Department of Computer Science and Engineering

SOFTWARE ENGINEERING

Question Bank

UNIT I - SOFTWARE PROCESS

PART - A (2 Marks)

1. Define Software Engineering.
2. What is meant by Software engineering paradigm?
3. What are the Advantages of incremental model?
4. Write any two characteristics of software as a product.
5. Identify in which phase of the software life cycle the following documents are delivered.
i) Architectural design
ii) Test plan
iii) Cost estimate
iv) Source code document
6. Which process model leads to software reuse? Why?
7. What are the various activities in WINWIN Spiral Model?
8. What are the various elements that a computer based system makes use of?
9. Give at least two reasons for prototyping is problematic.
10. Mention the Advantage and Disadvantage of waterfall model.
11. Distinguish between process and methods.
12. Differentiate System and Computer based System.
13. Define software process. State the important features of a process.
14. Distinguish between verification & validation.
15. Define System Modeling.
16. What are the four types of changes are encountered during the support phase?
17. State the System Engineering Hierarchy.
18. Mention some of the factors to be considered during System Modeling.
19. Define Verification &Validation.
20. What are the phases encompassed in the RAD model?
21. List the task regions in the spiral model.

PART- B (16 Marks)

1. (i) What are the major differences between system engineering and software engineering? State explains the stages that distinguish the two. [8]
(ii)Explain with two examples of software development projects would be amenable to evolutionary prototyping. Why is evolutionary prototyping suitable in these cases? [8]

2. Explain Water fall Model. What are the problems that are sometimes encountered when the waterfall model
is applied? [16]

3. (i) Which is more important-the product or process? Justify your answer. [8]

(ii) With suitable illustration explain SPIRAL model evolutionary software
development. [8]

4. (i) Explain the Evaltionary and Incremental Model. What are the Advantages and Disadvantages? [8]
(ii) Write a short notes an System engineering and Computer based System. [8]

5. Explain System Engineering hierarchy.What are the restraining factors to construct a system model? [16]

6. (i) Explain Component Based Development model in detail. [8]
(ii) How do you differentiate software engineering from system engineering? [8]

7. Explain in detail the following s/w process models with a neat diagram.
i) Evolutionary process model. [8]
ii) Incremental Process model. [8]

8. Explain the spiral model? What is the task region in the spiral model? How does the customer wins by
getting the system or product that satisfy the majority of the customer's needs and the developer wins by
working to realistic and achievable budgets and deadline? [16]

9. What are the necessities of Life cycle model? Elaborate on the various issues of Software life cycle. [16]

10. (i) How does system engineering differ from software engineering? Also write brief notes on computer
based system and system engineering hierarchy. [8]

(ii) Differentiate product engineering and business engineering overview [8]

11. Explain the process model that combines the element of waterfall and iterative fashion. [16]

12. Explain briefly about the following (i) business process engineering (ii) product engineering
13.Explain briefly about the following (i) Computer based system(ii) System engineering process

UNIT II - SOFTWARE REQUIREMENTS

PART-A (2 Marks)

1. What is requirement engineering?
2. What is meant by feasibility study?
3. What is meant by requirement validation?
4. What is meant by Requirement management?
5. What is meant by software prototyping?
6. Mention any two non-functional requirements on software to be developed.
7. Differentiate data flow diagram and state transition diagram.
8. Define cardinality and Modality of a relation.
9. Compare evolutionary and throw away prototyping?
10. Define the term product and process in software engineering?
11. List out the elements of analysis model?
12. What are all the information in data dictionary?
13. Why modularity is important in data dictionary?
14. Specify at least four questionnaire which supports to select the prototyping approach.
15. What is known as SRS review? How is it conducted?
16. Distinguish between expected requirements and excited requirements.
17. What is meant by software prototyping?
18. What are the non-functional requirements of software?
19. What is data dictionary? How is it used in software engineering?
20. What is the role of data dictionary?
21. What is meant by Information flow Continuity?
22. Draw a DFD & CFD of a test monitoring system for Gas Turbine
23. Define Behavioral Modeling.
24. Draw the Context level DFD for the Safe home Software.
25. Define Data dictionary.
26. Define Process Specification.
27. What does data dictionary contains?
28. What is meant by Throw away Prototyping?
29. Why is it so difficult to gain a clear understanding of what the customer wants?
30. Create a data dictionary that provides with a precise definition of telephone number, it should indicate,
where and how this data item is used and supplementary information that is relevant to it?
31. What is the purpose of domain analysis?
32. What is the major distinction between user requirements and system requirements?
33. What is QFD?
34. What is ERD?
35. What is DFD?

36. What are the problems makes elicitation difficult?
37. Why requirements elicitation process is difficult?

PART-B (16 Marks)

1. Explain software prototyping? What are the various prototyping methods and tools? [16]

2. (i) Why is traceability an important aspect of requirement management? Why context system models are
useful for requirements validation? [8]
(ii) What is requirement engineering? State its process and explain requirements elicitation problem. [8]

3. Explain with example diagram the functional and behavioral modeling. How do we model the software's
reaction to some external event? [16]

4. (i) How to select the appropriate prototyping approach? Explain. [8]

(ii) Explain about the cardinality and modality with suitable example. [8]

5. Explain in detail about all modeling technique in software requirements. [16]

6. (i) Explain about rapid prototyping techniques. [8]

(ii) Differentiate functional and nonfunctional requirements. [8]

7. Why customer iteration is difficult process? Explain one formal procedure used for customer interaction.
8. Draw an ER and DFD diagram for university information System. [16]

9. (i) Describe the primary difference between structured analysis and object oriented analysis. [6]
(ii) Write a detailed note on scenario based modeling. [10]

10. (i) Compare functional and behavioral models. [4]
(ii) With a suitable diagram explain the elements of the analysis model [4]
(iii) With an example explain about DFD. [8]

11. (i) Differentiate functional and non functional requirements and explain. [8]

(ii) Why the customer interaction is a difficult process? Explain one formal procedure used for customer interaction. [8]

12. Draw an E-R diagram for university information system. Specify atleast four cardinality and modality relationships in this. [8]

13. (i) Explain the feasibility studies. What are the outcomes? Does it have either implicit or explicit effects on software requirement collection? [8]

(ii) What is the prototyping technique? How prototype models are prepared for a software process? Discuss.

14. (i) Discuss in detail the FAST method of Requirement elicitation with an example. [4]
(ii)What is software specification? [4]

(iii)Write short notes on data modeling? [4]

(iv)Discuss in detail the basic structure of analysis model. [4]

15. (i)Explain about the cardinality and modality with suitable example. [4]

(ii) What is Data dictionary? And explain data Modeling. [4]

(ii) What is the use of context diagram? Draw a Level-1 DFD and STD for photocopier software.

UNIT III- DESIGN CONCEPTS AND PRINCIPLES

PART- A (2 Marks)

1. What are the common characteristics of design methods?
2. What are the different levels of abstraction?
3. What are the criteria for an effective modular system?
4. What are the elements of design model?
5. How the Architecture Design can be represented?
6. Define design process.
7. List the principles of a software design.
8. What is the benefit of modular design?
9. What is a cohesive module?
10. What are the different types of Cohesion?
11. What is coupling?
12. What are the various types of coupling?
13. What are the common activities in design process?
14. What are the benefits of horizontal partitioning?
15. What is vertical partitioning?
16. What are the advantages of vertical partitioning?
17. What are the various elements of data design?

18. List the guidelines for data design.
19. Name the commonly used architectural styles.
20. What is Transform mapping?
21. Define real time system.
22. Define real time Executives.
23. Define Baseline.
24. What is meant by fan-in, fan-out?

PART- B (16 Marks)

1. Explain the fundamental software design concepts in detail. [16]

2. Explain the following
(i) SCM repository [8]
(ii) SCM process [8]

3. (i) Draw a translating diagram for analysis model into a software design. Brief about each translations. [8]

(ii) Give a complete template for documentation design specification. [8]

4. (i) How interrupts are handled in real time system? Explain. [8]
(ii) Explain in detail about the real time systems. . [8]

5. (i)Define the concept of cohesion and coupling. State the difference. [4]
(ii)Briefly explain the use of global variables in context of coupling cohesion? [4]
(iii)What are different types of architectural styles exist for software and explain any one software architecture.

6. What is transform mapping? Explain the process with an illustration. What is its strength and weakness?

7. i) Explain about the various design concepts considered during design? [8]
ii) Write short notes on user interface design process? [8]

8. What are the different types of architectural styles exist for software and explain any one software architecture in detail. [16]

9. i) Explain data architectural and procedural design for a software. [8]

ii) Describe the design procedure for data acquisition system. [8]

10. Describe decomposition levels of abstraction and modularity concepts in softwareDesign. [16]

11. i) Discuss in detail about the design process in software development process. [8]

ii) Justify “Design is not coding and coding is not design”. [8]

12. i) Explain in detail about the characteristics and criteria for a good design. [8]
ii) Describe the golden rules for interface design. [4]
(iii) What is the design document? [4]

UNIT IV- TESTING
PART- A (2 Marks)

1. What is a Real time system?
2. What is SCM?
3. What is SCI?
4. Define software testing?
5. Define Smoke Testing?
6. What are the objectives of testing?
7. Define White Box Testing.
8. What are the two levels of testing?
9. What are the various testing activities?
10. Write short note on black box testing.
11. What is equivalence partitioning?
12. What is Regression Testing?
13. What is a boundary value analysis?
14. What are the reasons behind to perform white box testing?
15. What is cyclomatic complexity?
16. How to compute the cyclomatic complexity?
17. Distinguish between verification and validation.
18. What are the various testing strategies for conventional software?
19. Write about drivers and stubs.
20. What are the approaches of integration testing?
21. What are the advantages and disadvantages of bigbang?
22. What are the benefits of smoke testing?
23. What are the conditions exists after performing validation testing?
24. Distinguish between alpha and beta testing.
25. What are the various types of system testing?
26. What is BRO testing?
27. List out the data structure errors identified during unit testing.

28. What is called as glass box testing? What is the objective of this?
29. State the objectives and guidelines for debugging.
30. What do you mean by test case management?
31. What are the roles of cyclomatic complexity value in software resting?
32. What is the need for cyclomatic complexity?

PART- B (16 Marks)

1. i) Explain the testing objectives and its principles. [8]
(ii) Explain the basis path testing in detail. [8]

2. (i) What is the need for software maintanance and maintenance report. [8]
(ii) What are the attributes of the good test? Explain the test case design. [8]

3. (i) What are all formulas for cyclomatic complexity? Calculate cyclomatic complexity for greatest of all these numbers. [8]

(ii) How the RST condition is verified in black box testing? Explain with example. [8]

4. (i) What is the necessity of unit testing? Write down all unit test considerations. [8]
(ii) Explain about system testing. [8]

5. Write a note of
(i) Black box testing. [4]
(ii) Regression testing. [4]
(iii) White box testing [4]
(iv) Integration testing. [4]

6. Why is it so important to include boundary values in your black-box test data? Illustrate with examples in which a test suite developed using black box techniques might give the impression that 'everything is OK", while a test suite developed with whit box testing techniques (for example, branch coverage) might uncover a fault and vice versa. [16]

7. (i) Discuss the differences between black box and white box testing . [8]

(ii) Explain the different integration testing approaches. [8]

8. (i)Discuss how these testing models may be used together to test a program schedule. [4]

(ii) What do you mean by system testing? Explain in detail [4]
(iii) Explain boundary value analysis. [4]

(iv) Justify the importance of testing process [4]

9. (i)Discuss in detail about alpha and beta testing. [8]
(ii)What do you mean by integration testing? Explain their outcomes. [8]

10. Explain the integration testing process and system testing process and discuss their outcomes:
(i) What do you mean by system testing? Give a case study of a system testing for operating system? [8]
(ii). What do you mean by boundary value analysis? Give two examples of boundary value testing. [8]

11. Explain automated testing tools. How test cases are generated? Discuss when to stop testing? What is performance testing? Describe. [16]

13. What are the various testing strategies to software testing? Discuss them briefly. [16]

14.(i) Describe the testing objectives and its principles. [8]
(ii) Explain the basis path testing in detail. [8]

15. (i) What is need for software maintenance and maintenance report. [8]
(ii) What are the attributes of a good test. Explain the test case design. [8]

16. Explain the various types of black-box testing methods.

17. (i) Explain about system testing. [6]

(ii) What is the necessity of unit testing? Write down all unit test considerations. [10]

18. (i) What are all the formulas for cyclomatic complexity?Calculate cyclamatic complexity for greatest of three numbers? [8]

(ii) How the RST (Reflexive, Symmetric, and Transitivity) is related to black box testing? [8]

20 i) Why Unit testing is important? Explain the concept of unit testing in detail.
ii) Write a note an regression testing.

UNIT V- SOFTWARE PROJECT MANAGEMENT

PART- A (2 Marks)

1. What is meant by software project management?
2. What is meant by software management?
3. Define debugging.
4. What are the common approaches in debugging?
5. Write about the types of project plan.
6. Define measure.
7. Define metrics.
8. What are the types of metrics?
9. What are the advantages and disadvantages of size measure?
10. Write short note on the various estimation techniques.
11. What is the Objective of Formal Technical Reviews?
12. What is COCOMO model?
13. Give the procedure of the Delphi method.
14. What is the purpose of timeline chart?
15. What is EVA?
16. What are the metrics computed during error tracking activity?
17. Why software change occurs?
18. Write about software change strategies.
19. Define CASE Tools.
20. What is software maintenance?
21. Define maintenance.
22. What are the types of software maintenance?
23. What is architectural evolution?
24. How the CASE tools are classified?
25. What are the types of static testing tools?

PART- B (16 Marks)

1. i) Explain about CASE repository functions in detail. [6]
(ii) Discuss on the various method encountered in cost estimation.

2. (i) Explain in detail about Delphi technique. [6]
(ii) Discuss in detail about software software evaluation. 10]

3. (i)What are the different activities in project planning. 12]
(ii)What is error tracking? Discuss. [4]

4. (i) Brief about 3D function point measures. [8]
(ii) How to measure quality and defect removal efficiency. [8]

5. (i)How to compute a task set selector value for a project? [8]
(ii)Brief about taxonomy of case tools (at least eight) [8]

6. (i) What are the upper and lower CASE tools? What is the purpose of upper-CASE tools? [6]
(ii) Explain in detail the COCOMO model. [10]

7. (i) Describe about software equation. [8]
(ii) Describe about the constructive cost model in detail. [8]

8. (i) Explain in detail about the maintenance process [8]
(ii) Discuss in detail about software evolution. [8]

9. Describe two metrics which are used to measure the software in detail. Discuss clearly the advantages and disadvantages of these metrics. [16]

10. (i) Justify the statement “Software maintenance is costlier”. [8]

(ii)Discuss the concept of software maintenance process. [8]

11. (i) Brief about 3D function point measures. [8]

(ii) How to measure quality and defect removal efficiency (DRE). [8]

12. (i) How to compute Task Set Selector(TSS) value? Explain. [8]

(ii) Brief about taxonomy of CASE tools (at least eight) [8]

13. i) Explain the scheduling of software project. [8]

ii) Explain task network. Construct a schematic task network for concept development project.

14. i) How is earned value computed to assess the progress? [8]
ii) Explain the Constructive Cost model. [8]

15. Software project scheduling does not differ from scheduling of any other multitask engineering Projects. Discuss.

16. i) Explain the CASE repository functions in detail.
ii) Explain the various method encountered in cost estimation.