SRM VALLIAMMAI ENGINEERING COLLEGE

SRM Nagar, Kattankulathur – 603 203

DEPARTMENT OF
ARTIFICIAL INTELLIGENCE AND DATA SCIENCE

QUESTION BANK

V SEMESTER
1922501 – SOFTWARE ENGINEERING AND MANAGEMENT
Regulation – 2019
Academic Year 2022 – 2023 ODD

Prepared by

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SUBJECT : 1922501 – SOFTWARE ENGINEERING AND MANAGEMENT

SEM / YEAR: V / III

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.	Remembering	BTL-1
2.	**Demonstrate** your understanding of umbrella activities of a Software process.	Applying	BTL-3
3.	If you have to develop a word processing software product, what process model will you choose? Justify your answer and **examine.**	Applying	BTL-3
4.	Differentiate verification and validation. Give an example.	Understanding	BTL-2
5.	**List** the characteristics of software contrasting it with characteristics of hardware.	Remembering	BTL-1
6.	**Explain** How do we create a process that can manage unpredictability?	Evaluating	BTL-5
7.	**Identify** the human factors considered for an agile software development.	Remembering	BTL-1
8.	Is it possible to realize Win-Win spiral model for software? **Analyze.**	Analyzing	BTL-4
9.	**Summarize** the pros and cons of iterative software development model.	Evaluating	BTL-5
10.	**Define** agile process**. Give** any two agile principles.	Remembering	BTL-1
11.	**List** two deficiencies in waterfall model. Which process model do you suggest to overcome each deficiency	Remembering	BTL-1
12.	**Compare** perspective and specialized process model.	Analyzing	BTL-4
13.	Predict about XP story.	Understanding	BTL-2
14.	**Discuss** about the various drawbacks of spiral model	Understanding	BTL-2
15.	Discuss any two characteristics of software as a product.	Understanding	BTL-2
16.	**Show** what led to the transition from product oriented development to process oriented development.	Applying	BTL-3
17.	**Differentiate** SDD and DDD.	Analyzing	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.		Creating	BTL-6
19.	**Summarize** on extreme programming.		Understanding	BTL-2
20.	**Why** system engineers must understand the environment of a system? Give two reasons.		Remembering	BTL-1
21.	**Compare** the challenges in software in contrast with legacy systems.		Understanding	BTL-2
22.	**Illustrate** the major activities of industrial XP.		Analyzing	BTL-4
23.	**Write** about the software quality metrics.		Creating	BTL-6
24.	**Criticize** spiral model.		Evaluating	BTL-5
	PART-B (13- MARKS)			
1.	Define software life cycle. **List** all life cycle models and explain spiral model with a neat diagram.	(13)	Remembering	BTL-1
2.	(i) **Explain** at least 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)	Analyzing	BTL-4
3.	(i) **Describe** about agile modeling in detail**.** (ii**) Explain** the component based software development model with a neat sketch	(7) (6)	Remembering	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)	Evaluating	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)	Understanding	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)	Analyzing	BTL-4
7.	(i) **Explain** in detail about iterative and waterfall model. (ii)Write short notes on concurrent models.	(7) (6)	Analyzing	BTL-4
8.	(i) **Discuss** in detail about Scrum. (ii) **What** is the significance of the spiral model when compared with other model?	(7) (6)	Understanding	BTL-2
9.	(i)**Discuss** the Extreme Programming process. (ii)**What** are some of the issues that lead to an XP debate?	(7) (6)	Understanding	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)	Applying	BTL-3

11.	(i**) What** is agility in the context of software engineering work? (ii) **List** the principles of agile software development.	(7) (6)	Understanding	BTL-2
12.	(i) **Compose** your view about agile software development. **(ii) Generalize** your view about extreme programming.	(7) (6)	Creating	BTL-6
13.	(i) **Describe** about pair programming and how unit tests used in XP? (ii) **List** the new practices appended to XP to create IXP.	(7) (6)	Remembering	BTL-1
14.	(i) E**xplain** software product engineering with its services and advantages. (ii)**Write** a note on the unique characters of a software.	(7) (6)	Applying	BTL-3
15.	How do you differentiate system engineering from software engineering?	(13)	Understanding	BTL-2
16.	Explain the win-win spiral model with neat diagram.	(13)	Applying	BTL-3
17.	Write in detail about Agility process.	(13)	Evaluating	BTL-5
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)	Creating	BTL-6
2.	**Compare** the following life cycle models based on their distinguishing factors, strengths and weakness-waterfall model, RAD model, Spiral Model, and Formal Methods Model.(Present in the form of table only use diagrams wherever necessary).	(15)	Evaluating	BTL-5
3.	**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)	Evaluating	BTL-5
4.	**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)	Evaluating	BTL-5
5.	**Write** in detail about Software Quality Assurance.	(15)	Creating	BTL-6
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.		Understanding	BTL-2
2.	**Define** feasibility study. And list the types.		Remembering	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		Applying	BTL-3
4.	Draw and **explain** a simple semantic data model for a library Management system		Analyzing	BTL-4
5.	**List** the characteristics of a good system requirements specification(SRS).		Remembering	BTL-1
6.	**Define** Quality Function Development(QFD)		Remembering	BTL-1
7.	How requirements are **classified**? List them with an example for each.		Applying	BTL-3
8.	**Develop** the spiral view of requirement engineering process.		Creating	BTL-6
9.	**Differentiate** between normal and exciting requirement.		Understanding	BTL-2
10.	**Point out** the problems faced when user requirements are written in natural language.		Analyzing	BTL-4
11.	**Distinguish** between the terms inception, elicitation and elaboration with reference to requirements.		Understanding	BTL-2
12.	**List** two advantages of using traceability tables in the requirements management phase.		Remembering	BTL-1
13.	**Classify** the metrics for specifing non-functional requirements.		Analyzing	BTL-4
14.	**Express** the different types of check list that should be carried out for requirement validation process.		Understanding	BTL-2
15.	**Explain** how to manage changing requirements during the requirements elicitation process?		Evaluating	BTL-5
16.	**What** is meant by structural analysis and volatile requirement?		Remembering	BTL-1
17.	**Classify** the common data Dictionary notations		Applying	BTL-3
18.	**Define** Petri Net and list types of traceability in a software process.		Remembering	BTL-1
19.	**Explain**, how the requirements are validated?		Evaluating	BTL-5
20.	**Generalize** on the concept of data dictionary.		Creating	BTL-6
21.	Summarize various Rapid prototyping techniques.		Understanding	BTL-2
22.	Articulate the characteristics of SRS.		Applying	BTL-3
23.	Explain ERD and DFD.		Analyzing	BTL-4
24.	What are the values of outcome for feasibility study?		Evaluating	BTL-5
PART-B (13- MARK)				
1.	(i) **Differentiate** functional and non-functional requirements. (ii) **Give** the steps involved in initiating requirements engineering.	(7) (6)	Understanding	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)	Understanding	BTL-2
3.	i)**List** and **explain** the Three aspects that SRS should clearly document. ii)**List** the characteristics of good SRS document and their components.	(7) (6)	Remembering	BTL-1
4.	(i) **Demonstrate** the structure of requirement document. (ii) **Show** the possible users of requirement document.	(7) (6)	Applying	BTL-3

5.	(i)**Explain** the different ways of writing a system requirement specification. (ii) **Describe** the spiral view of system requirement.	(7) (6)	Remembering	BTL-1
6.	**Analyze** about the requirement engineering process and how the requirements are managed.	(13)	Analyzing	BTL-4
7.	(i) What is the purpose of feasibility study? (ii) State the inputs and results of the feasibility study. (iii) **List** any four issues addressed by a feasibility study. (iv) **Elaborate** the phases involved when carrying out a feasibility study.	(4) (3) (3) (3)	Remembering	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)	Evaluating	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)	Creating	BTL-6
10.	Write short notes on the **list** given below (i) Requirements discovery and Interviewing. (ii) Scenarios and Use cases. (iii) Ethnography.	(5) (4) (4)	Remembering	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)	Applying	BTL-3
12.	(i) **Discuss** about the requirement management planning. (ii) **Describe** about the requirement change management.	(7) (6)	Understanding	BTL-2
13.	(i) **Analyze** briefly about the structural system analysis in detail. (ii) **Explain** about classical perti nets model.	(7) (6)	Analyzing	BTL-4
14.	(i) What is the purpose of data flow diagrams? What are the notations used for the same? (ii) **Explain** by constructing a context flow diagram level-0 DFD and Level-1 DFD for a library management system.	(7) (6)	Analyzing	BTL-4
15.	(i) Compare and contrast SRS document and design document. (ii) What are all the contents should be included in srs and design document?	(6) (7)	Understanding	BTL-2
16.	Summarize in detail about requirement engineering tasks.	(13)	Understanding	BTL-2
17.	Write a detailed note on scenario based modeling.	(13)	Creating	BTL-6
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)	Creating	BTL-6

2.	**Assess** on software requirement specification for banking system.	(15)	Evaluating	BTL-5
3.	Draw and **Explain** the use case diagram for an ATM system in requirement elicitation.	(15)	Evaluating	BTL-5
4.	**Develop** 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)	Creating	BTL-6
5.	Consider a simple "Online vehicle purchase system". Apply scenario based modeling and draw the appropriate diagrams for it.	(15)	Creating	BTL-6

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?	Understanding	BTL-2
2.	**List** two principles of good design.	Remembering	BTL-1
3.	What do you **infer** from the design quality attributes 'FURPS'?	Analyzing	BTL-4
4.	**Draw** the context flow graph of an ATM automation system.	Remembering	BTL-1
5.	'A system must be loosely coupled and highly cohesive'. **Justify.**	Evaluating	BTL-5
6.	**Define** Modularity.	Remembering	BTL-1
7.	**Give** the various types of architectural styles with example.	Understanding	BTL-2
8.	**What** is coupling and list the various types of coupling?	Remembering	BTL-1
9.	How do you apply modularization criteria for monolithic software? **Discuss**.	Understanding	BTL-2
10.	**Define** mapping.	Remembering	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.	Analyzing	BTL-4
12.	**Distinguish** between transform flow and transaction flow.	Understanding	BTL-2
13.	**List** the basic design principles of class based component.	Remembering	BTL-1
14.	**Point out** the steps that are applied to develop a decision table in tabular design notation.	Analyzing	BTL-4
15.	**Classify** the four distinct frame work activity in the user interface analysis and design process.	Applying	BTL-3
16.	**Design** the architectural context diagram.	Creating	BTL-6
17.	In case of user interface analysis, **assess** the steps that are taken for understanding the problems.	Evaluating	BTL-5
18.	**Classify** the user interface design steps.	Applying	BTL-3
19.	**Show** the facilities to be provided in a system to recover users from the mistakes.	Applying	BTL-3

20.	**Generalize** on the concept of user interface design pattern.		Creating	BTL-6
21.	Interpret the Advantages of vertical partitioning.		Understanding	BTL-2
22.	Discover the Guidelines for data design.		Applying	BTL-3
23.	Define coupling and Categorize various types of coupling.		Analyzing	BTL-4
24.	Write about Data acquisition system.		Creating	BTL-6
PART-B (13- MARKS)				
1.	Explain the following **list** of design concept (i) Abstraction and Modularity (ii) Patterns (iii) Functional independence	(5) (4) (4)	Remembering	BTL-1
2.	**Explain** about software architecture design, with emphasize as fan in, fan-out, coupling, cohesion and factoring.	(13)	Evaluating	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. (iii) Deployment-level design elements.	(5) (4) (4)	Analyzing	BTL-4
4.	(i) **Demonstrate** in detail about architectural design. (ii) **Illustrate** in detail about any four architectural styles.	(7) (6)	Applying	BTL-3
5.	(i) **Give** the steps involved in transform mapping. (ii) **Discuss** transform mapping with example.	(7) (6)	Understanding	BTL-2
6.	(i) **List** the steps involved in transaction mapping. (ii)**Describe** transaction mapping with example.	(7) (6)	Remembering	BTL-1
7.	(i) **Discuss** the basic design principles of class based components. (ii) **Discuss** the component-level design guidelines.	(7) (6)	Remembering	BTL-2
8.	**Describe** the various coupling and cohesion methods used in software design.	(13)	Understanding	BTL-2
9.	**Examine** Architectural Styles. (i) Data centered Architecture and Data Flow Architecture. (ii) Call and Return Architecture and Object Oriented Architecture. (iii) Layered Architecture.	(5) (4) (4)	Applying	BTL-3
10.	(i) **Analyze** on the concept of graphical design notation. (ii) **Explain** Tabular Design Notation.	(7) (6)	Analyzing	BTL-4
11.	**i)Describe** about user interface analysis in detail. ii)Explain the general model of a real time system.	(7) (6)	Remembering	BTL-1
12.	(i) **Generalize** on the concept of user interface design and list the characteristics of a good user interface design (ii) **Develop** the design issues in interface design.	(7) (6)	Creating	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)	Analyzing	BTL-4
14.	i) **Describe** how UID may be developed for a data acquition system. ii)**Discuss** the design heuristics for effective modularity design.	(7) (6)	Remembering	BTL-1
15.	Summarize in detail about Software Architectural design.	(13)	Understanding	BTL-2
16.	Articulate the core activities involved in user interface design process with a neat sketch.	(13)	Applying	BTL-3

17.	What is transform mapping? Explain the process in detail.	(13)	Remembering	BTL-1
PART-C(15 -MARKS)				
1.	Model a Dataflow diagram for a "Library Management System". State and **explain** the functional requirements you are considering.	(15)	Evaluating	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 as 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. v) to design the system that is easy to maintain the upgrade.	(3) (3) (3) (3) (3)	Creating	BTL-6
3.	**Summarize** on the Hierarchical concept of user interface design and Draw the swim lane diagram for prescription refill function.	(15)	Evaluating	BTL-5
4.	**Rewrite** the concept of OCP in your own words. Why is it important to create abstraction that serve as an interface between components?	(15)	Creating	BTL-6
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 bi-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. i. Give a name for the system ii. Draw the Level – 0 DFD (Context Flow diagram) iii. Draw the Level-DFD	(5) (5) (5)	Creating	BTL-6
UNIT IV- TESTING AND MAINTENANCE				
Software testing fundamentals-Internal and external views of Testing-white box testing – basis path testingcontrol structure testing-black box testing- Regression Testing – Unit Testing – Integration Testing – Validation Testing – System Testing And Debugging –Software Implementation Techniques: Coding practices-RefactoringMaintenance and Reengineering-BPR model-Reengineering process model-Reverse and Forward Engineering.				
PART-A (2 -MARKS)				
1.	**Describe** the objectives of testing. What is "cyclomatic complexity"? **Point out** its primary use.		Remembering	BTL-1
2.	**Analyze** on what is a "good" test and **List** two principles of good design**.**		Analyzing	BTL-4

3.	**Differentiate** verification and validation. Which type of testing address verification? Which type of testing address validation?		Understanding	BTL-2
4.	**Identify** What methods are used for breaking very long expression and statement.		Remembering	BTL-1
5.	What is flow graph notation and **show** how it is important in white box testing?		Remembering	BTL-1
6.	**Measure** the performance of equivalence partitioning.		Evaluating	BTL-5
7.	**What** is controllability in testing?		Remembering	BTL-1
8.	**Point out** the purpose of stud and driver used for testing.		Analyzing	BTL-4
9.	**What** are the generic characteristics of software testing?		Remembering	BTL-1
10.	**Summarize** various testing strategies for conventional software?		Understanding	BTL-2
11.	**Examine how the** software Testing results related to the reliability of the software.		Remembering	BTL-1
12.	Between "statement coverage and Branch Coverage", **Examine** which is stronger criteria? Why?		Applying	BTL-3
13.	Identify and **analyze** the type of maintenance for each of the following: a) Correcting the software faults. b) Adapting the change in environment.		Analyzing	BTL-4
14.	**Give** the testing principles the software engineer must apply while performing the software testing.		Understanding	BTL-2
15.	**Generalize** your opinion about Smoke Testing.		Creating	BTL-6
16.	**Classify** the Reverse Engineering process.		Applying	BTL-3
17.	**Show** your understanding on maintainability.		Applying	BTL-3
18.	**Generalize** on What options exist when we are faced with a poorly designed and implemented program?		Creating	BTL-6
19.	**Give** the software reengineering activities.		Understanding	BTL-2
20.	**Assess** on BPR model with neat diagram.		Evaluating	BTL-5
21.	**Classify** Various testing activities.		Understanding	BTL-2
22.	**Discove**r drivers and stubs.		Applying	BTL-3
23.	**Illustrate** the benefits of smoke testing.		Analyzing	BTL-4
24.	How to **compute** the Cyclomatic complexity?		Evaluating	BTL-5
PART-B (13- MARKS)				
1.	**Describe** the type's basic path testing given. (i)Flow graph notation. (ii) Independent program paths.	(7) (6)	Remembering	BTL-1
2.	What is black box testing? **Explain** the different types of black box testing strategies. Explain by considering suitable examples.	(13)	Analyzing	BTL-4
3.	**(i) Write** elaborately on unit testing. How do you develop test suites? (ii) **Explain** how to broaden testing coverage and improve the quality of white box-testing.	(7) (6)	Remembering	BTL-1
4.	(i)What is cyclomatic complexity and what are the ways to compute it? (ii) **Give** the steps to select the path in data flow testing. (iii) **Explain** how the various types of loops are tested.	(5) (4) (4)	Understanding	BTL-2
5.	(i) **Describe** in detail about software testing strategies. (ii) Explain in detail about any one control structure testing.	(7) (6)	Remembering	BTL-1

6.	(i) **Summarize** on Top-down Integration testing and Bottom - up integration testing. (ii) **Describe** business process reengineering.	(7) (6)	Understanding	BTL-2
7.	(i)How would you **apply** your understanding about Software implementation techniques. (ii) What is refactoring? when is it needed? Explain with an example.	(7) (6)	Applying	BTL-3
8.	**i) Analyze** on equivalence partitioning. List rules used to define valid and invalid equivalence classes. explain the technique using examples **ii)** What is boundary value analysis? **Explain** the technique specifying rules and its usage with the help of an example.	(7) (6)	Analyzing	BTL-4
9.	(i)What conclusions can you draw from regression testing? **Support** your answer with a neat sketch. (ii)explain the list given below (a) Reverse Engineering to Understand Data. (b) Reverse Engineering to Understand Processing. (c) Reverse Engineering User Interfaces.	(7) (2) (2) (2)	Evaluating	BTL-5
10.	Write a **generalize** concept on the following system testing (i) Recovery testing and Security testing. (iii) Orthogonal array testing and Graph-based testing.	(7) (6)	Creating	BTL-6
11.	(i) **Describe** in detail about BPR model with a neat diagram. (ii) Explain Forward Engineering in detail.	(7) (6)	Remembering	BTL-1
12.	**Apprise and analyze** the purpose of system testing with a high level explanation on all its types.	(13)	Analyzing	BTL-4
13.	(i)What is the purpose of software reengineering? **Explain** it with a diagram. (ii)**Summarize** the activities involved in software reengineering.	(7) (6)	Understanding	BTL-2
14.	(i) **Illustrate** in detail about Reverse engineering process. (ii) Explain Forward Engineering for Client-Server Architectures.	(7) (6)	Applying	BTL-3
15.	Elaborate white box testing. How do you develop test suites?	(13)	Understanding	BTL-2
16.	Enumerate various types of software test. Which type of testing is suitable for boundary condition. Justify	(13)	Applying	BTL-3
17.	Write the program for sorting of n numbers. Draw the flow chart, flow graph and cyclomatic complexity.	(13)	Evaluating	BTL-5
PART-C (15-MARKS)				

1.	Consider the following program segment.
	/*num is the number of function searches in a presorted integer array arr*/
	int bin_search(int num)
	{
	int min , max; min=0;
	max=100; while(min!=max) {
	if(arr[(min+max)/2]>num)
	max=(min+max)/2; else
	if(arr[(min+max)/2]
	min=(min+max)/2; else
	return((min+max)/2);
	}
	return(-1);
	}
	(i)Draw the control flow graph for this program segment.
	(ii)Define cyclomatic complexity.
	(iii)Determine the cyclomatic complexity for this program.(Show the intermediate steps in your computation. writing only the final result is not sufficient)
		(5)
		(5)
		(5)
			Evaluating	BTL-5

2.	**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 testin and generate test cases . Explain black box and white box testing.	(15)	Evaluating	BTL-5
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)	Creating	BTL-6
4.	**Generalize** on forward and reverse engineering process in detail.	(15)	Creating	BTL-6
5.	**Write** short notes on i) Unit testing ii) Validation testing iii) System testing	(5) (5) (5)	Creating	BTL-6
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.	**Define** risk. What are its type? Give an example.		Remembering	BTL-1
2.	**What** is version control?		Analyzing	BTL-1
3.	Organic software occupies 15,000 LOC. **Assess** how many programmers are needed to complete.		Evaluating	BTL-5
4.	**Analyze** on how are the software risks assessed.		Analyzing	BTL-4
5.	**List** out the principles of project scheduling.		Remembering	BTL-1

6.	**Discuss** is there a systematic way to sort through the options associated with the make/buy decision?		Understanding	BTL-2
7.	**Give** the purpose of LOC based estimation.		Understanding	BTL-2
8.	**Compare** size oriented and function oriented metrics.		Evaluating	BTL-5
9.	**Predict** on what is RFP risk Management.		Understanding	BTL-2
10.	**Examine** ZIPF's law.		Remembering	BTL-1
11.	**Describe** Earned Value Analysis.		Remembering	BTL-1
12.	**Give** some steps in project planning.		Understanding	BTL-2
13.	**Relate** task set and network.		Applying	BTL-3
14.	**Generalize** on how productivity and cost related to function points.		Creating	BTL-6
15.	**List** the two character tics of software risk.		Remembering	BTL-1
16.	What are predictable risk? **Classify** some categories of predictablek. ri		Analyzing	BTL-4
17.	What do you **infer** from RMMM**?**		Analyzing	BTL-4
18.	**Write** a note on Risk Information Sheet(RIS).		Applying	BTL-3
19.	**Show** the basic principles that guide software project scheduling.		Applying	BTL-3
20.	**Generalize** on the concept of project metrics.		Creating	BTL-6
21.	**Define** metrics and its types.		Understanding	BTL-2
22.	**Discover** CASE tools and its classification.		Applying	BTL-3
23.	**Illustrate** delphi method.		Analyzing	BTL-4
24.	Write about software change strategies.		Creating	BTL-6
	PART-B(13 MARKS)			
1.	**(i) Examine** the activities associated with project process planning. **(ii)Write** short notes on earned value analysis for project tracking.	(7) (6)	Remembering	BTL-1
2.	(i) What elements used in COCOMO II model? (ii) **Explain** in detail about the COCOMO II model for software estimation.	(7) (6)	Analyzing	BTL-4
3.	How do you compute Earned Value Analysis and use it to **assess** progress?	(13)	Creating	BTL-5
4.	**Develop** a program for sorting of n numbers. Draw the flow chart, FL graph, find out the cyclomatic complexity.(MAKE AND BUY)	(13)	Evaluating	BTL-6
5.	(i) **Summariz**e on purpose of Delphi method. state advantages and disadvantages of the method. (ii) **Discuss** the steps involved in project planning. (iii)State ZIPF's law.	(5) (4) (4)	Understanding	BTL-2
6.	**Demonstrate** on the following list given below (i) Function Point estimation. (ii) LOC based estimation.	(7) (6)	Applying	BTL-3
7.	**Describe** in detail about the following scheduling (i) Timeline charts. (ii) Tracking the schedule. (iii) Tracking progress for an OO project.	(5) (4) (4)	Remembering	BTL-1
8.	(i) **Explain** in detail about risk identification. (ii) **Analyze** on the concept of risk Projection.	(7) (6)	Analyzing	BTL-4
9.	(i) Discuss about risk management in a software development life cycle. (ii) **Discuss** on the concept of RMMM.	(7) (6)	Understanding	BTL-2

10.	**Discuss** the process of functional point analysis. Explain the function point analysis with sample cases for components of different complexit**y**. (ii) **Describe** a task set for the software project.	(7) (6)	Remembering	BTL-1
11.	(i) **Explain** in detail COCOMO model for software cost estimation. (ii) if a team A found 342 errors prior to release of software and team B found 182 errors. what additional measures and metrics are needed to find out if the teams have removed the errors effectively? **Analyze**.	(7) (6)	Analyzing	BTL-4
12.	**Apply** COCOMO-II model to estimate total time and effort required to develop a software of KLOC 230. (ii) **Outline** the importance of "project scheduling and use of Gantt charts".	(7) (6)	Applying	BTL-3
13.	Consider the following Function point components and their complexity. If the total degree of influences is 52, **Predict** the estimated function points. Function type Estimated count complexity ELF 2 7 ILF 4 10 EQ 22 4 EO 16 5 EI 24 4	(13)	Understanding	BTL-2
14.	(i) **Describe** in detail about Process Metrics. (ii) How should we use metrics during the project itself?	(7) (6)	Remembering	BTL-1
15.	Discuss decision tree to support make / buy decision.	(13)	Understanding	BTL-2
16.	Sketch in detail about the project scheduling methods.	(13)	Applying	BTL-3
17.	Explain RMMM.	(13)	Analyzing	BTL-4
PART-C(15 MARKS)				
1.	Compute and **prepare** function point value for a project with the following information domain characteristics. No. of external inputs-30 No.of external outputs - 52 No. of external inquiries-22 No. of logical files-12 No. of external interface files-2 Assume complexity adjustment values for the above are average (4,5,4,10,7 respectively).	(15)	Creating	BTL-6
2.	**Prepare** RIS Sheets for any two risk associated with "Automated Airline controller" software.	(15)	Creating	BTL-6
3.	**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)	Evaluating	BTL-5

4.	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)	Evaluating	BTL-5
5.	Write a short notes on W5HH Principle. Mention the challenges of risk management.	(8) (7)	Creating	BTL-6