SRM VALLIAMMAI ENGINEERING COLLEGE

SRM Nagar, Kattankulathur – 603 203

DEPARTMENT OF INFORMATION TECHNOLOGY

QUESTION BANK
(Common to Computer Science and Engineering)

III SEMESTER
1908503 – SOFTWARE ENGINEERING
Regulation – 2019
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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

QUESTION BANK

SUBJECT : 1908503- SOFTWARE ENGINEERING

SEM / YEAR : III / II

UNIT I - SOFTWARE PROCESS AND AGILE DEVELOPMENT			
Introduction to Software Engineering, Software Process, Perspective and Specialized Process Models – Introduction to Agility-Agile process-Extreme programming-XP Process - Quality management-SQA-SQA plan.			
PART-A (2 - MARKS)			
Q. No	**QUESTIONS**	**Competence**	**BT Level**
1.	Write the IEEE definition of software engineering.	Remember	BTL-1
2.	Demonstrate your understanding of umbrella activities of a Software process.	Apply	BTL-3
3.	If you have to develop a word processing software product, what process model will you choose? Justify your answer and examine.	Apply	BTL-3
4.	Differentiate verification and validation. Give an example.	Understand	BTL-2
5.	List the characteristics of software contrasting it with characteristics of hardware.	Remember	BTL-1
6.	Explain How do we create a process that can manage unpredictability?	Evaluate	BTL-5
7.	Identify the human factors considered for an agile software development.	Remember	BTL-1
8.	Is it possible to realize Win-Win spiral model for software. Analyze	Analyze	BTL-4
9.	Summarize the pros and cons of iterative software development model.	Evaluate	BTL-5
10.	Define agile process .Give any two agile principles.	Remember	BTL-1
11.	List two deficiencies in waterfall model. Which process model do you suggest to overcome each deficiency	Remember	BTL-1
12.	Compare perspective and specialized process model.	Analyze	BTL-4
13.	Predict about XP story.	Understand	BTL-2
14.	Discuss about the various drawbacks of spiral model	Understand	BTL-2
15.	Generalize on any two characteristics of software as a product.	Create	BTL-6
16.	Show what led to the transition from product oriented development to process oriented development.	Apply	BTL-3
17.	Differentiate SDD and DDD.	Analyze	BTL-4
18.	Create six new practices that are designed to help ensure that an XP project works successfully for significant projects within a large organization.	Create	BTL-6
19.	Summarize on extreme programming.	Understand	BTL-2
20.	Why system engineers must understand the environment of a	Remember	BTL-1

	system? Give two reasons.			
21.	What are the potential advantages of adhering to life cycle models for software?		Remember	BTL-1
22.	Compare and contrast the relative advantages of object oriented and function oriented approaches to software design.		Understand	BTL-2
23.	Illustrate the umbrella activities of a software process.		Apply	BTL-3
24.	Point out two deficiencies in waterfall model. Which process model do you suggest to overcome each deficiency?		Analyze	BTL-4
	PART-B (13- MARKS)			
1.	Define software life cycle. List all life cycle models and explain spiral model with a neat diagram.	(13)	Remember	BTL-1
2.	(i) Explain alteast one scenario where a) RAD model would be applicable and not the waterfall model. b) waterfall model is preferable compare to all other models. (ii) What are the pros and cons of using mathematical approach for software development?	(7) (6)	Analyze	BTL-4
3.	(i) Describe about agile modeling in detail. (ii) Explain the component based software development model with a neat sketch	(7) (6)	Remember	BTL-1
4.	(i) Write short notes on aspect oriented software development. (ii) Explain in detail about personal process models and team process models.	(7) (6)	Evaluate	BTL-5
5.	(i) What is a process model? Describe the process model that you would choose to manufacture a car explain giving suitable reasons. (ii) Describe the various Evolutionary Process Models with neat diagram.	(7) (6)	Understand	BTL-1
6.	**(i)** Compare the life cycle models based on their distinguishing factors, strengths and weaknesses. **(ii)** Discuss the prototyping model .what is the effect of designing prototype on the overall cost of the software project?	(7) (6)	Analyze	BTL-4
7.	Explain in detail about iterative and waterfall model and also write short notes on concurrent models.	(13)	Analyze	BTL-4
8.	(i) Discuss in detail about drawback of life cycle model. (ii) What is the significance of the spiral model when compared with other model?	(7) (6)	Understand	BTL-2
9.	Discuss the Extreme Programming process and What are some of the issues that lead to an XP debate?	(13)	Understand	BTL-2
10.	(i) Illustrate about agility and cost of change. (ii) What key traits must exist among the people on an effective software team?	(7) (6)	Apply	BTL-3
11.	What is agility in the context of software engineering work? And list the principles of agile software development.	(13)	Understand	BTL-2
12.	(i) Compose your view about agile software development. (ii) Generalize your view about extreme programming.	(7) (6)	Create	BTL-6
13.	Describe about pair programming and how unit tests used in XP? And list the new practices appended to XP to create IXP.	(13)	Remember	BTL-1
14.	(i) Explain software product engineering with its services and advantages. (ii)Write a note on the unique characters of a software.	(7) (6)	Apply	BTL-3
15.	Which process model is best suited for risk management? Discuss in detail with an example. Give the advantages and disadvantages of the model.	(13)	Understand	BTL-2
16.	Describe the XP concepts of refactoring and pair programming.	(13)	Remembering	BTL-1
17.	Analyze the concept of Agility. List the principles of agility and illustrate	(13)	Analyze	BTL-4

	the process in detail.			
PART-C (15- MARK)				
1.	Generalize about system engineering hierarchy with suitable diagram and give an overview of the Business process Engineering with a diagram.	(15)	Create	BTL-6
2.	Compare the following life cycle models based on their distinguishing factors, strengths and weakness-waterfall model, AD model, Spiral Model, and Formal Methods Model.(Present in the form of table only-use diagrams wherever necessary).	(15)	Evaluate	BTL-5
3.	Compose in detail about agile process development model with example	(15)	Create	BTL-6
4.	Explain about the umbrella activities which support software development process and discuss about their necessity in maintaining the quality in both software process and product that is being developed for railway reservation system.	(15)	Evaluate	BTL-5
5.	Assume that you are the technical manager of a software development organization. A Client approached you for a software solution the problems stated by the client have uncertainties which lead to loss if it not planned and solved which software development model you will suggest for this project –justify. Explain that model With its pros and cons and neat sketch.	(15)	Evaluate	BTL-5

UNIT II- REQUIREMENTS ANALYSIS AND SPECIFICATION

Software Requirements: Functional and Non-Functional, User requirements, System requirements, Software Requirements Document – Requirement Engineering Process: Feasibility Studies, Requirements elicitation and analysis, requirements validation, requirements management-Classical analysis: Structured system Analysis, Petri Nets- Data Dictionary.

PART-A (2 - MARKS)

Q.No	QUESTIONS	BT Level	Competence
1.	Give a use case diagram for an online shopping which should provide provisions for registering authenticating the customers and also online payment through any payment gateway like PayPal.	Understand	BTL-2
2.	Define feasibility study. And list the types.	Remember	BTL-1
3.	Classify the following as functional /non-functional requirements for a banking system (a)Verifying bank balance (b) Withdrawing money from bank (c) Completion of transactions in less than one second. (d)Extending the system by providing more tellers for the customers	Apply	BTL-3
4.	Draw and explain a simple semantic data model for a library Management system	Analyze	BTL-4
5.	List the characteristics of a good system requirements specification(SRS)	Remember	BTL-1
6.	Define Quality Function Development(QFD)	Remember	BTL-1
7.	How requirements are classified? List them with an example for each.	Apply	BTL-3
8.	Develop the spiral view of requirement engineering process.	Create	BTL-6
9.	Differentiate between normal and exciting requirement.	Understand	BTL-2
10.	Point out the problems faced when user requirements are written in natural language.	Analyze	BTL-4
11.	Distinguish between the terms inception, elicitation and elaboration with reference to requirements.	Understand	BTL-2
12.	List two advantages of using traceability tables in the requirements management phase.	Remember	BTL-1
13.	Classify the metrics for specifing non-functional requirements.	Analyze	BTL-4
14.	Express the different types of check list that should be carried out for requirement validation process.	Understand	BTL-2

15.	Explain how to manage changing requirements during the requirements elicitation process?	Evaluate	BTL-5
16.	What is meant by structural analysis and volatile requirement?	Remember	BTL-1
17.	Classify the common data Dictionary notations	Apply	BTL-3
18.	Define Petri Net and list types of traceability in a software process.	Remember	BTL-1
19.	Explain, how the requirements are validated?	Evaluate	BTL-5
20.	Generalize on the concept of data dictionary.	Create	BTL-6
21.	What are the types of prototypes?	Remember	BTL-1
22.	Interpret the usage of ERD.	Understand	BTL-2
23.	Examine the advantage of using traceability tables in the requirement management phase.	Apply	BTL-3
24.	Point out the linkages between data flow and E-R Diagram	Analyze	BTL-4

PART-B (13- MARK)

1.	Differentiate functional and non-functional requirements and give the steps involved in initiating requirements engineering.	(13)	Understand	BTL-2
2.	(i) What are called as non-functional requirements? Explain in detail. (ii) Summarize on user requirements and system requirements in detail.	(7) (6)	Understand	BTL-2
3.	List and explain the Three aspects that SRS should clearly document also list the characteristics of good SRS document and their components.	(13)	Remember	BTL-1
4.	(i) Demonstrate the structure of requirement document. (ii) Show the possible users of requirement document.	(7) (6)	Apply	BTL-3
5.	(i) Explain the different ways of writing a system requirement specification. (ii) Describe the spiral view of system requirement.	(7) (6)	Remember	BTL-1
6.	Analyze about the requirement engineering process and how the requirements are managed.	(13)	Analyze	BTL-4
7.	State the purpose, inputs and results of the feasibility study, list any four issues addressed by a feasibility study and elaborate the phases involved when carrying out a feasibility study.	(13)	Remember	BTL-1
8.	What is requirement elicitation? Briefly describe the various activities performed in requirements elicitation with an example of a watch system that facilitates to set time and alarm and assess.	(13)	Evaluate	BTL-5
9.	i) What is feasibility study?how it helps in requirement engineering process. ii) How will you classify the requirement types of a project, give example. iii) List the stake holders and all types of requirements for an online train reservation system .	(5) (4) (4)	Create	BTL-6
10.	Write short notes on the list given below (i) Requirements discovery and Interviewing. (ii) Scenarios and Use cases.	(6) (7)	Remember	BTL-1
11.	(i) Classify the different types of checks carried out on the requirements in the requirements document during the validation process. (ii) Demonstrate on the requirement validation techniques.	(7) (6)	Apply	BTL-3
12.	(i) Discuss about the requirement management planning. (ii) Describe about the requirement change management.	(7) (6)	Understand	BTL-2
13.	(i) Analyze briefly about the structural system analysis in detail. (ii) Explain about classical perti nets model.	(7) (6)	Analyze	BTL-4

14.	(i) What is the purpose of data flow diagrams? What are the notations used for the same? Explain by constructing a context flow diagram level-0 DFD and Level-1 DFD for a library management system.	(13)	Analyze	BTL-4
15.	Describe the functional and behavioral models for software requirement process.	(13)	Understand	BTL-2
16.	Draw use case & data flow diagrams for a "restaurant system". The activities of the Restaurant system are listed below. Receive the customer food orders, Produce the customer ordered foods, Serve the customer with their ordered foods, collect payment from customers, store customer payment details, order raw materials for food products, pay for raw materials & pay for labor.	(13)	Apply	BTL-3
17.	Identify the difference between SRS document and design document. Examine the contents that should be present in the SRS document and design document.	(13)	Remember	BTL-1
	PART-C (15 -MARKS)			
1.	**Develop** an online railway reservation system, which allows the user to select route, book/cancel tickets using net banking/credit/debit cards. The site also maintains the history of the passengers. For the above system, list and draw the use case scenario and model the above specification.	(15)	Create	BTL-6
2.	**Assess** on software requirement specification for banking system.	(15)	Evaluate	BTL-5
3.	Consider an online book stores. It accepts individual/bulk orders, process payments, triggers delivery of the books. Some of the major features of the system include: • Order books. • Use friendly online shopping cart function. • Create, view Modify and delete books to be sold. • To store inventory and sales information in database. • To provide an efficient inventory system'. • Register for book payment options. • Request book delivery. • Add a wish list. • Place request for books not available. • To be able to print invoices to members and print a set of summary reports. • Internet access. Analyze the system using the context diagram and level 1 DFD for the system. Explain the components of DFD.(15)	(15)	Create	BTL-6
4.	**Evaluate** the process of ordering a pizza over the phone. Draw the use case diagram and also sketch the activity diagram representing each step of the process, from the moment you pick up the phone to the point where you start eating the pizza. Include activities that others need to perform. Add exception handling to the activity diagram you developed. Consider at least two exceptions (e.g. delivery person wrote down wrong address, deliver person brings wrong pizza).	(15)	Evaluate	BTL-5
5.	Prepare a software requirement specification document for a "Library Management System"	(15)	Evaluate	BTL-5

UNIT III- SOFTWARE DESIGN				
Design process – Design Concepts-Design Model– Design Heuristic – Architectural Design -Architectural styles, Architectural Design, Architectural Mapping using Data Flow- User Interface Design: Interface analysis, Interface Design –Component level Design: Designing Class based components, traditional Components.				
PART-A (2 - MARKS)				
1.	What do you interpret from design heuristics?		Understand	BTL-2
2.	List two principles of good design.		Remember	BTL-1
3.	What do you infer from the design quality attributes 'FURPS'?		Analyze	BTL-4
4.	Draw the context flow graph of an ATM automation system.		Remember	BTL-1
5.	'A system must be loosely coupled and highly cohesive'. Justify.		Evaluate	BTL-5
6.	Define Modularity.		Remember	BTL-1
7.	Give the various types of architectural styles with example.		Understand	BTL-2
8.	What is coupling and list the various types of coupling?		Remember	BTL-1
9.	How do you apply modularization criteria for monolithic software? Discuss.		Understand	BTL-2
10.	Define mapping.		Remember	BTL-1
11.	Analyze an UI design pattern are used for the following. i) Page layout ii) Tables iii) Navigation through menus and webpages iv) Shopping cart.		Analyze	BTL-4
12.	Distinguish between transform flow and transaction flow.		Understand	BTL-2
13.	List the basic design principles of class based component.		Remember	BTL-1
14.	Point out the steps that are applied to develop a decision table in tabular design notation.		Analyze	BTL-4
15.	Classify the four distinct frame work activity in the user interface analysis and design process.		Apply	BTL-3
16.	Design the architectural context diagram.		Create	BTL-6
17.	In case of user interface analysis, assess the steps that are taken for understanding the problems.		Evaluate	BTL-5
18.	Classify the user interface design steps.		Apply	BTL-3
19.	Show the facilities to be provided in a system to recover users from the mistakes.		Apply	BTL-3
20.	Generalize on the concept of user interface design pattern.		Create	BTL-6
21.	Define **d**ata abstraction and inheritance.		Remember	BTL-1
22.	Give the need for architectural mapping using data flow.		Understand	BTL-2
23.	Differentiate the notion of software architecture and design patterns.		Analyze	BTL-4
24.	If a module has logical cohesion, what kind of coupling is this module likely to have? Illustrate.		Apply	BTL-3
PART-B (13- MARKS)				
1.	Explain the following list of design concept (i) Abstraction and Modularity (ii) Patterns & Functional independence	(5) (8)	Remember	BTL-1
2.	Explain about software architecture design, with emphasize as fan in, fan-out, coupling, cohesion and factoring.	(13)	Evaluate	BTL-5
3.	Analyze your understanding on the following design models (i) Data design elements and Architectural design elements. (ii) Interface design elements and Component-level design elements.	(6) (7)	Analyze	BTL-4
4.	Demonstrate in detail about architectural design and illustrate in detail about any four architectural styles.	(13)	Apply	BTL-3
5.	Give the steps involved in transform mapping and discuss transform mapping with example.	(13)	Understand	BTL-2
6.	List the steps involved in transaction mapping and describe transaction mapping with example.	(13)	Remember	BTL-1

7.	(i) Discuss the basic design principles of class based components. (ii) Discuss the component-level design guidelines.	(7) (6)	Remember	BTL-2
8.	Describe the various coupling and cohesion methods used in software design.	(13)	Understand	BTL-2
9.	Examine Architectural Styles. (i) Data centered Architecture and Data Flow Architecture. (ii) Call and Return Architecture and Object Oriented Architecture.	(7) (6)	Apply	BTL-3
10.	(i) Analyze on the concept of graphical design notation. (ii) Explain Tabular Design Notation.	(7) (6)	Analyze	BTL-4
11.	**i)** Describe about user interface analysis in detail. **ii)** Explain the general model of a real time system.	(7) (6)	Remember	BTL-1
12.	Generalize on the concept of user interface design and list the characteristics of a good user interface design and Develop the design issues in interface design.	(13)	Create	BTL-6
13.	(i) Analyze about program design language in designing conventional components. (ii) Classify and explain the various architectural styles in detail.	(7) (6)	Analyze	BTL-4
14.	i) What are? Describe how UID may be developed for a data acquition system. ii) Discuss the design heuristics for effective modularity design.	(7) (6)	Remember	BTL-1
15.	What are the good characteristics of good design? Discuss how structural partitioning can help to make software more maintainable.	(13)	Understand	BTL-2
16.	Explain the steps involved in conducting component level design When it is applied for object oriented system	(13)	Apply	BTL-3
17.	What is transform mapping? Describe the design steps of the transform mapping and transaction mapping.	(13)	Remember	BTL-1
18.	What is cohesion? How is it related to coupling? Discuss in detail different types of cohesion and coupling with suitable examples.	(13)	Analyze	BTL-4
	PART-C(15 -MARKS)			
1.	Model a Dataflow diagram for a "Library Management System". State and **explain** the functional requirements you are considering.	(15)	Evaluate	BTL-5
2.	What is the purpose of DFD ?what are the components of DFD? **Design** DFD for the following system: An on-line shopping system for XYZ provides many services and benefits to its members and staffs. Currently ,XYZ staffs manually handle the purchasing information with the use of basic office software, such ass Microsoft office word and excel.it may results in having mistakes easily and the process is very inconvenient .XYZ needs an online shopping system at their intranet based on the requirement of users. XYZ online shopping system has 5 key features: i) to provide the user friendly online shopping cart function to members to replace hardcopy ordering form. ii)o store inventory and sales information in data base to reduce the human mistakes, increase accuracy and enhance the flexibility of information processing. iii) to provide an efficient inventory system which can help the XYZ staffs to gain enough information to update the inventory. iv) to able to print invoice to members and print a set of summary reports for XYZ internal usage.	(15)	Create	BTL-6

3.	Summarize on the Hierarchical concept of user interface design and Draw the swim lane diagram for prescription refill function.	(15)	Evaluate	BTL-5
4.	For any problem of your choice (say for example stock monitoring system or key word frequency vector or key word in context that is used in Information Retrieval system).Design at least four different architectural design solutions using four different architectural styles. Compare these solutions based on at least three quality attributes. Note that the problem can be of your choice , the example given need not be considered	(15)	Evaluate	BTL-5
5.	Tamil Nadu Electricity Board(TNEB) would like to automate its billing process. Customers apply for a connection (domestic/commercial).EB staff take readings and update the system. Each customer is required to pay charges by-monthly according to the rates set for the type of connection. Customers can choose to pay either by cash/card. A bill is generated on payment. Monthly reports are provided to EB Manager. Design the following i. Give a name for the system ii. Draw the Level – 0 DFD(Context Flow diagram) iii. Draw the Level- 1 DFD	 (2) (6) (7)	Create	BTL-6
UNIT IV- TESTING AND MAINTENANCE				
Software testing fundamentals-Internal and external views of Testing-white box testing - basis path testing-control structure testing-black box testing- Regression Testing – Unit Testing – Integration Testing – Validation Testing – System Testing And Debugging –Software Implementation Techniques: Coding practices-Refactoring-Maintenance and Reengineering-BPR model-Reengineering process model-Reverse and Forward Engineering.				
PART-A (2 -MARKS)				
1.	What is the difference between black box testing and white box testing?		Analyze	BTL4
2.	What methods are used for breaking very long expression and statements?		Remember	BTL1
3.	What is the need for regression testing and system testing?		Remember	BTL1
4.	List the levels of testing.		Remember	BTL1
5.	How do you measure cyclomatic complexity?		Evaluate	BTL5
6.	What is a test case?		Remember	BTL1
7.	Determine about software maintenance problem.		Applying	BTL3
8.	Define boundary value analysis.		Remember	BTL1
9.	How can refactoring be made more effective?		Analyze	BTL4
10.	How are software testing related to reliability of software?		Apply	BTL3
11.	Define: Reverse Engineering.		Remember	BTL1
12.	In Unit testing of a module, it is found a set of test data, at maximum 90% of the code alone were tested with the probability of success . What is the reliability of the module?		Apply	BTL3
13.	Distinguish between alpha and beta testing.		Understand	BTL2
14.	List two testing strategies that address verification. Which types of testing address validation?		Analyze	BTL4
15.	Formulate the best practices for coding.		Create	BTL6
16.	Differentiate verification and validation. Which type of testing address verification?		Understand	BTL2
17.	What happen if the software fails after it has passed from acceptance testing? Examine.		Create	BTL6
18.	What is the difference between testing and debugging?		Understand	BTL2

19.	What is business process reengineering?		Understand	BTL2
20.	Who Should perform the validation test, software developer or the software users? Justify your answer**.**		Evaluate	BTL5
21.	Describe the objectives of testing. What is "cyclomatic complexity"? Point out its primary use.		Remember	BTL1
22.	Give the testing principles the software engineer must apply while performing the software testing.		Understand	BTL2
23.	Between "statement coverage and Branch Coverage", Examine which is a stronger criteria? Why?		Apply	BTL3
24.	Analyze on what is a "good" test and List two principles of good design.		Analyze	BTL4
PART-B (13- MARKS)				
1.	Discuss on i. Unit testing &Regression testing ii. Validation testing & Acceptance testing	(7) (6)	Understand	BTL2
2.	What is Boundary value analysis? Explain the technique specifying rules and is usage with the help of an example.	(13)	Analyze	BTL4
3.	What is Equivalence class partitioning? List rules used to define valid and invalid Equivalence class. Describe the technique using example.	(13)	Remember	BTL1
4.	Elaborate path testing and regression testing with an example.	(13)	Remember	BTL1
5.	Discuss the various Black box and white Box testing techniques. Use suitable example for your explanation**.**	(13)	Understand	BTL2
6.	Describe about the various Integration & Debugging strategies followed in software development.	(13)	Remember	BTL1
7.	(i) Explain software implementation techniques .What is the percentage in total cost of the project? How do you expedite the implementation stage (ii) What is meant by control flow testing? Is it always falling with data flow in case of software? Justify?	(7) (6)	Evaluate	BTL5
8.	(i) Compare White box and black box testing. (ii) Write a procedure for the following: Given three sides of a triangle, return the type of triangle i.e. equilateral, isosceles and scalene triangle. Draw the Control Flow Graph and calculate the minimum number of paths. Enumerate the paths to be tested.	(4) (9)	Apply	BTL3
9.	(i) Explain the categories of debugging approaches. (ii) Why is testing important? Relate the path testing procedure in detail with sample code.	(7) (6)	Analyze	BTL4
10.	Develop BPR model to increase the efficiency of business process.	(13)	Create	BTL6
11.	Define Refactoring and List the Phases in software Reengineering process model and explain each phase.	(13)	Understand	BTL2
12.	What is black box testing? Explain the different types of black box testing strategies. Explain by considering suitable examples.	(13)	Analyze	BTL4
13.	(i) Highlight Forward engineering process for different types of architectures. (ii) Outline how the reverse engineering process helps the software engineer to understand the internal design structure of complex problems.	(7) (6)	Remember	BTL1
14.	Describe the type's basic path testing given. (i)Flow graph notation. (ii) Independent program paths.	(7) (6)	Remember	BTL1

15.	Summarize on Top-down Integration testing and Bottom -up integration testing .	(13)	Understand	BTL2
16.	(i) Illustrate in detail about Reverse engineering process. (iii) Explain Forward Engineering for Client-Server Architectures.	(7) (6)	Apply	BTL3
17.	Apply and analyze the purpose of system testing with a high level explanation on all its types.	(13)	Apply	BTL3
	PART-C (15-MARKS)			
1.	How Reverse Engineering is used for Data, Processing and User Interface? Justify your answer.	(15)	Evaluate	BTL5
2.	(i) Enumerate the various types of software test. Which type of testing is suitable for boundary condition? Justify. (ii) How do you relate software testing results with reliability of the product? Explain.	(8) (7)	Create	BTL6
3.	Given a set of numbers ‘n’; ,the function findprime(a[],n) prints a number if it is a prime number. Draw a control flow graph, calculate the cyclomatic complexity and enumerate all paths. State how many test cases are needed to adequately cover the code in terms of branches, decisions and statement? Develop the necessary test cases using sample values for ‘a’ and ‘n’..	(15)	Create	BTL6
4.	Write the program for sorting of n numbers. Draw the flow chart, flow graph, and point out the cyclomatic complexity.	(15)	Create	BTL4

5.	Consider the pseudocode for simple subtraction given below:
	Program ‘Simple Subtraction’
	Input (x,y)
	Output(y)
	If x> y then DO
	x-y=z
	else y-x=z
	endif
	output(z)
	output ‘End Program’
	perform the basic path testing and generate test cases .Explain black box and white box testing.
		(15)	Evaluate	BTL5

	UNIT V-PROJECT MANAGEMENT			
	Software Project Management: Estimation – LOC, FP Based Estimation, Make/Buy Decision COCOMO I & II Model – Project Scheduling – Scheduling, Earned Value Analysis Planning – Project Plan, Planning Process, RFP Risk Management – Identification, Projection - Risk Management-Risk Identification-RMMM Plan-CASE TOOLS.			
	PART-A (2 -MARKS)			
1.	What are the Decomposition Techniques?		Remember	BTL1
2.	How do we compute the “Expected Value” for Software Size?		Apply	BTL3
3.	What are the different types of productivity estimation measures?		Remember	BTL1
4.	What is Work Breakdown Structure?		Remember	BTL1
5.	List any two advantages of using COCOMO Model.		Remember	BTL1
6.	What is risk management?		Remember	BTL1
7.	Compare Project risk and Business Risk		Analyze	BTL4
8.	Will exhaustive testing guarantee that the program is 100% correct? Examine.		Apply	BTL3
9.	Classify the activities in project planning.		Analyze	BTL4
10.	What is the difference between direct and indirect measures?		Understand	BTL2
11.	How to measure the function point FP?		Evaluate	BTL5
12.	What is budgeted cost of work scheduled?		Understand	BTL2
13.	Why LOC is not treated as a standard metric? Justify.		Evaluate	BTL6
14.	Formulate the metrics computed during error tracking activity.		Evaluate	BTL6

15.	State the importance of scheduling activity in project management.		Understand	BTL2
16.	Write any two differences between “known risks” and “predictable risks”.		Evaluate	BTL5
17.	An Organic software occupies 15,000 LOC. How many programmers are needed to complete?		Apply	BTL3
18.	How is productivity and cost associated to Function points?		Understand	BTL2
19.	What do you infer about EVA?		Analyze	BTL4
20.	List the CASE tools for the following phases of SDLC: Design,Testing.		Remember	BTL1
21.	Define risk. What are its type? Give an example.		Remember	BTL1
22.	Discuss is there a systematic way to sort through the options associated with the make/buy decision?		Understand	BTL2
23.	What do you infer from RMMM?		Analyze	BTL4
24.	Compare size oriented and function oriented metrics.		Apply	BTL3
	PART-B(13 MARKS)			
1.	Summarize the methods of decomposition for software cost estimation and describe the various estimation techniques.	(13)	Remember	BTL1
2.	(i)Describe about COCOMOI / II model cost estimation. (ii)Summarize the types of project plan.	(7) (6)	Remember	BTL1
3.	How the cost of a software is estimated using (i) Function Point metric Model & COCOMO (by three Methods.) (ii)What is the contribution of technology complexity factor in function point model.	(10) (3)	Apply	BTL3
4.	(i) Define Risk & List the types of risk and give examples for each. (ii) List and explain the phases in risk management.	(7) (6)	Understand	BTL2
5.	Discuss Decision tree to support Make/buy decision.	(13)	Understand	BTL2
6.	(i)Describe the basic principles of software project scheduling. (ii)Describe the relationship between people and effort with diagram.	(7) (6)	Remember	BTL1
7.	(i) Pointout the challenges of risk management. (ii)How to track the schedule for the project? Explain in detail.	(7) (6)	Analyze	BTL4
8.	(i)Examine the various technical metrics and measures for software? (ii)Demonstrate Software cyclomatic complexity metric with an example.	(7) (6)	Apply	BTL3
9.	State the need for Risk Management &explain the activities under risk management.	(13)	Analyze	BTL4
10.	Describe the following (i) Project scheduling . (ii) Project Time Line chart & Task network .	(7) (6)	Remember	BTL1
11.	List the features of LOC and FP based estimation models and Compare the two models and list the advantages of one over other.	(13)	Understand	BTL2
12.	(i) An application has the following: 10 low external inputs, 8 high external outputs, 13 low internal logical files, 17 high external interface files, 11 average external inquires and complexity adjustment factor of 1.10.Formulate the unadjusted and adjusted function point counts? (ii) Discuss Putnam resources allocation model. Develop the time and effort equations.	(3) (10)	Evaluate	BTL6
13.	Explain in detail COCOMO model for software cost estimation. Use it to estimate the effort required to build software for a simple ATM that produces 12 screens,10 reports and has 80 software components. Assume average complexity and average developer maturity. Use application composition model with object points.	(13)	Evaluate	BTL5

14.	Describe in detail about the following scheduling (i) Timeline charts. (ii) Tracking the schedule and Tracking progress for an OO project.	(7) (6)	Remember	BTL1
15.	(i) Discuss about risk management in a software development life cycle. (ii) Discuss on the concept of RMMM.	(7) (6)	Understand	BTL2
16.	Demonstrate on the following list given below (i) Function Point estimation. (ii) LOC based estimation.	(7) (6)	Apply	BTL3
17.	(i) Explain in detail about risk identification. (ii) Analyze on the concept of risk Projection.	(7) (6)	Analyze	BTL4
PART-C(15 MARKS)				
1.	(i) Design the effort and duration using the above details for basic COCOMO model. Given, Number of user inputs = 15 Number of user outputs = 3 Number of external interfaces = 11 1 function point = 20 LOC (as fourth generation language is used). Values of constant used in basic COCOMO model. a=2.4, b = 1.05, c = 2.5, d = 0.38. (ii)Prepare in detail about the a. Scheduling b. Error tracking.	(7) (4) (4)	Create	BTL6
2.	Explain in detail about on: (i)SCM . (ii)Software cyclomatic complexity metric. (iii)Software cost estimation.	(5) (5) (5)	Evaluate	BTL5
3.	Prepare RIS Sheets for any two risk associated with “Automated Airline controller” software.	(15)	Create	BTL6
4.	Explain in detail about COCOMO model for software cost estimation. Use it to estimate the effort required to build software for a simple ATM that produces 12 screens, 10 reports and has 80 software components. Assume average complexity and average developer maturity .Use application composition model with object points.	(15)	Evaluate	BTL5
5.	Suppose you have a budget cost of a project as Rs.9, 00,000.The project is to be completed in 9 months. After a month, you have completed 10 percent of the project at a total expense of Rs.1, 00,000.The planned completion should have been 15 percent .you need to evaluate whether the project is on-time and on-budget? Use Earned Value analysis approach and interpret.	(15)	Evaluate	BTL5