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| LOGO.jpg | **GEETHANJALI INSTITUTE OF SCIENCE & TECHNOLOGY**  (**AN AUTONOMOUS INSTITUTION**)  **(Approved by AICTE, New Delhi & Affiliated to JNTUA, Ananthapuramu)**  **(Accredited by NAAC with “A” Grade, NBA (EEE,ECE &ME) & ISO9001:2008CertifiedInstitution)** |
| **QUESTION BANK (DESCRIPTIVE)**  **SOFTWARE ENGINEERING**  **Subject Name with Code: 22A0508T** **Course & Branch: B. Tech & CSE(AI&ML) Year& Semester: III-I Regulation: RG22** | |

Basic concepts: abstraction versus decomposition, evolution of software engineering techniques, Software development life cycle (SDLC) models: Iterative waterfall model, Prototype model, Evolutionary model, Spiral model, RAD model, Agile models, software project management: project planning, project estimation, COCOMO, project scheduling, Organization and team structure, risk management.

**UNIT - I**

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| **UNIT-1. Software, Software Engineering and Software Process** | | |
| **S. No.** | **Question** | **[BT Level] [CO][ Marks]** |
| **2 Marks Questions (Short)** | | |
|  | Define software and specify various characteristics of software. | **L1, CO1, 2M** |
|  | Define Software Engineering? What are its applications? | **L1, CO1, 2M** |
|  | List out the characteristics of software? | **L1, CO1, 2M** |
|  | Show software and hardware failure rate curves as a function of time? | **L3, CO1, 2M** |
|  | List out the types of software? | **L1, CO1, 2M** |
|  | What are the layers of software engineering? | **L1, CO1, 2M** |
|  | What are the elements of generic process frame work? | **L1, CO1, 2M** |
|  | What is software process? Give its importance. | **L1, CO1, 2M** |
|  | List various process models | **L1, CO1, 2M** |
|  | List various software development life cycle phases | **L1, CO1, 2M** |
| **Descriptive Questions (Long)** | | |
|  | Describe at least one scenario where ‘RAD model would be applicable than waterfall model’. | **L2, CO1, 10M** |
|  | Describe in detail COCOMO model for software cost estimation. | **L2, CO1, 10M** |
|  | Compare the Waterfall, Prototyping and Spiral model. List the features of each model, advantages and disadvantages and a type of application where the model will be acceptable. | **L4, CO1, 10M** |
|  | a) Which process model is good for risk management? Explain that model.  b) Describe how the model is used to layout the objectives, risks and plans for quality improvement. | **L2, CO1, 5M**  **L2, CO1, 5M** |
|  | Illustrate the following models in detail: (i) Iterative water fall model. (ii) Agile model. | **L3, CO1, 10M** |
|  | What is the evolution of software engineering techniques? | **L1, CO1, 10M** |
|  | Explain in detail about software development life cycle model. | **L2, CO1, 10M** |
|  | Explain about Evolutionary model and Agile models. | **L2, CO1, 10M** |
|  | Illustrate software project management | **L3, CO1, 10M** |
|  | Explain about project planning and Project estimation? | **L2, CO1, 10M** |

The Nature of software, The unique nature of web apps, The software myths Requirements Engineering: Functional and non-functional requirements, the software requirements document, Requirements specification, Requirements engineering processes, Requirements elicitation and analysis, Requirements validation, Requirements management Agile development model: What is agility, what is an agile process, XP, Agile process models, CMMI

**UNIT - II**

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| **UNIT-2. Requirements Engineering and Agile Models** | | |
| **S. No.** | **Question** | **[BT Level] [CO][ Marks]** |
| **2 Marks Questions (Short)** | | |
|  | Define Requirement engineering | **L1, CO2, 2M** |
|  | Explain about software myths | **L2, CO2, 2M** |
|  | What is SRS | **L1, CO2, 2M** |
|  | List various functional requirements | **L1, CO2, 2M** |
|  | Write the customer myths existing in software engineering industry. | **L1, CO2, 2M** |
|  | What is meant by elicitation | **L1, CO2, 2M** |
|  | List various non-functional requirements | **L1, CO2, 2M** |
|  | Define CMMI | **L1, CO2, 2M** |
|  | What is agile process | **L1, CO2, 2M** |
|  | Explain about requirements management | **L2, CO2, 2M** |
| **Descriptive Questions (Long)** | | |
|  | Discuss the SEVEN Tasks involved in requirement engineering and also explain requirement engineering process. | **L2, CO2, 10M** |
|  | Explain about Function and Non-Functional Requirements | **L2, CO2, 10M** |
|  | What is SRS? Explain in detail the various components of an SRS. | **L2, CO2, 10M** |
|  | Explain about requirements elicitation and analysis. | **L2, CO2, 10M** |
|  | Explain about unique nature of web apps. | **L2, CO2, 10M** |
|  | Write neatly about: (i) The structure of software requirements document. (ii) The various software myths. | **L2, CO2, 5M**  **L2, CO2, 5M** |
|  | What is agility? What is an agile process and XP and explain them. | **L2, CO2, 10M** |
|  | Explain indetail about Capability Maturity Model Integration (CMMI)? | **L2, CO2, 10M** |
|  | Write a short note on Requirements management and Validation? | **L2, CO2, 10M** |
|  | Explain about Nature of software and also explain indetail about the chainging nature of Software? | **L2, CO2, 10M** |

**UNIT – III**

Design Concepts: Good Software Design, Cohesion and coupling, The design Process, Design concepts, design models Component Level Design: Introduction to components, designing class-based components User Interface Design: Golden rules, User Interface analysis and design

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| **UNIT-3. Design Concepts, Component Level and User interface Design** | | |
| **S. No.** | **Question** | **[BT Level] [CO][ Marks]** |
| **2 Marks Questions (Short)** | | |
|  | Define interface design. | **L1, CO3, 2M** |
|  | Define component level design. | **L1, CO3, 2M** |
|  | Name the software quality attributes suggested by Hewlett-Packard. | **L1, CO3, 2M** |
|  | Name the software design concepts. | **L1, CO3, 2M** |
|  | In the design model, what is process dimension? | **L1, CO3, 2M** |
|  | In the design model, what is Abstraction dimension? | **L1, CO3, 2M** |
|  | What are Deployment level design elements? | **L1, CO3, 2M** |
|  | Define cohesion and coupling. | **L1, CO3, 2M** |
|  | Define class Responsibility Collaborator (CRC) modeling. | **L1, CO3, 2M** |
|  | Mention the types of requirements identified by QFP (Quality Function Deployment). | **L1, CO3, 2M** |
| **Descriptive Questions (Long)** | | |
|  | Discuss about user interface design of software with an example and neat sketch. | **L2, CO3, 12M** |
|  | What is structured design? Illustrate the structured design process from DFD to structured chart with a case study. | **L2, CO3, 12M** |
|  | Clearly explain the concepts and types of coupling and cohesion with examples of each. | **L2, CO3, 12M** |
|  | Explain the steps involved in conducting component level design when it is applied for object oriented system. | **L2, CO3, 12M** |
|  | Write notes in detail: (i) Data flow diagram.  (ii) UML diagram. | **L2, CO3, 6M**  **L2, CO3, 6M** |
|  | Illustrate neatly about user – interface design methodology. | **L3, CO3, 12M** |
|  | Explain about Golden rules and write about advantages and disadvantages. | **L2, CO3, 12M** |

**UNIT – IV**

Software Testing Strategies: coding standards and guidelines, code review, testing, types of testing. Process and project metrics: software measurement, A framework for product metrics. Quality Management: Quality, Software quality, metrics for software quality, software quality assurance

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| **UNIT-4. Software Testing Strategies, Project Metrics and Quality Management** | | |
| **S. No.** | **Question** | **[BT Level] [CO][ Marks]** |
| **2 Marks Questions (Short)** | | |
|  | What is Verification and Validation? | **L1, CO4, 2M** |
|  | What are the different levels of testing? | **L1, CO4, 2M** |
|  | What is Cyclomatic complexity? | **L1, CO4, 2M** |
|  | How to compute the cyclomatic complexity? | **L1, CO4, 2M** |
|  | What is equivalence partitioning? | **L1, CO4, 2M** |
|  | What is a boundary value analysis? | **L1, CO4, 2M** |
|  | What is various types black box testing? | **L1, CO4, 2M** |
|  | What are various types of white box testing methods? | **L1, CO4, 2M** |
|  | What is black box and white box testing? | **L1, CO4, 2M** |
|  | What are types of system testing? | **L1, CO4, 2M** |
| **Descriptive Questions (Long)** | | |
|  | Identify the purpose of regression testing. What are the two main activities of regression testing? | **L3, CO4, 12M** |
|  | Demonstrate the difference between black-box and white-box testing and suggest how they can be used in the defect testing process. | **L3, CO4, 12M** |
|  | Elaborate path testing and regression testing with an example. | **L2, CO4, 12M** |
|  | What is black box testing? Explain the different types of black box testing strategies. Explain by considering suitable examples. | **L2, CO4, 12M** |
|  | Describe the following: (i) The process of debugging. (ii) The metrics of analysis model. | **L2, CO5, 6M**  **L2, CO5, 6M** |
|  | Explain in detail about: (i) The test strategies for connection software. (ii) The software testing. | **L2, CO5, 12M** |
|  | Discuss in detail a framework for product metrics. | **L2, CO5, 12M** |
|  | Illustrate metrics for software quality. | **L2, CO5, 12M** |

**UNIT – V**

Risk Management: Risk identification, Risk projection, risk refinement, RMMM Maintenance and reengineering: Software maintenance, reengineering, reverse engineering and forward engineering Case Study: Implementation of safe home system using software engineering principles.

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| **UNIT-5. Risk Management and Reengineering** | | |
| **S. No.** | **Question** | **[BT Level] [CO][ Marks]** |
| **2 Marks Questions (Short)** | | |
|  | What is risk refinement? | **L1, CO6, 2M** |
|  | What is risk projection? | **L1, CO6, 2M** |
|  | What is Value at Risk (VaR)? | **L1, CO6, 2M** |
|  | Which risk management technique involves in transferring risk to a third party? | **L1, CO6, 2M** |
|  | What does the term “stress testing” refer to in market risk management? | **L1, CO6, 2M** |
|  | What is a financial risk management? | **L1, CO6, 2M** |
|  | What is operational risk? | **L1, CO6, 2M** |
|  | What is the primary goal of a Business Impact Analysis ? | **L1, CO6, 2M** |
|  | What is the purpose of Key Risk Indicators in operational risk management? | **L1, CO6, 2M** |
|  | Which is an example of an internal operational risk event? | **L1, CO6, 2M** |
| **Descriptive Questions (Long)** | | |
|  | Discuss in detail Case Study of system using software engineering principles. | **L2, CO6, 12M** |
|  | What is Risk Identification? Explain about Risk Projection. | **L2, CO6, 12M** |
|  | What is Software maintenance? Explain about Software maintenance. | **L2, CO6, 12M** |
|  | Illustrate about the following.   1. Reengineering and b) Reverse engineering c) Forward engineering | **L3, CO6, 4M**  **L3, CO6, 4M**  **L3, CO6, 4M** |
|  | Explain about Risk projection in the risk management. | **L2, CO6, 12M** |
|  | Describe risk refinement and explain about RMMM. | **L2, CO6, 12M** |
|  | Illustrate the implementation of safe home system using software engineering principles. | **L3, CO6, 12M** |

**Signature of the Staff: B.POOJITHA**

**Signature of Department Academic Committee Member 1:**

**Signature of Department Academic Committee Member 2:**

**Signature of Department Academic Committee Member 3:**