



**SIDDHARTH GROUP OF INSTITUTIONS:: PUTTUR
(AUTONOMOUS)**

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QUESTION BANK (DESCRIPTIVE)

Subject with Code: SE&T(18CI0603)

Course & Branch:B.Tech - CSIT

Year & Sem: III-B.Tech & I-Sem

Regulation: R18

**UNIT –I
INTRODUCTION, SOFTWARE METRICS**

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|----|---|--|-----------|-------|
| 1 | a | Define the term software engineering. | [L1][CO1] | [2M] |
| | b | List the reasons for software crisis. | [L1][CO1] | [2M] |
| | c | What is software metrics? | [L1][CO1] | [2M] |
| | d | What is more important : product or process? Justify your answer. | [L1][CO1] | [2M] |
| | e | What do you understand by term software development life cycle. | [L1][CO1] | [2M] |
| 2 | a | Which is more important-the product or process? Justify your answer. | [L1][CO1] | [6M] |
| | b | Identify the umbrella activities in software engineering process. | [L2][CO1] | [4M] |
| 3 | | Explain in detail Boehm's spiral model for software life cycle and discuss various activities in each phase. | [L5][CO1] | [10M] |
| 4 | a | Compare the waterfall model and the spiral model of software development. | [L2][CO1] | [5M] |
| | b | Describe the rapid application development (RAD) model. Discuss each phase in detail. | [L2][CO1] | [5M] |
| 5 | a | List the process maturity levels in SEI's CMM. Explain each level. | [L1][CO1] | [5M] |
| | b | Explain layer technology in software engineering | [L5][CO1] | [5M] |
| 6 | a | What are the necessities of life cycle model? Elaborate on the various issues of software life cycle. | [L6][CO1] | [5M] |
| | b | Give an overview of unified process model. | [L1][CO1] | [5M] |
| 7 | | Explain in detail the following software metrics with example. | [L5][CO1] | [10M] |
| | | A) Size metric. | | |
| | | B) Token Count | | |
| | | C) Design Count | | |
| 8 | a | Define Software metrics. Classify software metrics and Explain advantages and disadvantages of software metrics. | [L4][CO1] | [5M] |
| | b | Is software metrics required in software engineering? Why do we really need metrics in software. | [L1][CO1] | [5M] |
| 9 | | Explain in detail the following software process models with a neat diagram. | [L2][CO1] | [10M] |
| | | A) Incremental model | | |
| | | B) Prototype model | | |
| 10 | | Consider a project with the following functional units: | [L5][CO1] | [10M] |
| | | Number of user inputs = 50 | | |
| | | Number of user outputs = 40 | | |
| | | Number of user enquiries = 35 | | |
| | | Number of user files = 06 | | |
| | | Number of external interfaces = 04 | | |
| | | Assume all complexity adjustment factors and weighting factors are average. Compute the function points for the project. | | |

UNIT –II
SOFTWARE PROJECT PLANNING, SOFTWARE REQUIREMENT ANALYSIS AND SPECIFICATIONS

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|----|-----|--|-----------|-------|
| 1 | a | Define size estimation. | [L1][CO2] | [2M] |
| | b | What is static, single variable model? | [L1][CO2] | [2M] |
| | c | What is static multi variable model? | [L1][CO2] | [2M] |
| | d | What is software requirement specification? | [L1][CO2] | [2M] |
| | e | List out advantages of SRS document standards. | [L1][CO2] | [2M] |
| 2 | | Compare the Walton-Felix model with the SEL model on a software development expected to involve 12 person-years of effort Software Project Planning. | [L2][CO2] | [10M] |
| | (a) | Calculate the number of lines of source code that can be produced. | | |
| | (b) | Calculate the duration of the development. | | |
| | (c) | Calculate the productivity in LOC/PY | | |
| | (d) | Calculate the average manning | | |
| 3 | | What is COCOMO Model? Explain in detail. | [L1][CO2] | [10M] |
| 4 | | Explain the COCOMO-II in detail. What types of categories of projects are identified. | [L5][CO2] | [10M] |
| 5 | a | Discuss various types of COCOMO mode. | [L6][CO2] | [5M] |
| | b | A project size of 300 KLOC is to be developed. Software development team has average experience on similar type of projects. The project schedule is not very tight. Calculate the effort, development time, average staff size and productivity of the project. | [L5][CO2] | [5M] |
| 6 | a | Explain the Putnam resource allocation model. What are the limitations of this model? | [L2][CO2] | [5M] |
| | b | A software development project is planned to cost 95 MY in a period of 1 year and 9 months. Calculate the peak manning and average rate of software team build up. | | [5M] |
| 7 | a | Differentiate functional and non-functional requirements. | [L4][CO2] | [5M] |
| | b | Give the steps involved in initiating requirements engineering | [L1][CO2] | [5M] |
| 8 | a | What is requirement elicitation? Briefly describe the various activities performed in requirements elicitation with an example. | [L2][CO2] | [10M] |
| | b | Draw and explain the use case diagram for an ATM system in requirements elicitation. | [L6][CO2] | [5M] |
| 9 | a | What is the purpose of data flow diagrams? What are the notations used for the same? | [L1][CO2] | [5M] |
| | b | Model a Dataflow diagram for a "Library Management System". State and explain the functional requirements you are considering. | [L6][CO2] | [5M] |
| 10 | a | List the characteristics of good SRS document and their requirements | [L4][CO2] | [5M] |
| | b | Assess on software requirement specification for banking system. | [L6][CO2] | [5M] |

UNIT –III**SOFTWARE DESIGN, SOFTWARE RELIABILITY**

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|-----------|----------|---|-----------|-------|
| 1 | a | What is software design? | [L1][CO3] | [2M] |
| | b | Define cohesion and coupling. | [L1][CO3] | [2M] |
| | c | What is software reliability. | [L1][CO3] | [2M] |
| | d | Define failure and fault. | [L1][CO3] | [2M] |
| | e | Distinguish between software reliability and hardware reliability. | [L4][CO3] | [2M] |
| 2 | a | What is design? Describe the difference between conceptual design and technical design. | [L2][CO3] | [5M] |
| | b | What is modularity? List the important properties of a modular system. | [L1][CO3] | [5M] |
| 3 | a | Discuss the objectives of software design. How do we transform an informal design to a detailed design? | [L6][CO3] | [5M] |
| | b | What is module cohesion? Classify different type of module cohesion. | [L2][CO3] | [5M] |
| 4 | a | Define module coupling and explain different types of coupling. | [L1][CO3] | [5M] |
| | b | If a module has logical cohesion, what kind of coupling is this module likely to have with others? | [L1][CO3] | [5M] |
| 5 | a | Discuss object-oriented software design approach. | [L6][CO3] | [5M] |
| | b | Describe the various strategies of design. Which design strategy is most popular and practical? | [L2][CO3] | [5M] |
| 6 | a | Explain function-oriented software design approach. | [L1][CO3] | [5M] |
| | b | Demonstrate relationship between module cohesion and module coupling for process of good software design. | [L1][CO3] | [5M] |
| 7 | | What is software reliability? Discuss various types of software reliability models. | [L4][CO3] | [5M] |
| 8 | | What is software quality? Discuss software quality attributes. | [L1][CO3] | [10M] |
| 9 | | Explain the following software reliability models. | [L2][CO3] | [10M] |
| | (i) | Basic Execution Time Model | | |
| | (ii) | Calendar Time Component Model. | | |
| 10 | | Discuss the difference between object oriented designs and function oriented design. | [L6][CO3] | [10M] |

UNIT –IV
SOFTWARE TESTING

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|-----------|---|-----------|-------|
| 1 | a What is software testing? | [L1][CO4] | [2M] |
| | b Define verification. | [L1][CO4] | [2M] |
| | c Define validation. | [L1][CO4] | [2M] |
| | d What is bug? | [L1][CO4] | [2M] |
| | e Define acceptance testing. | [L1][CO4] | [2M] |
| 2 | What is the difference between | [L1][CO4] | [10M] |
| | (i) Alpha testing & beta testing | | |
| | (ii) Functional & structural testing | | |
| 3 | Discuss various types of functional testing techniques. | [L5][CO4] | [10M] |
| 4 | a Consider a program for the determination of the nature of roots of a quadratic equation. Its input is a triple of positive integers (say a,b,c) and values may be from interval [0,100]. The program output may have one of the following words.
[Not a quadratic equation; Real roots; Imaginary roots; Equal roots]
Design the boundary value test cases. | [L6][CO4] | [5M] |
| | b Explain the boundary value analysis testing techniques with the help of an example. | [L2][CO4] | [5M] |
| 5 | a Illustrate Equivalence class testing technique. | [L2][CO4] | [5M] |
| | b Consider a program for the determination of the nature of roots of a quadratic equation. Its input is a triple of positive integers (say a,b,c) and values may be from interval [0,100]. The program output may have one of the following words.
[Not a quadratic equation; Real roots; Imaginary roots; Equal roots]
Identify the equivalence class test cases for output and input domains. | [L6][CO4] | [5M] |
| 6 | Elaborate various types of structural testing technique. | [L5][CO4] | [10M] |
| 7 | a Explain decision table based testing technique. | [L2][CO4] | [5M] |
| | b Simplify data flow testing technique with an example. | [L2][CO4] | [5M] |
| 8 | a What is the purpose of integration testing? How is it done? | [L1][CO4] | [5M] |
| | b Differentiate between integration testing and system testing. | [L4][CO4] | [5M] |
| 9 | a What are the objectives of testing? Why is the psychology of a testing person important. | [L1][CO4] | [5M] |
| | b Summarize an effect graphing testing technique. | [L2][CO4] | [5M] |
| 10 | a Explain mutation testing technique. | [L2][CO4] | [5M] |
| | b Compare various debugging technique. | [L2][CO4] | [5M] |

UNIT –V
SOFTWARE MAINTENANCE

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|-----------|---|-----------|-------|
| 1 | a What is software maintenance? | [L1][CO5] | [2M] |
| | b What are reverse engineering? | [L1][CO5] | [2M] |
| | c Differentiate between re-engineering and new development. | [L2][CO5] | [2M] |
| | d What is regression testing? | [L1][CO5] | [2M] |
| | e List of the importance of software maintenance. | [L1][CO5] | [2M] |
| 2 | Explain the phases of software maintenance with help of a diagram. | [L5][CO5] | [10M] |
| 3 | What is software maintenance? Describe various categories of maintenance. Which category consumes maximum effort and why? | [L2][CO5] | [10M] |
| 4 | Discuss Reverse engineering and Re-engineering. | [L6][CO5] | [10M] |
| 5 | What is regression testing? Differentiate between regression and development testing. | [L2][CO5] | [10M] |
| 6 | List out system documentation and also explain their purpose. | [L1][CO5] | [10M] |
| 7 | a Explain the following software maintenance. | [L2][CO5] | [5M] |
| | (i) Quick fix model | | |
| | (ii) Iterative enhancement model | | |
| | b What are the appropriate reverse engineering tools? Discuss any two tools in detail. | [L1][CO5] | [5M] |
| 8 | a What is reverse engineering? Discuss levels of reverse engineering. | [L6][CO5] | [5M] |
| | b What are configuration management activities? Draw the Performa of change request form. | [L6][CO5] | [5M] |
| 9 | Identify various software maintenance models and explain in details. | [L2][CO5] | [10M] |
| 10 | a Classify different categories of software documentation. | [L1][CO5] | [5M] |
| | b Compare New software development and Re-engineering | [L4][CO5] | [5M] |

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