**CS6403 SOFTWARE ENGINEERING**
**Year / Sem : II / IV Sub. Code &Subject : CS6403 –SOFTWARE ENGINEERING**
**QUESTION BANKWITH ANSWERS**

## UNIT 1-SOFTWARE PROCESS AND PROJECT MANAGEMENT

1. What is software engineering?
2. What is Software?
3. What are the characteristics of the software?
4. What are the various categories of software?
5. What are the challenges in software?
6. Define software process.
7. What are the fundamental activities of a software process?
8. What are the umbrella activities of a software process?
9. What are the merits of incremental model?
10. List the task regions in the Spiral model.
11. What are the drawbacks of spiral model?
12. What is System Engineering?
13. List the process maturity levels in SEIs CMM.
14. What is an effector process?
15. Define the computer based system.
16. What does Verification represent?
17. What does Validation represent?
18. What are the steps followed in testing?
19. What is the use of CMM?
20. Name the Evolutionary process Models.
21. What is requirement engineering?
22. What are the various types of traceability in software engineering?

**Part -B**

1. Explain iterative waterfall and spiral model for software life cycle and various activities in each
phase. (16)
- Water fall model and spiral model
- Communication
- Planning
- Modeling
- Construction
- Deployment
- Advantages and disadvantages

2. Explain about the incremental model. (16)
- Incremental model
- Communication
- Planning
- Modeling
- Construction
- Deployment
- Advantages and disadvantages

3. Explain in detail about the software process. (16)
- Process

- Framework
- Communication,Planning,Modeling,Construction,Deployment
- Software project tracking and control
- Software quality assurance
- Technical reviews
- Measurements
- SCM, reusability management
- Work product preparation and production

4. Explain in detail about the life cycle process. (16)
- Waterfall model
- Incremental model
- Evolutionary process model
- Concurrent model
- Specialized models

5. Explain COCOMO Model in detail? (16)
- Basics of COCOMO
- Intermediate

6. Explain in detail about project scheduling & EVA?
- Basic principles
- Relationship between people and effort
- Effort distribution
- Scheduling
- Earned value analysis

## UNIT II-REQUIREMENTS ANALYSIS AND SPECIFICATION

23. Define software prototyping.
24. What are the benefits of prototyping?
25. What are the prototyping approaches in software process?
26. What are the advantages of evolutionary prototyping?
27. What are the various Rapid prototyping techniques?
28. What is the use of User Interface prototyping?
29. What are the characteristics of SRS?
30. What are the objectives of Analysis modeling?
31. What is data modeling?
32. What is a data object?
33. What are attributes?
34. What is cardinality in data modeling?
35. What does modality in data modeling indicates?
36. What is ERD?
37. What is DFD?
38. What does Level0 DFD represent?
39. What is a state transition diagram?
40. Define Data Dictionary.
41. What are the elements of Analysis model?

### Part-B

1. Explain in detail about Functional and non functional requirements. (16)
- Introduction about requirements
- Functional requirements
- Non Functional requirements

2. Explain in detail about user requirements. (16)
 Specification user requirements
- Capability and constraint requirements
 Methods for user requirement capture
- Interviews and surveys
- Studies of existing systems and system requirements
- Feasibility study
- Prototyping
 Methods for user requirement Specification
- Natural language
- Mathematical formalism
- Structured English
- Tables
3. Explain in detail elicitation and analysis. (16)
 Requirement discovery
 Interviewing
 Scenarios
 Use cases
 Ethnography
4. Explain about requirement validation and management. (16)
 Validation
 Requirement management planning
 Change management
5. Explain Petri nets and data dictionary. (16)
 Introduction
 Petri nets
 Case study
 Data dictionary

## UNIT III- SOFTWARE DESIGN

42. What are the elements of design model?
43. Define design process.
44. List the principles of a software design.
45. What is the benefit of modular design?
46. What is a cohesive module?
47. What are the different types of Cohesion?

48. What is Coupling?
49. What are the various types of coupling?
50. What are the common activities in design process?
51. What are the benefits of horizontal partitioning?
i. Software that is easy to test.
ii. Software that is easier to maintain.
iii. Propagation of fewer sideeffects. iv. Software that is easier to extend.
52. What is vertical partitioning?
53. What are the advantages of vertical partitioning?
54. What are the various elements of data design?
55. List the guidelines for data design.
56. Name the commonly used architectural styles.
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57. What is Transform mapping?
58. What is a Real time system?
59. What is SCM?
60. What is SCI?

**Part-B**

1. Explain in detail the design concepts. (16)
- Abstraction
- Architecture
- Patterns
- Modularity
- Information hiding
- Functional independence
- Refactoring

2. Explain the design model. (16)
- Data design elements
- Architectural design elements
- Interface design elements
- Component level
- Deployment level

3. Explain the User Interface Design. (16)
- Golden rules
- Interface analysis
- Interface design steps

4. Explain in detail about the designing components. (16)
- Class based components
- Traditional components

## UNIT IV-TESTING AND IMPLEMENTATION

61. Define software testing?
62. What are the objectives of testing?
63. What are the testing principles the software engineer must apply while performing the software testing?
63. What are the two levels of testing?
64. What are the various testing activities?
65. Write short note on black box testing.
66. What is equivalence partitioning?
67. What is a boundary value analysis?
68. What are the reasons behind to perform white box testing?
69. What is cyclomatic complexity?
70. How to compute the cyclomatic complexity?
71. Distinguish between verification and validation.
72. What are the various testing strategies for conventional software?
i. Unit testing ii. Integration testing. iii. Validation testing. iv. System testing.
73. Write about drivers and stubs.
74. What are the approaches of integration testing?
The integration testing can be carried out using two approaches.
1. The non-incremental testing.
2. Incremental testing.

75. What are the advantages and disadvantages of big-bang? Advantages:
76. What are the benefits of smoke testing?
77. What are the conditions exists after performing validation testing?
78. Distinguish between alpha and beta testing.
79. What are the various types of system testing?
80. Define debugging.
81. What are the common approaches in debugging?
82. Write about the types of project plan.

**Part-B**

1. Explain the types of software testing. (16)
- Black box testing
- White box testing
- Basis path testing
- Unit testing
- Integration
- Validation
- System

2. Explain in detail about Black box testing and white box testing. (16)

White box testing
- Static testing
- Structural testing

- Condition testing, data flow testing, loop testing

Black box testing
- Graph based
- Equivalence portioning
- Boundary value analysis
- Comparison testing
- Orthogonal array testing

3. Explain about the software testing strategies. (16)
- Introduction
- Strategies

4. Explain in detail about Integration testing. (16)
- Top down
- Bottom up
- Regression
- Smoke
- Comments and documentation

5. Explain in detail about system testing. (16)
- Recovery testing
- Security testing
- Stress testing
- Performance testing

6. Explain in detail about system testing. (16)
- Refactoring
- steps
- benefits

## UNIT V- PROJECT MANAGEMENT

83. Define measure.
84. Define metrics.
85. What are the types of metrics?
86. What are the advantages and disadvantages of size measure? Advantages:
87. Write short note on the various estimation techniques.
88. What is COCOMO model?
89. Give the procedure of the Delphi method.
90. What is the purpose of timeline chart?
91. What is EVA?
92. What are the metrics computed during error tracking activity?
93. Why software change occurs?
94. Write about software change strategies.
95. What is software maintenance?
96. Define maintenance.
97. What are the types of software maintenance?
98. What is architectural evolution?
99. How the CASE tools are classified?

**Part-B**

1. Explain about software cost estimation. (16)
 Software project estimation
 Decomposition technique
- Software sizing
 Make /buy decision
2. Explain in detail about COCOMO model. (16)
 Planning
 Risk management
 Identification
 Projection
 RMMM
3. Explain in detail about project scheduling. (16)
 Basic principles
 Relationship between people and effort
 Effort distribution
 Scheduling
4. Explain in detail about project scheduling & EVA?
 Basic principles
 Relationship between people and effort
 Effort distribution
 Scheduling
 Earned value analysis
5. Explain about process and project metrics. (16)
 Metrics for software process and project
 Software measurements
 Metrics for software quality
 Integrating metrics within the software.