug reports only

30. The Product Backlog is: - A) Completed work - B) List of all work items - C) Current sprint tasks only - D) Test cases

31. What is an Increment in Scrum? - A) Planning document - B) Finished, potentially shippable work - C) Meeting agenda - D) Bug list

32. Agile welcomes: - A) Fixed requirements - B) No documentation - C) Changing requirements - D) Late testing only

33. Waterfall is characterized by: - A) Iterative cycles - B) Sequential phases - C) Continuous deployment - D) Flexible requirements

34. DevOps unifies: - A) Development and Operations - B) Testing and Design - C) Planning and Documentation - D) Frontend and Backend

35. In DevOps, monitoring data feeds back to: - A) Deployment only - B) Planning phase - C) Testing only - D) Release management

36. Continuous Integration (CI) involves: - A) Manual deployments - B) Automated builds and testing - C) Annual releases - D) No version control

37. Continuous Deployment (CD) means: - A) Manual release approval - B) Automated deployment to production - C) Quarterly releases - D) Testing in isolation

38. The Spiral Model emphasizes: - A) Linear progression - B) Risk analysis - C) No planning - D) Single iteration

39. RAD (Rapid Application Development) focuses on: - A) Long planning phases - B) Quick prototyping and iteration - C) Extensive documentation - D) Waterfall approach

40. Kanban uses: - A) Fixed time sprints - B) Visual workflow boards - C) No work limits - D) Annual planning

41. Throwaway prototyping involves: - A) Building the final system first - B) Creating a mock version then discarding it - C) No user feedback - D) Skipping design phase

42. Scrum ceremonies do NOT include: - A) Sprint Planning - B) Daily Standup - C) Annual Review - D) Sprint Retrospective

43. Agile values working software over: - A) Customer collaboration - B) Comprehensive documentation - C) Responding to change - D) Individual interactions

44. The infinity loop in DevOps represents: - A) Linear process - B) Continuous cycle - C) One-time deployment - D) Documentation phase

45. In modern development, testing is: - A) Done at the end only - B) Integrated throughout lifecycle - C) Optional - D) Done before coding

Section 3: Testing and Quality (Questions 46-65)

46. Manual testing involves: - A) Automated scripts - B) Human testers playing user role - C) No interaction - D) Only code review

47. Selenium is used for: - A) Manual testing - B) Automated web testing - C) Database design - D) Project management

48. User Acceptance Testing (UAT) verifies: - A) Code syntax - B) System meets user needs - C) Database structure - D) Network speed

49. Regression testing ensures: - A) New features work only - B) Fixes didn't break existing functionality - C) Performance improves - D) Documentation is complete

50. Load testing checks: - A) Code quality - B) System behavior under heavy traffic - C) User interface design - D) Database schema

51. Security testing looks for: - A) Performance issues - B) Vulnerabilities - C) User experience problems - D) Design flaws

52. Mean Time Between Failures (MTBF) measures: - A) Code quality - B) System reliability - C) User satisfaction - D) Development speed

53. Defect Removal Efficiency is a: - A) Product metric - B) Process metric - C) Design pattern - D) Programming language

54. Cyclomatic Complexity measures: - A) Team size - B) Code maintainability - C) Project cost - D) User satisfaction

55. Big O notation is used for: - A) Project planning - B) Algorithm efficiency analysis - C) Team management - D) Documentation

56. SonarQube is a tool for: - A) Project management - B) Static code analysis - C) Database design - D) User testing

57. Unit testing verifies: - A) Entire system - B) Individual functions/components - C) User interface only - D) Network connectivity

58. Integration testing checks: - A) Individual components - B) Components working together - C) User acceptance - D) Documentation quality

59. Stress testing determines: - A) Normal operation - B) System breaking point - C) User preferences - D) Code style

60. Penetration testing is related to: - A) Performance - B) Security - C) Usability - D) Documentation

61. Code coverage measures: - A) Lines of documentation - B) Percentage of code tested - C) Team productivity - D) Project timeline

62. A test case should be: - A) Vague and general - B) Specific and repeatable - C) Undocumented - D) Impossible to automate

63. Smoke testing is: - A) Comprehensive testing - B) Basic functionality check - C) Security testing - D) Performance testing

64. Alpha testing is conducted by: - A) End users - B) Internal team - C) Third-party testers - D) Customers

65. Beta testing is conducted by: - A) Developers only - B) Internal QA team - C) External users/customers - D) Management

Section 4: Software Process and Management (Questions 66-85)

66. An SRS document is: - A) Test plan - B) Software Requirements Specification - C) System Release Schedule - D) Source Code Repository

67. Good requirements should be: - A) Ambiguous - B) Unverifiable - C) Unambiguous and verifiable - D) Incomplete

68. A Process Model provides: - A) Final product - B) Blueprint for how work should be done - C) User interface - D) Database schema

69. Change Control Board (CCB) decides: - A) Code syntax - B) If maintenance requests are approved - C) Testing schedules - D) Developer salaries

70. A Maintenance Request (MR) originates from: - A) Developers - B) Customers/Help Desk - C) Management only - D) Automated systems

71. Legacy code refers to: - A) New features - B) Old code written previously - C) Documentation - D) Test cases

72. The DRY principle means: - A) Document Redundant Yearly - B) Don't Repeat Yourself - C) Deploy Regularly Yet - D) Debug Rigorously Yearly

73. A "God Object" is: - A) Well-designed class - B) Large class that knows too much - C) Optimized code - D) Test framework

74. Version control systems like Git help with: - A) Code compilation - B) Collaboration and code history - C) User interface design - D) Database queries

75. CI/CD stands for: - A) Code Integration/Code Deployment - B) Continuous Integration/Continuous Deployment - C) Central Information/Central Data - D) Code Inspection/Code Documentation

76. A Pull Request is used for: - A) Database queries - B) Code review before merging - C) User authentication - D) Error handling

77. Release Cycle Time is a: - A) Product metric - B) Process metric - C) Design pattern - D) Testing method

78. GDPR relates to: - A) Code quality - B) Data privacy compliance - C) Testing frameworks - D) Design patterns

79. ACM/IEEE codes provide: - A) Programming syntax - B) Ethical guidelines for engineers - C) Testing procedures - D) Design templates

80. Portability means software can: - A) Only run on one OS - B) Run on different environments/OS - C) Be easily deleted - D) Have large file size

81. Usability focuses on: - A) Code efficiency - B) Ease of use for users - C) Database design - D) Network speed

82. Efficiency in software means: - A) Using maximum resources - B) Using resources wisely - C) Slow performance - D) Large memory footprint

83. Story Points are used for: - A) Writing documentation - B) Relative sizing in Agile - C) Code compilation - D) Database indexing

84. A realistic schedule is important for: - A) Project failure - B) Project success - C) Scope creep - D) Poor communication

85. Stakeholder involvement leads to: - A) Project delays - B) Increased success rate - C) Unclear requirements - D) Communication problems

Section 5: Technical Concepts (Questions 86-100)

86. A Process is: - A) A thread within a program - B) Independent program with own memory - C) A function call - D) A variable

87. A Thread is: - A) Independent program - B) Lighter execution unit within a process - C) Database connection - D) Network protocol

88. A Race Condition occurs when: - A) Code runs too fast - B) Two threads access shared data simultaneously - C) Network is slow - D) Database is full

89. Deadlock happens when: - A) Code executes successfully - B) Threads wait on each other forever - C) System runs fast - D) Memory is available

90. A Mutex provides: - A) Unlimited access - B) Mutual exclusion lock for resources - C) No synchronization - D) Multiple simultaneous access

91. A Semaphore: - A) Blocks all access - B) Controls access with counter - C) Has no limit - D) Is only for processes

92. SQL Injection is prevented by: - A) Fast queries - B) Input validation and sanitization - C) Large databases - D) Multiple tables

93. XSS (Cross-Site Scripting) is a: - A) Performance issue - B) Security vulnerability - C) Design pattern - D) Testing method

94. Database indexing improves: - A) Security only - B) Query performance - C) Code readability - D) User interface

95. Refactoring means: - A) Adding new features - B) Cleaning up code without changing behavior - C) Removing functionality - D) Rewriting from scratch

96. Technical stakeholders include: - A) End users only - B) Admins and security leads - C) Customers only - D) Marketing team only

97. Productivity is measured in: - A) Meetings per day - B) LOC per person-month - C) Emails sent - D) Documentation pages

98. Labor rate is expressed as: - A) Cost per line of code - B) Cost per person-month - C) Cost per feature - D) Cost per bug

99. Total Effort is calculated by: - A) Team size × duration - B) Total LOC ÷ productivity - C) Cost ÷ team size - D) Duration × productivity

100. The feedback loop in software process ensures: - A) No changes needed - B) Problems found are fixed before release - C) Documentation is skipped - D) Testing is avoided

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Answer Key

1. C | 2. B | 3. C | 4. C | 5. C | 6. B | 7. C | 8. B | 9. B | 10. C
11. B | 12. C | 13. B | 14. C | 15. A | 16. B | 17. B | 18. C | 19. C | 20. B
21. C | 22. B | 23. A | 24. B | 25. B | 26. B | 27. C | 28. B | 29. B | 30. B
31. B | 32. C | 33. B | 34. A | 35. B | 36. B | 37. B | 38. B | 39. B | 40. B
41. B | 42. C | 43. B | 44. B | 45. B | 46. B | 47. B | 48. B | 49. B | 50. B
51. B | 52. B | 53. B | 54. B | 55. B | 56. B | 57. B | 58. B | 59. B | 60. B
61. B | 62. B | 63. B | 64. B | 65. C | 66. B | 67. C | 68. B | 69. B | 70. B
71. B | 72. B | 73. B | 74. B | 75. B | 76. B | 77. B | 78. B | 79. B | 80. B
81. B | 82. B | 83. B | 84. B | 85. B | 86. B | 87. B | 88. B | 89. B | 90. B
91. B | 92. B | 93. B | 94. B | 95. B | 96. B | 97. B | 98. B | 99. B | 100. B