



Sri Indu

College of Engineering & Technology

UGC Autonomous Institution

Recognized under 2(f) & 12(B) of UGC Act 1956,

NAAC, Approved by AICTE &

Permanently Affiliated to JNTUH



NAAC

NATIONAL ASSESSMENT AND
ACCREDITATION COUNCIL



HANDOUT

SOFTWARE ENGINEERING

II Year II Semester

DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND DATA SCIENCE

ACADEMIC YEAR 2025-2026



SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY

(An Autonomous Institution under UGC, New Delhi)

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DEPARTMENT OF COMPUTER SCIENCE ENGINEERING

HANDOUT- INDEX

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DEPARTMENT VISION

To develop competent engineers in the domain of Artificial Intelligence & Machine Learning for noteworthy contributions to the society.

DEPARTMENT MISSION

DM1: To strengthen academic collaborations for better exposure.

DM2: Promote professional environment to imbibe ethical values and entrepreneurial skills

DM3: Encourage research & development by emphasizing on innovation

DM4: Facilitate Industry-Institute collaboration for mutual benefit

PROGRAM EDUCATIONAL OBJECTIVES (PEOS)

PEO1: Generate contributions towards advancements in Artificial Intelligence and Machine Learning

PEO2: Promote design, research and implementation of products through strong communication skills, leadership and entrepreneurial skills.

PEO3: Apply basic principles and practices of AI/DS to successfully complete Software related projects to meet customer business objectives and/or productively engage in research.

Program Outcomes(POs)

PO1	Engineering Knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO2	Problem Analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO3	Design / Development of Solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO4	Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO5	Engineering Tool Usage: Create, select and apply appropriate techniques, resources and modern engineering & IT tools, including prediction and modelling recognizing their limitations to solve complex engineering problems. (WK2 and WK6)
PO6	The Engineer and The World: Analyze and evaluate societal and environmental aspects while solving complex engineering problems for its impact on sustainability with reference to economy, health, safety, legal framework, culture and environment. (WK1, WK5, and WK7)..
PO7	Ethics: Apply ethical principles and commit to professional ethics, human values, diversity and inclusion; adhere to national & international laws. (WK9).
PO8	Individual and Collaborative Team work: Function effectively as an individual, and as a member or leader in diverse/multi-disciplinary teams.
PO9	Communication: Communicate effectively and inclusively within the engineering community and society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations considering cultural, language, and learning differences
PO10	Project Management and Finance: Apply knowledge and understanding of engineering management principles and economic decision-making and apply these to one's own work, as a member and leader in a team, and to manage projects and in multidisciplinary environments.
PO11	Life-Long Learning: Recognize the need for, and have the preparation and ability for i) independent and life-long learning ii) adaptability to new and emerging technologies and iii) critical thinking in the broadest context of technological change. (WK8).

Program Educational Objectives(PEO's)

PEO1	PEO1: Higher studies: Pursue innovation oriented higher education with high degree of research.
PEO2	Professional Career: Engage in best practices to get employed in Top notch companies.
PEO3	Domain Knowledge: Demonstrated professionalism to analyse and design the data science solutions.
PEO4	Lifelong Learning: Continual Learning with ethical principles to contribute to the human well-being and society.

Program Specific Outcomes(PSO's)

PSO1	Register mathematical methodology to crack problems using suitable data structures.
PSO2	Competence to design and develop software for web based and mobiles androids under real world environment.
PSO3	Skill to design the algorithms for machine learning, data compression can be used in different applications.

COURSE OUTCOMES (CO's)

Academic Year: 2025-26

Class : II YEAR- II SEM.

Course Name : SOFTWARE ENGINEERING

At the end of the course, the student will be able to

C223.1	Define the key software engineering tasks and software engineering process.
C223.2	Explain requirement engineering process and design concepts.
C223.3	Describe object oriented design process and design evolution.
C223.4	Explain strategic approach to software testing.
C223.5	Explain risk strategies and refinement and quality concepts
C223.6	Evaluate Quality control and ensures good quality software, risk management.

COURSE ARTICULATION MATRIX

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C223.1	3	2	-	-	-	-	-	-	-	-	-	2	3	3	-
C223.2	3	3	3	-	-	-	-	-	-	-	-	-	3	2	-
C223.3	3	2	3	3	-	-	-	-	-	-	-	2	3	2	-
C223.4	3	2	3	3	-	-	-	-	-	-	-	2	3	3	-
C223.5	3	-	2	2	3	-	-	-	-	-	-	2	3	3	-
C223.6	3	-	-	-	3	-	-	-	-	-	-	-	3	3	-
C223	3	1.5	1.8	1.3	1	-	-	-	-	-	-	1.3	3	2.7	-



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Sheriguda (V), Ibrahimpatnam, R.R. Dist, Hyderabad - 501 510

D4

ANNEXURE -III**BR-22****Lr.No.SICET/AUTO/DAE/II^o B.Tech Academic Calendar/30/2025**

B.TECH II-YEAR I-SEM & II-SEM ACADEMIC CALENDAR
(FOR ACADEMIC YEAR : 2025-26)

Academic Calendar for B.Tech – IInd Year Students (2024 - 25 Batch), BR-22 Regulation.

I – Semester

S.No.	EVENT	PERIOD	DURATION
1.	Commencement of class work.	01.08.2025 (Monday)	
2.	1 st Spell of Instructions for covering First Two and a half Units.	01.08.2025 – 07.10.2025	9 Weeks
3.	I Mid Term Examinations.	08.10.2025 – 10.10.2025	3 Days
4.	Submission of I Mid Term Examination Marks.	16.10.2025	
5.	2 nd Spell of Instructions for Remaining Two and a half Units.	13.10.2025 – 13.12.2025	9 Weeks
6.	II Mid Term Examinations.	15.12.2025 – 17.12.2025	3 Days
7.	Preparation Holidays and Practical Examinations	18.12.2025 – 27.12.2025	1 Week
8.	Submission of II Mid Term Examination Marks.	23.12.2025	
9.	I Semester End Examinations.	29.12.2025 – 10.01.2026	2 Weeks
Commencement of Class-Work for II B.Tech - II Semester 19.01.2026			

Note: No of Working/instructional days : 92

II – Semester

S.No.	EVENT	PERIOD	DURATION
1.	Commencement of class work.	19.01.2026 (Monday)	
2.	1 st Spell of Instructions for covering First Two and a half Units.	19.01.2026 – 14.03.2026	8 Weeks
3.	I Mid Term Examinations.	16.03.2026 – 18.03.2026	3 Days
4.	Submission of I Mid Term Examination Marks.	24.03.2026	
5.	2 nd Spell of Instructions for Remaining Two and a half Units.	20.03.2026 – 09.05.2026	7 Weeks
6.	Continuation of remaining 2 nd Spell of Instructions	25.05.2026 – 10.06.2026	2 1 Weeks
7.	II Mid Term Examinations.	11.06.2026 – 13.06.2026	3 Days
8.	Preparation Holidays and Project Evaluation.	15.06.2026 – 20.06.2026	1 Week
9.	Submission of II Mid Term Examination Marks.	18.06.2026	
10.	II Semester End Examinations	22.06.2026 – 04.07.2026	2 Weeks

Note: No of Working/instructional days : 92

ACE

CE

DIRECTOR

PRINCIPAL

Controller of Examination
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PRINCIPAL
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(An Autonomous Institution Under UGC)
Sheriguda (V), Ibrahimpatnam, R.R. Dist-501510.

Sign:
Dr. M.V.S.S. Giridhar

Prof. of CEA; JNTUH Nominee

Sign:
Dr. T. Venu Gopal

Prof. of CSE; JNTUH Nominee

Sign:
Dr. D. Ramesh

Prof. of CSE; JNTUH Nominee

(Copy to DAP&E and Copy to all the Dept. Heads)

SOFTWARE ENGINEERING

SYLLABUS

BR22 – B.TECH. –ARTIFICIAL INTELLIGENCE & DATA SCIENCE

SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY
(An Autonomous Institution under UGC, New Delhi)
B.Tech. - II Year – II Semester

L	T	P	C
3	0	0	3

(R22CSE2215) SOFTWARE ENGINEERING
Course Objectives

- The aim of the course is to provide an understanding of the working knowledge of the techniques for estimation, design, testing and quality management of large software development projects.
- Topics include process models, software requirements, software design, software testing, software process/product metrics, risk management, quality management and UML diagrams

Course Outcomes

- Ability to translate end-user requirements into system and software requirements, using e.g.UML, and structure the requirements in a Software Requirements Document (SRD).
- Identify and apply appropriate software architectures and patterns to carry out high level design of a system and be able to critically compare alternative choices.
- Will have experience and/or awareness of testing problems and will be able to develop a simple testing report

UNIT - I

Introduction to Software Engineering: The evolving role of software, changing nature of software, software myths. **A Generic view of process:** Software engineering- a layered technology, a process framework, the capability maturity model integration (CMMI). **Process models:** The waterfall model, Spiral model and Agile methodology

UNIT - II

Software Requirements: Functional and non-functional requirements, user requirements, system requirements, interface specification, the software requirements document.

Requirements engineering process: Feasibility studies, requirements elicitation and analysis, requirements validation, requirements management.

UNIT - III

Design Engineering: Design process and design quality, design concepts, the design model. Creating an architectural design: software architecture, data design, architectural styles and patterns, architectural design, conceptual model of UML, basic structural modeling, class diagrams, sequence diagrams, collaboration diagrams, use case diagrams, component diagrams.

UNIT - IV

Testing Strategies: A strategic approach to software testing, test strategies for conventional software, black-box and white-box testing, validation testing, system testing, the art of debugging. Metrics for Process and Products: Software measurement, metrics for software quality.

UNIT - V

Risk management: Reactive Vs proactive risk strategies, software risks, risk identification, risk projection, risk refinement, RMMM. **Quality Management:** Quality concepts, software quality assurance, software reviews, formal technical reviews, statistical software quality assurance, software reliability, the ISO 9000 quality standards.

TEXT BOOKS:

1. Software Engineering, A practitioner's Approach- Roger S. Pressman, 6th edition, McGraw Hill International Edition.
2. Software Engineering- Sommerville, 7th edition, Pearson Education.

REFERENCE BOOKS:

1. The unified modeling language user guide Grady Booch, James Rumbaugh, Ivar Jacobson, Pearson Education.
2. Software Engineering, an Engineering approach- James F. Peters, Witold Pedrycz, John Wiley.
3. Software Engineering principles and practice- Waman S Jawadekar, The McGraw-Hill Companies.
4. Fundamentals of object-oriented design using UML Meier page-Jones: Pearson Education.

R22

R22CSE2215 – Software Engineering

II/II

PUSALA SRIKANTH, Assistant. Professor

Unit/ Item No.	Topic (s)	Book Reference	Page (s)		Teaching Methodology	Proposed No. of Periods	Actual Date of Handled	CO/RBT
			From	To				
UNIT-I					8			
1.1	Introduction to software engineering: The evolving role of software	T1	11	13	Black board	01		CO1/L4
1.2	Changing nature of software	T1	14	16	Black board	01		CO1/L2
1.3	Software myths	T1	18	19	Black board	01		CO1/L1
1.4	A Generic view of process : Software engineering- A layered technology	T1	21	22	Black board	01		CO1/L2
1.5	A process framework	T1	24	25	Black board	01		CO1/L2
1.6	The Capability Maturity Model Integration (CMMI)	T1	27	29	Black board	01		CO1/L2
1.7	Process models : The waterfall model	T2	30	31	Black board	01		CO1/L2
1.8	Spiral model	T1	38	40	Black board	01		CO1/L2
1.9	Agile methodology	T1	43	45	Black board	02		CO1/L2
	Review	Signature of the HOD/Coordinator						

	SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY			Prepared on 2026
	LESSON PLAN			
	(Regulation :R22)			
	Department of AIDS			
Sub. Code & Title	R22CSE2215 – Software Engineering			
Academic Year :2025-26	Year/Sem./Section	II/II		
Faculty Name & Designation	PUSALA SRIKANTH Assistant. Professor			

Unit/ Item No.	Topic (s)	Book Reference	Page (s)		Teaching Methodology	Proposed No. of Periods	Actual Date of Handled	CO/RB T
			From	To				
UNIT-II								
2.1	Software Requirements : Functional and non- functional requirements	T1	78	79	Black board	01		CO2/L4
2.2	User requirements, System requirements	T1	81	83	Black board	01		CO2/L5
2.3	Interface specification, The software requirements document	T2	85	87	Blackboard	01		CO2/L1
2.4	Requirements engineering process : Feasibility studies	T1	91	93	Presentation	01		CO2/L6
2.5	Requirements elicitation and analysis	T1	95	97	Presentation	02		CO2/L2
2.6	Requirement validation, Requirements management.	T1	98	99	Black board	01		CO2/L2

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		LESSON PLAN						
		(Regulation :R22)						
		Department of AIDS						
Sub. Code & Title		R22CSE2215 – Software Engineering						
Academic Year: 2025-26			Year/Sem./Section		II/II			
Faculty Name & Designation			PUSALA SRIKANTH Assistant. Professor					
Unit/ Item No.	Topic (s)	Book Reference	Page (s)		Teaching Methodology	Proposed No. of Periods	Actual Date of Handled	CO/RBT
			From	To				
UNIT-III15								
3.1	Design Engineering : Design process and Design quality	W2	110	118	Presentation	01		CO3/L2
3.2	Design concepts	T1	119	121	Presentation	01		CO3/L2
3.3	The design model	T1	122	124	Black board	01		CO3/L2
3.4	Creating an architectural design : Software architecture	W3	125	128	Presentation	01		CO3/L6
3.5	Data design	T1	129	131	Black board	01		CO3/L4
3.6	Architectural styles and patterns, Architectural Design		132	133	Black board	01		CO3/L2
3.7	Conceptual model of UML	T1	135	137	Black board	01		CO3/L4
3.8	Basic structural modeling, class diagram	W4			Presentation	01		CO3/L3
3.9	Sequence diagram, collaboration diagram, use case diagram component diagram	T1	138	140	Black board	01		CO3/L3

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	(Regulation :R22)			
	Department of AIDS			
Sub. Code & Title	R22CSE2215 – Software Engineering			
Academic Year: 2025-26	Year/Sem./Section	II/II		
Faculty Name & Designation	PUSALA SRIKANTH Assistant. Professor			

Unit/ Item No.	Topic (s)	Book Reference	Page (s)		Teaching Methodology	Proposed No. of Periods	Actual Date of Handled	CO/RBT
			From	To				
UNIT-IV					10			
4.1	Testing Strategies : A strategic approach to software testing	T1	158	160	Black board			CO5/L2
4.2	Test strategies for conventional software	W5	175	189	Presentation			CO5/L4
4.3	Black-Box and White-Box testing	T1	200	201	Black board			CO5/L6
4.4	Validation testing, System testing, the art of Debugging.	T1	206	210	Black board			CO5/L2
4.5	Metrics for Process and Products : Software Measurement	T1	530	532	Black board	01		CO5/L2
4.6	Metrics for software quality	W6			Presentation	01		CO5/L4

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		LESSON PLAN (Regulation :R22) Department of AIDS							
		Sub. Code & Title		R22CSE2215 – Software Engineering					
		Academic Year: 2025-26			Year/Sem./Section		II/II		
Faculty Name & Designation			PUSALA SRIKANTH Assistant. Professor						
Unit/ Item No.	Topic (s)	Book Reference	Page (s)		Teaching Methodology	Proposed No. of Periods	Actual Date of Handled	CO/RBT	
			From	To					
UNIT-V10									
5.1	Risk management : Reactive vs. Proactive Risk strategies	T1	737	741	Presentation			CO6/L2	
5.2	Software risks, Risk identification	T1	737	741	Presentation			CO6/L2	
5.3	Risk projection, Risk refinement	T1	743	790	Black board			CO6/L2	
5.4	RMMM	T1	743	790	Black board			CO6/L1	
5.5	Quality Management : Quality concepts	T1	743	790	Black board			CO6/L2	
5.6	Software quality assurance, Software Reviews	T1	743	790	Presentation			CO6/L1	
5.7	Formal technical Reviews,statistical software quality assurance	T1	819	822	Black board			CO6/L1	
5.8	Software reliability,The ISO 9000 quality standards	T1	820	832	Presentation			CO6/L2	

LIST OF TEXT BOOKS AND REFERENCES

TEXT BOOKS:

T1:Software Engineering, A practitioner's Approach, Roger S Pressman, sixth edition. McGrawHill International Edition.

T2: Software Engineering, Ian Sommerville, seventh edition, Pearson education.

REFERENCE BOOKS:

R1. Software Engineering, A Precise Approach, Pankaj Jalote,Wiley India,2010.

R2. Software Engineering : A Primer, Waman S Jawadekar, Tata McGraw-Hill, 2008

R3. Fundamentals of Software Engineering, Rajib Mall, PHI, 2005

R4. Software Engineering, Principles and Practices, Deepak Jain, Oxford University Press.

R5. Software Engineering1: Abstraction and modeling, Diner Bjorner, Springer International edition, 2006.

R6. Software Engineering2: Specification of systems and languages, Diner Bjorner, Springer International edition , 2006.

R7. Software Engineering Foundations, Yingxu Wang, Auerbach Publications,2008.

R8. Software Engineering Principles and Practice, Hans Van Vliet,3rd edition, John Wiley &Sons Ltd.

Web links

W1: <https://nptel.ac.in/courses/106101061/2>

W2:www.tutorialspoint.com/software_testing_dictionary/software_requirement_specification.htm

W3:https://elsmar.com/pdf_files/cmmi-overview05.pdf

W4:www.tutorialspoint.com/uml/uml_basic_notations.html

	SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY			Prepared on 2026
	LESSON PLAN			
	(Regulation :R22)			
	Department of AIDS			
	Sub. Code & Title	R22csE2215 SOFTWARE ENGINEERING		
	Academic Year: 2025-26	Year/Sem./Section	II/II	
	Faculty Name & Designation	PUSALA SRIKANTH Assistant. Professor		

UNIT-1 : Introduction To Software Engineering			
	Multiple choice Questions	BT Level	Course Outcome
1C-1	Software is defined as _____ a) set of programs, documentation & configuration of data b) set of programs c) documentation and configuration of data d) None of the mentioned	L4	CO1
1C-2	The dual role of software includes: a) System software and Application software b) Product and Vehicle to deliver service c) Coding and Testing d) Waterfall and Agile	L1	CO1
1C-3	The evolving role of software refers to: a) Software only performs calculations b) Software grows from a product to control hardware and deliver services c) Software never changes after release d) Software is always error-free	L1	CO1
1C-4	Select the incorrect statement: "Software engineers should a) not knowingly accept work that is outside your competence." b) not use your technical skills to misuse other people's computers." c) be dependent on their colleagues." d) maintain integrity and independence in their professional judgment."	L2	CO1
1C-5	Select the option that suits the Manifesto for Agile Software Development a) Individuals and interactions b) Working software c) Customer collaboration d) All of the mentioned	L4	CO1
1C-6	Which of the following is not a phase of CMMI? a) Initial b) Quantitatively managed c) Integrated d) Defined	L1	CO1

1C-7	How is plan driven development different from agile development ? a) Outputs are decided through a process of negotiation during the software development process b) Specification, design, implementation and testing are interleaved c) Iteration occurs within activities d) All of the mentioned	L4	CO1
1C-9	Which of these are the 5 generic software engineering framework activities? a). Communication, risk management, measurement, production, reviewing b). Communication, planning, modeling, construction, deployment c). Analysis, designing, programming, debugging, maintenance d). Analysis, planning, designing, programming, testing	L1	CO1
1C-10	The process of developing a software product using software engineering principles and methods is referred to as ____? a). Software Engineering b). Software Evolution c). System Models d). Software Models	L2	CO1
1C-11	Software evolution does not comprises: a) Development activities b) Negotiating with client c) Maintenance activities d) Re-engineering activities	L5	CO1
1C-12	Which is the Layered Technology in Bedrock that supports Software Engineering? a. Methods b. Tools c. Process d. Quality Focus	L1	CO1
1C-13	The two dimensions of spiral model are a) diagonal, angular b) radial, perpendicular c) radial, angular d) diagonal, perpendicular	L1	CO1
1C-14	Which of the following activities of a generic process framework provides a feedback report? a)Communication b)Planning c)Modeling & Construction d)Deployment	L1	CO1
1c-15	Agile Software Development is based on which of the following type? a) Iterative Development b) Incremental Development c) Both Incremental and Iterative Development d) Linear Development	L2	CO1
1C-16	What are the features of Software Code? a) Simplicity	L1	CO1

	b) Accessibility c) Modularity d) All of the above		
1C-17	Agile Software Development is based on a) Incremental Development b) Iterative Development c) Linear Development d) Both Incremental and Iterative Development	L1	CO1
1C-18	12. Attributes of good software is _____ a) Development b) Maintainability & functionality c) Functionality d) Maintainability	L1	CO1
1C-19	What are the features of Software Code? a) Simplicity b) Accessibility c) Modularity d) All of the above	L5	CO1
1C-20	What is Software Engineering? a) Designing a software b) Testing a software c) Application of engineering principles to the design a software d) None of the above	L6	CO1
Fill in the blanks			
1F-1	Actual programming of software code is done during the _____ step in the SDLC.	L1	CO1
1F-2	_____ are applied throughout the software process.	L1	CO1
1F-3	In XP Increments are delivered to customers every _____ weeks.	L2	CO1
1F-4	_____ frameworks activities are present in Adaptive Software Development(ASD)	L1	CO1
1F-5	Agile Software Development is based on _____	L1	CO1
1F-6	_____ is the first step in the software development lifecycle	L1	CO1
1F-7	_____ is the major drawback of the Spiral Model	L1	CO1
1F-8	_____ is a set of programs that are built by software engineers	L2	CO1
1F-9	_____ is a collection of programs written to service other program	L2	CO1
1F-10	_____ makes use of non-numerical algorithma to solve complex problems that are not amenable to computation or straightforeware analysis	L1	CO1
1F-11	_____ is the process of changing a system after it has been delivered and is in use.	L1	CO1
1F-12	. _____ resides only in read-only memory and is used to control products and systems for the consumer and industrial markets.	L1	CO1
1F-13	The _____ and _____ are the two major dimensions encomposed in the spiral model.	L5	CO1

1F-14	CMMI stands for_____	L1	CO1
1F-15	_____activities of a Generic Process framework provides a feedback report	L1	CO1
1F-16	SDLC stands for_____	L2	CO1
1F-17	_____ suits the Manifesto for Agile Software Development.	L1	CO1
1F-18	_____ is not a fundamental activity for software processes in software development.	L6	CO1
1F-19	_____is not suitable for accommodating any change	L4	CO1
1F-20	_____ is a software development life cycle model that is chosen if the development team has less experience on similar projects.	L1	CO1
Match the following			
1M-1	a)System software b)Application software c) Embedded software d)Scientific /Engineering software	i) c, java ii) Gps Devices iii)Compiler Aided design iv)Operating system	L1 CO1
1M -2	a)Waterfall b) Spiral/Iterative system c) Agile d) Scrum	i)Continuous collaboration & improvement ii)Inflexible Partitioning of the project into iii)Framework for agile development iv)Explicit Recognition of risk	L1 CO1
1M -3	a)Level 1 b)Level 2 c)Level 3 d)Level 4 e)Level 5	i)Work is quantitatively ii)Work is based upon continuous improvement iii)Work is performed informally iv)Work is planned and Tracked v)Work is well defined	L1 CO1
1M -4	a)Quality focus b)Process c)Tools d)Method	i)Technical Question ii)Supports automated & semi automated iii)Bedrock support iv)Foundation layer	L1 CO1
1M -5	a)Planning & Analysis b)Define Requirements c)Testing d)Designing e)Developing	i)Implementation of design ii)Unit, Integration process iii)Identification of the risks iv)Defines architectural modules of the product v)SRS document	L1 CO1

5 - MARKS QUESTIONS			
1D-1.	What is meant by software? Discuss in detail the evolving role of software.	L1	CO1
1D-2.	What is software myth? Explain the management myths, the Practitioners myths, and Customers myths along with the realities.	L1	CO1
1D-3.	Explain in detail various software engineering layers.	L2	CO1
1D-4.	Explain in detail the Capability Maturity Model Integration (CMMI)	L2	CO1
1D-5.	With the help of a diagram discuss on software process framework. What are the five generic process frame work activities?	L2	CO1
1D-6.	With the help of the diagram discuss in detail waterfall model. Give certain reasons for its failure.	L2	CO1
1D-7.	Explain the Spiral model in detail?	L2	CO1
1D-8	Explain in detail about Agile methodology.	L2	CO1
1D-9	Explain changing nature of software in detail	L2	CO1
1D-10	Define software. Explain various Roles/types of software available	L1	CO1
1D-11	A. Explain software myths? B. Explain the water fall /classical life cycle model with real time scenario	L1	CO1
1D-12	Explain values and principles of Agile Methodologies	L2	CO1
1D-13	Write down the advantages and disadvantages of water-fall model	L1	CO1
1D-14	Write about Changing nature of software and Evolving Roles of software	L1	CO1
1D-15	What do you mean by software Engineering? Explain the software engineering layers	L1	CO1

	SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY			Prepared on 2026
	LESSON PLAN (Regulation :R22) Department of AIDS			
	Sub. Code & Title	R22csE2215- SOFTWARE ENGINEERING		
	Academic Year: 2025-26	Year/Sem./Section	II/II	
Faculty Name & Designation	PUSALA SRIKANTH Assistant. Professor			

Unit -II :Software Requirements & Requirements engineering process			
Multiple choice Questions			
2C-1	Which one of the following is not a step of requirement engineering? a) elicitation b) design c) analysis d) documentation	L1	CO2
2C-2	The user system requirements are the parts of which document ? a) SDD b) SRS c) DDD d) SRD	L1	CO2
2C-3	Which one of the following is a requirement that fits in a developer's module ? a) Availability b) Testability c) Usability d) Flexibility	L1	CO2
2C-4	“Consider a system where, a heat sensor detects an intrusion and alerts the security company.” What kind of a requirement the system is providing ? a) Functional b) Non-Functional c) Known Requirement d) None of the mentioned	L1	CO2
2C-5	What is the first step of requirement elicitation ? a) Identifying Stakeholder b) Listing out Requirements c) Requirements Gathering d) All of the mentioned	L1	CO2
2C-6	_____ and _____ are the two viewpoints discussed in Controlled Requirements Expression (CORE). a) Functional, Non-Functional b) User, Developer	L2	CO2

	c) Known, Unknown d) All of the mentioned		
2C-7	What is a Functional Requirement? a) specifies the tasks the program must complete b) specifies the tasks the program should not complete c) specifies the tasks the program must not work d) All of the mentioned	L2	CO2
2C-	Which of the following statements about SRS is/are true ? i. SRS is written by customer ii. SRS is written by a developer iii. SRS serves as a contract between customer and developer a) Only i is true b) Both ii and iii are true c) All are true d) None of the mentioned	L1	CO2
2C-8	Which two requirements are given priority during Requirement Management of a product ? a) User and Developer b) Functional and Non-functional c) Enduring and Volatile d) All of the mentioned	L1	CO2
2C-9	Which of the following is NOT a feasibility analysis criterion? (A). Technical feasibility (B). Resource feasibility (C). Operational feasibility (D). Economic feasibility	L1	CO2
2C-10	Why is Requirements Elicitation a difficult task ? a) Problem of scope b) Problem of understanding c) Problem of volatility d) All of the mentioned	L1	CO2
2C-11	Requirements Analysis is an Iterative Process. a) True b) False	L2	CO2
2C-12	Arrange the given sequence to form a SRS Prototype outline as per IEEE SRS Standard. i. General description ii. Introduction iii. Index iv. Appendices v. Specific Requirements a) iii, i, ii,v, iv b) iii, ii, i, v, iv c) ii, i, v, iv, iii d) iii, i, ii	L1	CO2
2C-13	Which is true for SRS? a) SRS is the main input of the software product design process b) SRS is the main output to the engineering design process c) SRS is also the main output of the requirements specification activity d) All of the mentioned	L1	CO2

2C-14	Which of these are true for non functional requirements? a) A non-functional requirement is also called behavioral requirements b) A non-functional requirement is a statement that a software product must have certain properties c) It consists of Development and operational requirements d) All of the mentioned	L2	CO2
2C-15	SRS consists of? a) Problem statement b) Product design c) Problem statement & Product design d) None of the mentioned	L1	CO2
2C-16	Which one of the following is a functional requirement ? a) Maintainability b) Portability c) Robustness d) None of the mentioned	L2	CO2
2C-17	Requirements analysis is critical to the success of a development project. a) True b) False	L1	CO2
2C-18	The SRS is said to be <i>consistent</i> if and only if a) its structure and style are such that any changes to the requirements can be made easily while retaining the style and structure b) every requirement stated therein is one that the software shall meet c) every requirement stated therein is verifiable d) no subset of individual requirements described in it conflict with each other	L1	CO2
2C-19	Which two requirements are given priority during Requirement Management of a product ? a) User and Developer b) Functional and Non-functional c) Enduring and Volatile d) All of the mentioned	L5	CO2
2C-20	Requirements should specify 'what' but not 'how'. a) True b) False	L2	CO2
2C-21	Arrange the tasks involved in requirements elicitation in an appropriate manner. i. Consolidation ii. Prioritization iii. Requirements Gathering iv. Evaluation	L1	CO2
2C-22	Validation mechanism is a, a) Technical review b) Design overview c) Testing mechanism d) None of the mentioned above	L3	CO2

Fill in the blanks			
2F-1	Requirement engineering establishes a solid base for _____	L1	CO2
2F-2	The user, system requirements are the parts of _____ document	L1	CO2
2F-3	Which is focused towards the goal of the organization _____	L1	CO2
2F-4	_____ is referred to as the heart of requirement management.	L2	CO2
2F-5	_____ writes the srs document	L2	CO2
2F-6	_____ is the first step of requirement elicitation	L1	CO2
2F-7	_____ two requirements are given priority during Requirement Management of a product	L1	CO2
2F-8	_____ feasibility studies is conducted in Requirement Analysis	L2	CO2
2F-9	The process of developing a software product using software engineering principle methods is referred to as _____	L1	CO2
2F-10	_____ design the system to meet the users requirements	L1	CO2
2F-11	The goal of requirements engineering is to develop and maintain sophisticated and descriptive _____ document.	L1	CO2
2F-12	Functional requirements describe about _____	L1	CO2
2F-13	Example of non-functional requirements are _____	L1	CO2
2F-14	Complete description about behavior of the system to be developed is _____	L1	CO2
2F-15	_____ and _____ are the two issues of Requirement Analysis.		CO2
2F-16	SRS stands for _____	L1	CO2
2F-17	Which the process to gather the software requirements from the client, analyze and document them is known as _____	L4	CO2
2F-18	The distinct tasks encompasses by requirements engineering are inception, elicitation, elaboration, negotiation, specification, _____ .	L6	CO2
	Match the following		

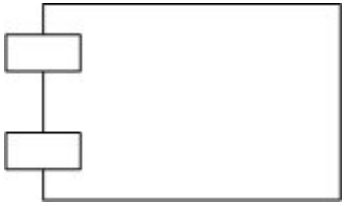
2M-1	a)Requirements Specification b)Requriment Elicitation throughout the c)Requriments Analysis & d)Requriment Management	i)Documenting the Requriments ii)Managing the requriments SDLC iii)Gathering information about needs expectations of stake holders iv)Scrutinize the gathered	L1	CO2
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	requirements to make consistent & unambiguous requirements		
2M-2	a)User Requirements i) describes what the software will do and how it will be expected to perform b)System Requirements ii) system operate with other system c)Interface Specification iii)specify the technical characteristics of the software system d)Software specification iv) describe what the end-user wants from the software system	L1	CO2
2M-3	a)Requirements review i) checking expected and actual outputs b)Test case generation ii) Checking whether the requirements will be done in real world c)Consistency check requirements iii) To check any constraints in the d)Realism check requirements iv)Group of people discussing about	L1	CO2
2M-4	Users of requirement document a)Managers i)use the requirement to understand what system is to be developed b)system test engineers ii)specify the requirements and specify changes to the requirements c)system engineers iii)use the requirements document to plan a bid for the system d)system customers iv)use the requirement to understand what system is to be developed	L1	CO2
2M-5	a)Product complexity i)software requirements definition b)Structured system analysis ii)software design c)Coupling and Cohesion iii)Validation Technique d)Symbolic Execution iv) Software cost estimation	L1	CO2
5- MARKS QUESTIONS			
2D-1	What are functional and Nonfunctional requirements of software? Discuss in detail.		CO 2
2D-2	Write short notes on user requirements. What is requirements amalgamation?		CO

			2
2D-3	Discuss in detail the system requirements along with locations for requirements specification.		CO 2
2D-4	Elaborate on software requirements document.		CO 2
2D-5	Elaborate on requirements management.	L6	CO 2
2D-6	Elaborate on requirements elicitation and analysis process. OR Explain the requirements analysis techniques.		CO2
2D-7	What is feasibility study? Describe the feasibility study process. Write a short notes on feasibility report.		CO2
2D-8	Discuss the problem of using natural languages for defined user and system requirements	L2	CO 2
2D-9	Define software requirements document. Explain the structure of it in detail.		CO 2
2D-10	Explain the requirements analysis techniques.		CO 2
2D-11	Explain in detail on interface specification.		CO5
2D-12	Does Requirements Validation have an important role in Requirements Engineering Process? Explain in detail.		CO 2
2D-13	Discuss in detail the system requirements along with the notations for requirements specifications with suitable examples		CO 2
2D-14	Explain Software requirement document and explain along with its contents		CO 2
2D-15	Explain viewpoints and types of viewpoints? or Requirements discovery (or) Elicitation approaches: interviewing, usecases, scenarios		

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	Faculty Name & Designation	PUSALA SRIKANTH Assistant. Professor				
	Unit-III Design Engineering					
3C-1	Which of these are followed in case of software design process? a) Analysis occurs at start of product design with a product idea b) Analysis occurs at the end of engineering design with the SRS c) Product design resolution produces the design document d) Engineering design resolution produces the SRS				L1	CO3
3C-2	In Design phase, which is the primary area of concern ? a) Architecture b) Data c) Interface d) All of the mentioned				L1	CO3
3C-3	Actual programming of software code is done during the step in the SDLC. a) Maintenance and Evaluation b) Design c) Analysis d) Development and Documentation				L1	CO3
3C-4	Debugging is: a) creating program code b) finding and correcting errors in the program code c) identifying the task to be computerized d) creating the algorithm				L1	CO3
3C-5	The component-level design transforms structural elements of the software architecture, True False				L1	CO3
3C-6	The primary work product produced during software design is / are a)Architectural design b)Interface design c)Creation of components and deployment d)All of the mentioned above				L1	CO3
3C-7	Which of the following is not included in Architectural design decisions? a) type of application b) distribution of the system c) architectural styles d) testing the system				L1	CO3

3C-8	Data-Flow Architectures is suitable to apply when, a) Input data transformed through a series of computational or manipulative components b) Input data transformed through recursive process c) Input data does not transform through defined process d) None of the mentioned above	L2	CO3
3C-9	Which of the following diagram is timeoriented? a) Collaboration b) Sequence c) Activity d) None of the mentioned	L1	CO4
3C-10	According to components of FURPS+, which of the following does not belong to S? a) Testability b) Speed Efficiency c) Serviceability d) Installability	L1	CO3
3C-11	Which architectural style goal is to achieve Integrability? a) Data Flow Architecture b) Call and Return Architecture c) Data Centered Architectures d) None of the mentioned	L1	CO3
3C-12	Which architectural style goal is to achieve Modifiability with Scalability? a) Data Flow Architecture b) Call and Return Architecture c) Virtual Machine Architecture d) None of the mentioned	L1	CO3
3C-13	What are the notations for the Use case Diagrams? a) Use case b) Actor c) Prototype d) Use case and Actor	L1	CO4
3C-14	What are the different interaction diagram notations does UML have? a) A sequence diagram b) A communication diagram c) An interaction overview diagram d) All of the mentioned	L1	CO4
3C-15	According to components of FURPS+, which of the following does not belong to S ? a) Testability b) Speed Efficiency c) Serviceability d) Installability		
3C-16	What is multiplicity for an association? a) The multiplicity at the target class end of an association is the number of instances that can be associated with a single instance of source class b) The multiplicity at the target class end of an association is the number of instances that can be associated with a number instance of source class	L1	CO4

	c) All of the mentioned d) None of the mentioned		
3C-17	Which of the following is not included in Architectural design decisions? a) type of application b) distribution of the system c) architectural styles d) testing the system	L4	CO3
3C-18	Which view in architectural design shows the key abstractions in the system as objects or object classes? a) physical b) development c) logical d) process	L1	CO3
3C-19	Which of the following is a type of Architectural Model? a) Static structural model b) Dynamic process model c) Distribution model d) All of the mentioned	L1	CO3
3C-20	7. Architecture once established can be applied to other products as well. a) True b) False	L2	CO3
Fill in the blanks			
3F-1	_____is a measure of the degree of interdependence between modules.	L1	CO3
3F-2	Design develops a representation or _____	L1	CO3
3F-3	Design provides the representations of software that can be assessed for _____	L1	CO3
3F-4	The process of abstraction can also be referred to as _____	L5	CO3
3F-5	Architectural design describes about the _____	L1	CO3
3F-6	Data-centered architectures promote _____	L2	CO3
3F-7	_____are the taxonomy of architectural styles	L2	CO3
3F-8	Which core element of UML is being shown in the figure 	L4	CO4
3F-9	Interaction Diagram is a combined term for _____	L4	CO4

3F-10	Classes and interfaces are a part of_____	L4	CO4
3F-11	What is a physical element that exists at runtime in UML	L4	CO4
3F-12	Which things in UML _____are the explanatory parts of UML models	L1	CO4
3F-13	Software Design consists of _____	L1	CO3
3F-14	UML stands for_____	L2	CO4
3F-15	Usecase diagram describes about_____	L1	CO4
3F-16	Actual programming of software code is done during the _____step in the SDLC.	L2	CO3
3F-17	In Design phase,_____area is a primary concern	L1	CO3
3F-18	Software Design consists of _____	L1	CO3

Match the following

3M-1	a)Funtionalty i)Configurability,Testability,Adaptability b)Usability ii)Mean Time between Failures c)Reliabilty iii)capability of program d)Performance iv)Userfriendly,consistency,Documentation e)Suppotability v)Response time,Processing speed	L1	CO3
3M-2	a)Abstraction module i)Degree of relationship between elements of the same b)Refactoring ii)Process of elaboration c)Cohesion iii)Process of changing a software system d)Refinement iv)Degree of interdependence between the modules e)Coupling v)Background details or unnecessary implementation	L1	CO3
3M-3	Match the following: (a)State Diagram (i)Describe how the external entities can interact with the system (b)Use case Diagram (ii)Used to describe the static or structural view of a system (c)Class diagram (iii)Used to show the flow of business process, the steps of a use case or the logic of an object behavior (d)Activity diagram (iv)Used to describe the dynamic behavior of objects and could also be used to describe the entire system behavior	L1	CO4
3M-4	a)Generalization i) 	L1	CO4

	b)Association ii)  c)Composition iii)  d)Realization iv)  e)Aggregation v) 		
3M-5	a)Structural model identifying i) increases the level of design abstraction by architectural design b)Framework model system ii)Used to represent functional hierarchy of the c)Dynamic model process iii)Focuses on design of business or technical d)Process model iv)Organized collection of program components e)Funtional model v)Addresses the behavioral aspects of the program architecture	L1	CO4
5- MARK QUESTIONS			
3D-1	Discuss briefly on data design at the architectural level and Data design at the component level.	L2	CO3
3D-2	What are architectural styles? Explain briefly.	L1	CO3
3D-3	Write short notes on architectural patterns.	L1	CO3
3D-4	Explain the following terms with respect to the architectural patterns (a) Concurrency (b) Persistence (c) Distribution	L2	CO3
3D-5	Explain design concepts in detail.	L2	CO3
3D-6	Explain Conceptual Model of UML in detail.	L2	CO4
3D-7	What is software architecture? Explain about structured chart with an example.	L1	CO3
3D-8	What are the elements in data design? Give the guidelines for data design	L1	CO3
3D-9	a)Explain usecase modelling with an example ?purpose of usecase b)What are the use cases? Draw the use cases for library system.	L2	CO4
3D-10	Explain design process and design quality in detail.	L2	CO3
3D-11	Explain Basic Structural Modeling	L2	CO4

3D-12	What do you mean by architecture? Give the functioning of various architectural designs.	L1	CO3
3D-13	Draw an interaction diagram for ATM withdrawal.	L2	CO4
3D-14	Write a problem statement for Library management system. Draw the UML Use Case, Activity diagram, Class diagram, Sequence diagram, State Chart diagram, Component diagram	L1	CO4
3D-15	Explain the Concepts of Sequence and Deployment Diagram and Draw component and deployment diagrams for Book bank system.	L2	CO4
Unit-IV: Testing Strategies			
Multiple choice questions			
4C-1	In the maintenance phase the product must be tested against previous test cases. This is known as _____ testing.		
4C-2	Which type of testing is typically associated with software verification? (A) Regression testing (B) Usability testing (C) Alpha testing (D) User acceptance testing		
4C-3	Software Debugging is a set of activities that can be planned in advance and conducted systematically. a) True b) False	L1	CO5
4C-4	Which of the following is not a software testing generic characteristics? a) Different testing techniques are appropriate at different points in time b) Testing is conducted by the developer of the software or an independent test group c) Testing and debugging are different activities, but debugging must be accommodated in any testing strategy d) None of the mentioned	L2	CO5
4C-5	Test cases should uncover errors like a) Nonexistent loop termination b) Comparison of different data types c) Incorrect logical operators or precedence d) All of the mentioned	L1	CO5
4C-6	The testing in which code is checked a) Black box testing b) White box testing c) Red box testing d) Green box testing	L1	CO5
4C-7	Acceptance testing is also known as a) Grey box testing b) White box testing c) Alpha Testing d) Beta testing	L1	CO5
4C-8	Which of the following is not a direct measure of SE process? a) Efficiency b) Cost	L5	CO5

	c) Effort Applied d) All of the mentioned		
4C-9	A graphical technique for finding if changes and variation in metrics data are meaningful is known as a) DRE (Defect Removal Efficiency) b) Function points analysis c) Control Chart d) All of the mentioned	L1	CO5
4C-10	What do you understand by V&V in software testing? a) Verified Version b) Version Validation c) Verification and Validation d) Version Verification	L1	CO5
4C-11	Which of the following is black box testing a) Basic path testing b) Boundary value analysis c) Code path analysis d) None of the mentioned	L4	CO5
4C-12	Defects removal efficiency (DRE) depends on: a) E – errors found before software delivery b) D – defects found after delivery to user c) Both E and D d) Varies with project	L4	CO5
4C-13	Which of the following is non-functional testing? a) Black box testing b) Performance testing c) Unit testing d) None of the mentioned	L5	CO5
4C-14	Test should be conducted for every possible a) data b) case c) variable d) all of the mentioned	L1	CO5
4C-15	Which of the following does not affect the software quality and organizational performance? a) Market b) Product c) Technology d) People	L1	CO5
4F-1	Validation Testing is also known as _____	L1	CO5
4F-2	_____ is a measure of the filtering ability of quality assurance and control activities as they are applied throughout all process framework activities.	L1	CO5
4F-3	_____ is the process of checking that software achieves its goal without any bugs.	L2	CO5
4F-4	Indirect measures of the product include _____	L1	CO5

4F-5	_____Testing focuses on the validity of loop constructs	L1	CO5
4F-6	Behavioral testing is also known as_____	L1	CO5
4F-7	The most common measure for correctness is_____	L3	CO5
4F-8	Process of execution of a program with the intention of finding errors is known as_____	L2	CO5
4F-9	Verification Testing is also known as_____	L1	CO5
4F-10	_____ refers to a different set of activities that ensures that the software is traceable to the customer requirements	L1	CO5
4F-11	In the maintenance phase the product must be tested against previous test cases. This is known as _____ testing.	L1	CO5
4F-12	In size oriented metrics, metrics are developed based on the _____	L2	CO5
4F-13	_____use a measure of the functionality delivered by the application as a normalization value	L2	CO5
4F-14	A graphical technique for finding if changes and variation in metrics data are meaningful is known as_____	L1	CO5
4F-15	KLOC also known as _____	L1	CO5

Match the following

4M-1.	a) Verification b) Validation c) White box testing d) Black box testing	i) Dynamic testing ii) Static testing iii) Behavioural testing iv) Glass box testing	L1	CO5
4M-2	a) Unit testing a code introduced no b) Integration testing software requirements c) System testing modules. d) Regression testing system	i) a type of software testing conducted after update to ensure that the update new bugs. ii) To validate that each unit of the works as intended and meets the iii) Process of testing the interface between two software units or iv) To evaluate the compliance of the with the corresponding requirements.	L1	CO5

4M-3.	a)Size-Oriented Metrics features that b)Function-Oriented Metrics delivered value c)Use case Oriented Metrics: delivers a to the d)Web Engineering Project Metrics the size of	i) Describe user-visible functions and are basic requirements for a system. ii) Use a measure of the functionality by the application as a normalization iii) To build a Web application that combination of content and functionality end-user iv) Derived by normalizing quality and/or productivitymeasures by considering the software that has been produced.	L1	CO5
4M-4.	i. Determining whether you have built the right system is called _____. ii. Determining whether you have built the system right is called _____. iii. _____is the process of demonstrating. iv. _____ is the process of discovering the cause of a defect and fixing it. (A) i – B, ii – D, iii – A, iv – C (B) i – B, ii – D, iii – C, iv – A (C) i – D, ii – B, iii – C, iv – A (D) i – D, ii – B, iii – A, iv – C	A. Software Testing B. Software Verification C. Software debugging the existence of defects D. Software Validation	L1	CO5
4M-5.	a)Threat function b)Security error is c)Correctness from will occur d)Maintainability be	i) the degree to which the software performs its required ii) the ease with which a program can be corrected if an encountered iii) The probability (which can be estimated or derived empirical evidence) that an attack of a specific type within a given time. iv) The probability (which can be estimated or derived from empirical evidence) that the attack of a specific type will repelled	L1	CO5

4D-1.	a) Compare System Testing and Validation Testing. b) Explain Debugging Strategies in brief		
4D-2.	Examine Black-Box Testing in analysis mode.		
4D-3.	Demonstrate the test strategies for conventional software.		
4D-4	Describe various types of testings.		
4D-5.	Explain in detail art of debugging process.		
4D-6	Explain about Product metrics?		
4D7.	Describe the metric for software quality.		
4D-8	Explain in detail process metrics and software process improvement.		
4D-9	Explain in detail about software measurement.		
4D-10	What are the differences between black box and white box testing?		
4D-11	a) Discuss Metrics for Software Quality in detail b) Why test strategies are needed for Conventional Software?		
4D-12	Examine White-Box Testing in analysis mode.		
4D-13	Explain strategic approach to software testing?		
4D-14	Compare System Testing and Validation Testing.		
4D-15			
Unit-V-Risk management, Quality management			
Multiple choice questions			
5C-1	Which one of the following is not a software process quality? a) Productivity b) Portability c) Timeliness d) Visibility	L5	CO6
5C-2	Which of the following term is best defined by the statement: "There will be a change of organizational management with different priorities."? a) Staff turnover b) Technology change c) Management change d) Product competition	L5	CO6

5C-3	What assess the risk and your plans for risk mitigation and revise these when you learn more about the risk? a) Risk monitoring b) Risk planning c) Risk analysis d) Risk identification	L2	CO6
5C-4	Which of the following risks are derived from the organizational environment where the software is being developed? a) People risks b) Technology risks c) Estimation risks d) Organizational risks	L5	CO6
5C-5	Which one is not a risk management activity? a) Risk assessment b) Risk generation c) Risk control d) None of the mentioned	L5	CO6
5C-6	Which is the latest ISO 9001 version in the ISO 9000 family? a) ISO 9001:1994 b) ISO 9001:2000 c) ISO 9001:2008 d) ISO 9001:2015	L5	CO6
5C-7	If a software production gets behind schedule, one can add more programmers and catch up. a) True b) False	L1	CO6
5C-8	Who performs technical reviews? Software engineer Network engineer System administrator All of the mentioned above	L1	CO6
5C-9	Which requirements are the foundation from which quality is measured? a) Hardware b) Software c) Programmers d) None of the mentioned	L5	CO6
5C-10	Which of the following is not a SQA plan for a project? a) evaluations to be performed b) amount of technical work c) audits and reviews to be performed d) documents to be produced by the SQA group	L5	CO6

5C-11	Which of the following risks are derived from the software or hardware technologies that are used to develop the system? a) Managerial risks b) Technology risks c) Estimation risks d) Organizational risks	L3	CO6
5C-12	Software process and improvement are assessed by ____? A). ISO 9000 B). ISO 9001 C). SPICE (ISO/IEC15504) D). Both B and C	L3	CO6
Fill in the blanks			
5F-1	Efforts taken to specify threats to the project plan is known as _____	L1	CO6
5F-2	Strategy that begins before the technical activity by considering the probable risk_____	L2	CO6
5F-3	RMMM stands _____	L2	CO6
5F-4	The risk that affect quality and timelines of the project known as_____	L1	CO6
5F-5	The degree of uncertainty that the project schedule will be maintained and that the product will be delivered on time._____	L1	CO6
5F-6	The objective of ISO-9000 family of quality management is_____	L2	CO6
5F-7	Software risk always involves two characteristics_____	L2	CO6
5F-8	The degree of uncertainty that the project budget will be maintained_____	L4	CO6
5F-9	Risk tables are sorted by_____	L2	CO6
5F-10	Degree of uncertainty that the product will satisfy the customers' requirements is known as_____	L5	CO6
5F-11	_____is an approach of debugging	L2	CO6
5F-12	Three categories of risk are_____	L1	CO6
5F-13	statistical quality assurance involves_____	L1	CO6
5F-14	According to Pareto's principle, x% of defects can be traced to y% of all causes. What are the values of x and y?	L1	CO6
5F-15	Non-conformance to software requirements is known as_____	L2	CO6

5M-1	Match the following: a)project risk produced i)Threaten the quality and timeliness of software b)Technical risk ii) Risk can be recovered from careful evaluation c)Business risk resultant iii)Threaten the project plan and affect schedule and cost d)known risk iv)Threaten the viability of software to be built		CO6
5M-2	Match the following A)Risk Mitigation loss i) process to identify, analyze, evaluate, and treat exposures and monitor risk control B)Risk Monitoring ii)Removing causes that are the reason for risk Creation. C)Risk Management activities. iii) document that outlines all risk analysis D)RMMM plan iv) To ensure proper application of risk aversion steps defined for risk.	L1	CO6
5M-3	ISO Certification a)Application: i)ISO certification after the successful completion of all the phases b)Compliance Audit: ii) to monitor the organization time by time. c)Registration: iii)the registrar checks whether the organization has compiled d)Continued Inspection iv) it applies to the registrar for registration.	L1	CO6
5M-4	a)performance risk software will i) the degree of uncertainty that the resultant be easy to correct b)Cost risk meet its ii) the degree of uncertainty that the product will requirements c)Support risk schedule will be iii) the degree of uncertainty that the project maintained d)Schedule risk will be iv) the degree of uncertainty that the project budget maintained.	L1	CO6

5M-5	a) Quality of design b) Quality of conformance c) Quality control d) Quality assurance	i) Series of inspections, reviews, and tests used to ensure conformance ii) set of auditing and reporting functions that assess the effectiveness and completeness iii) Refers to characteristics that designers specify for the end product iv) Degree to which design specifications are followed in manufacturing the product	L1	CO6
5- MARK QUESTIONS				
5D-1	Discus about Reactive vs. Proactive Risk strategies			CO6
5D-2	Explain in detail about software Risk.			CO6
5D-3	Explain in detail about Risk Identification.			CO6
5D-4	Describe Risk Projection			CO6
5D-5	Explain in detail about RMMM			CO6
5D-6	Discuss ISO 9000 Quality Standards in detail.			CO6
5D-7	Write important points on the following a. Formal Technical Reviews. b. RMMM Model.			CO6
5D-8	Write notes on the following a) Reactive and Proactive Risk Strategies. b) Software Quality Assurance			CO6
5D-9	a) Explain Statistical Software Quality Assurance. b) What do you mean by Risk Projection .			CO6
5D-10.	Why Risk Refinement is needed?			CO6
5D-11.	Explain with an example data collection for statistical software quality assurance.			CO6
5D-12.	Explain various activities performed by software quality assurance or SQA group.			CO6
5D-13.	Explain software reliability along with its terms?			CO6
5D-14.	Explain about Quality concepts?			CO6
5D-15.	Explain the following: a) Cost of quality b) Software reviews c) The ISO 9000 quality standards d) Review guidelines.			CO6

	SRI INDU COLLEGE OF ENGG & TECH LESSON PLAN (Regulation :R22) Department of AIDS			Prepared On 2026
	Sub. Code & Title		R22CSE2215 & SOFTWARE ENGINEERING	
	Academic Year: 2025-26		Year/Sem	II/II
	Faculty Name & Designation		PUSALA SRIKANTH, ASST. PROF.	

ASSIGNMENT QUESTIONS (MID-I & MID-II)

ASSIGNMENT-I

Batch. No	Assignment Questions	Register Number	Course outcome	Level
1.	1. what is meant by software ? Discuss in detail the evolving role of software. 2. Explain in detail various software engineering layers 3. . Write short notes on user requirements & system requirements 4. What are the functional requirements of software? 5. Discuss briefly on data design the architectural level and data design at the component level.	24D41A7201 to 24D41A7205	CO1 CO1 CO2 CO2 CO3	1 2 3 5 4
2.	1. Discuss in detail about a process framework. 2. Explain software myths. 3. Explain the non-functional requirements of software in detail. 4. Discuss the user requirements in detail. 5. Explain Data Centered Architecture and Data Flow Architecture with the help of diagrams	24D41A7206 to 24D41A7210	CO1 CO1 CO2 CO2 CO3	4 2 2 4 3
3.	1.Explain the Agile methodology in detail? 2. Elaborate about Capability Maturity Model Integration 3. Discuss in detail requirement elicitation and analysis process 4. Elaborate on Feasibility studies 5.Explain design process and design quality in detail.	24D41A7211 to 24D41A7215	CO1 CO1 CO2 CO2 CO3	2 5 4 5 3

4.	1. What is meant by “Software myth”? Discuss on various types of software myths and the true aspects of these myths	24D41A7216 to	CO1	1
	2. explain about waterfall model? Give certain reasons for its failure.	24D41A7220	CO1	2
	3. Elaborate on requirements management.		CO2	5
	4. Explain Architectural styles and pattern in detail.		CO3	4
	5. Write short notes on user requirements & system requirements.		CO2	6
5.	1. Explain the Agile methodology? Discuss Agile values and Principles.	24D41A7221 to	CO1	2
	2. Discuss in detail the system requirements along with interface specification.	24D41A7225	CO2	4
	3. Explain design concepts in detail.		CO3	3
	4. What is a process framework activity? Explain in detail.		CO1	6
	5. Explain Data Centered Architecture and Data Flow Architecture with the help of diagrams		CO3	3
6.	1. What do you mean by software Engineering? Explain the software engineering layers.	24D41A7226 to	CO1	6
	2. What is meant by “Software myth”? Discuss on various types of software myths	24D41A7230	CO2	1
	3. Distinguish functional and non-functional requirements.		CO2	4
	4. Discuss briefly on data design at the architectural level and Data design at the component level		CO3	5
	5. Discuss the user requirements in detail.		CO2	3
7.	1. Discuss the working methodology of Waterfall model in Process Models	24D41A7231 to	CO1	5
	2. Explain the non-functional requirements of software in detail.	24D41A7235	CO2	3
	3. Explain Data Centered Architecture and Data Flow Architecture with the help of diagrams		CO3	4
	4. Explain in detail various software engineering layers		CO1	1
	5. Elaborate on requirements validation , requirement management.		CO2	2

8.	1. Explain the evolving role of software. 2. What do you mean by Interface Specification, explain in detail 3. Write short notes on the following: (a) Abstraction (b) Architecture (c) Patterns (d) Modularity (e) information hiding (f) functional independence (g) refinement (h) Refactoring. 4. Explain briefly on Data design elements and architectural design elements. 5. Elaborate on Feasibility studies	24D41A7236 to 24D41A7241	CO1 CO2 CO3 CO3 CO2	2 3 6 2 2
9.	1. Write down the advantages and disadvantages of water-fall model. 2. What is a process framework activity? Explain in detail. 3. What do you mean by Interface Specification, explain in detail . 4. Write a short notes on : (a) Architectural style. (b) Architectural pattern. (d) Architectural design 5. Discuss in detail the system requirements along with interface specification	24D41A7242 to 24D41A7246	CO1 CO1 CO2 CO3 CO2	6 4 4 6 2
10.	1. Explain in detail about changing nature of software 2...Explain the Agile methodology? Discuss Agile manifesto 3. Give the complete description and details of the Software Requirements Document 4. Explain the following terms with respect to the architectural patterns: (a) Concurrency. (b) Persistence. (c) Distribution 5. explain design concepts in detail.	24D41A7247 to 24D41A7251	CO1 CO1 CO2 CO3 CO3	3 2 6 3 2

11.	1. Discuss in detail about a process framework. 2. What are the functional requirements of software? 3. explain about design process and design quality 4. what is meant by software ? Discuss in detail the evolving role of software 5. Explain data design at the Architecture level and data design at the component level with an example	24D41A7252 to 24D41A7256	CO1 CO2 CO3 CO1 CO3	2 4 4 3 6
12.	1.. Explain about Capability Maturity Model Integration 2.. Explain the Agile methodology in detail? 3. Elaborate on requirements validation and requirement management. 4. Explain Data Centered Architecture and Data Flow Architecture with the help of diagrams 5. Discuss the user requirements in detail	24D41A7257 to 24D41A7261	CO1 CO1 CO2 CO3 CO2	2 6 2 6 2
13.	1. what is meant by software ? Discuss in detail the evolving role of software. 2. Explain the non-functional requirements of software in detail. 3. Elaborate on requirements management. 4. Explain Architectural styles and pattern in detail. 5.. Explain design concepts in detail.	24D41A7262 to 25D45A7203	CO1 CO2 CO2 CO3 CO3	6 2 3 6 2
14.	1.. Explain in detail various software engineering layers 2. Elaborate on Feasibility studies 3. Write short notes on the following: (a) Abstraction (b) Architecture (c) Patterns (d) Modularity (e) information hiding (f) functional independence (g) refinement (h) Refactoring. 4. Write a short notes on : (a) Architectural style. (b) Architectural pattern. (d) Architectural design 5.. Write down the advantages and disadvantages of water-fall model.	25D45A7204 to 25D45A7205	CO1 CO2 CO3 CO3 CO1	4 6 2 1 3

ASSIGNMENT-II

Batch. No	Assignment Questions	Register Number	Course outcome	Level
1.	1.Explain in detail about Class diagram with an example 2.Write the test strategies for conventional software. 3.Compare System Testing and Validation Testing. 4.Discuss ISO 9000 Quality Standards in detail. 5.Write important points on the following a. Formal Technical Reviews. b. Software reviews	24D41A7201 to 24D41A7205	CO4 CO5 CO5 CO6 CO6	2 6 3 2 6
2.	1.Explain in detail about component and deployment diagram 2.Compare reactive with proactive risk strategies? 3.Discuss black box testing in a detailed view? 4.Explain about Product metrics? 5.Explain in detail about software Risk.	24D41A7206 to 24D41A7210	CO4 CO5 CO5 CO6 CO6	2 4 2 2 4
3.	1.Discuss in detail about conceptual model of uml 2.Define Software Testing. Give few generic characteristics of it. 3.Discuss briefly on (a) Verification (b) Validation. 4.Explain various activities performed by software quality assurance or SQA group. 5.Explain about Quality concepts?	24D41A7211 to 24D41A7215	CO4 CO5 CO5 CO6 CO6	2 5 2 4 4
4.	1.Explain in detail about usecase diagram 2.Explain in detail art of debugging process. 3.Discuss Metrics for Software Quality in detail 4.Discuss ISO 9000 Quality Standards in detail. 5.Why Risk Refinement is needed?	24D41A7216 to 24D41A7220	CO4 CO5 CO5 CO6 CO6	4 2 2 4 6
5.	1.Explain in detail about component diagram 2. Why test strategies are needed for Conventional Software? 3. Explain in detail about Software Measurement? 4. Write notes on the following a) Reactive and Proactive Risk Strategies. b) Software Quality Assurance 5. Discuss ISO 9000 Quality Standards in detail	24D41A7221 to 24D41A7225	CO4 CO5 CO5 CO6 CO6	2 6 2 6 2

6.	1. Discuss basic structural modelling 2. Compare System Testing and Validation Testing. 3. Explain Debugging Strategies in brief 4. Define software reliability along with its terms? 5. Explain about RMMM	24D41A7226 to 24D41A7230	CO4 CO5 CO5 CO6 CO6	2 4 2 1 2
7.	1. Discuss in detail about component diagram. 2. Discuss Metrics for Software Quality in detail 3. Describe various types of testings 4. Explain in detail ISO 9000 quality standards? 5. Explain Statistical Software Quality Assurance	24D41A7231 to 24D41A7235	CO4 CO5 CO5 CO6 CO6	2 4 2 2 4
8.	1. Explain in detail about UML diagrams 2. Discuss black box testing and white box testing in a detailed view? 3. Explain strategic approach to software testing? 4. Explain software reviews in brief? 5. Write notes on the following a) Reactive and Proactive Risk Strategies. b) Software risks	24D41A7236 to 24D41A7241	CO4 CO5 CO5 CO6 CO6	2 2 4 4 6
9.	1. Draw an interaction diagram for ATM withdrawal. 2. Explain in detail about Software Measurement? 3. Write the test strategies for conventional software. 4. Define software reliability along with its terms? 5. Elaborate the concepts of Risk management Reactive vs Proactive Risk strategies?	24D41A7242 to 24D41A7246	CO4 CO5 CO5 CO6 CO6	1 2 6 1 3
10.	1. Discuss in detail class diagram with an example? purpose of class diagram 2. Compare System Testing and Validation Testing. 3. Describe various types of testings 4. Discuss ISO 9000 Quality Standards in detail.	24D41A7247 to 24D41A7251	CO4 CO5 CO5 CO6 CO6	2 4 2 4 2

	5.. Explain Statistical Software Quality Assurance			
11.	1. a)Explain usecase modeling with an example ?purpose of usecase b)What are the use cases? Draw the use cases for library system. 2. Describe the following terms with respective validation testing (a) Validation test criteria (b) configuration review (c) Alpha & Beta Testing. 3. Define “Software Testing”. Give few generic characteristics of it. 4. Explain the process of risk identification. 5. Explain the reactive and proactive risk strategies.	24D41A7252 to 24D41A7256	CO4 CO5 CO5 CO6 CO6	2 2 1 2 4
12.	1. Explain Basic Structural Modeling 2. Explain in detail about Software Measurement? 3. Describe test strategies for conventional software? 4. Discuss any four useful indicators for software quality. 5. Explain Statistical Software Quality Assurance	24D41A7257 to 24D41A7261	CO4 CO5 CO5 CO6 CO6	2 4 6 4 2
13.	1. Explain Conceptual Model of UML in detail. 2. Discuss an overview of quality metrics? 3. Explain Debugging Strategies in brief 4. Explain about Quality concepts? 5. Elaborate the concepts of Risk management Reactive vs Proactive Risk strategies	24D41A7262 to 25D45A7203	CO4 CO5 CO5 CO6 CO6	4 2 2 4 5
14.	1. Write a problem statement for Library management system. Draw the UML Use Case, Activity diagram, Class diagram, Sequence diagram, State Chart diagram,Component diagram 2.a) Discuss Metrics for Software Quality in detail b) Why test strategies are needed for Conventional Software? 3. Describe the following terms with respective validation testing (a) Validation test criteria (b) configuration review (c) Alpha & Beta Testing. 4. Explain in detail RMMM 5. Write important points on the following a)Formal Technical Reviews. b)Software reviews	25D45A7204 to 25D45A7205	CO4 CO5 CO5 CO6 CO6	6 2 2 4 6



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Assignment Questions

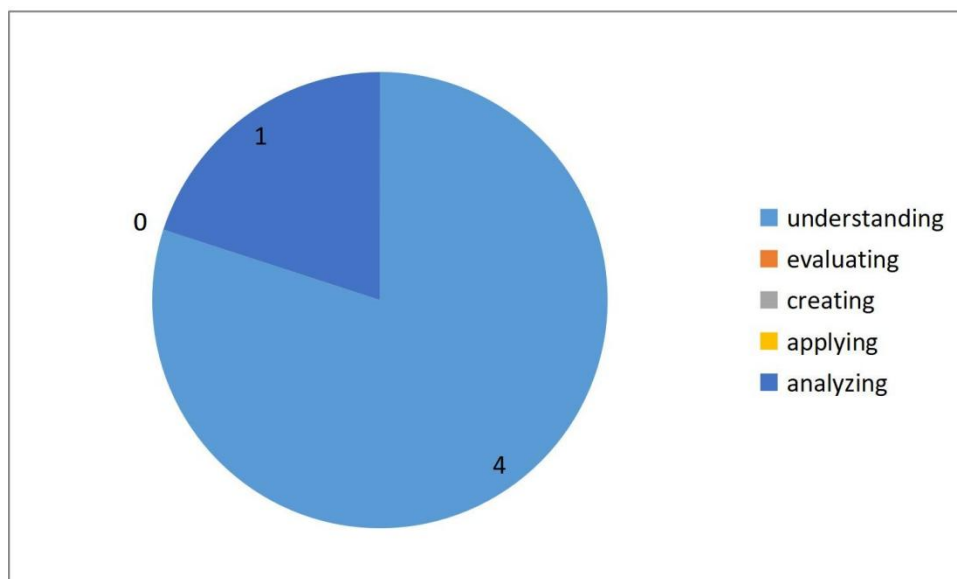
Assignment — Mid - I

1. Explain software myths?
2. Explain about Capability Maturity Model Integration.
3. Give the differentiate between functional and non-functional requirements.
4. Explain in detail object model.
5. Explain design concepts in detail.

CO & BT for Assignment- Mid- I

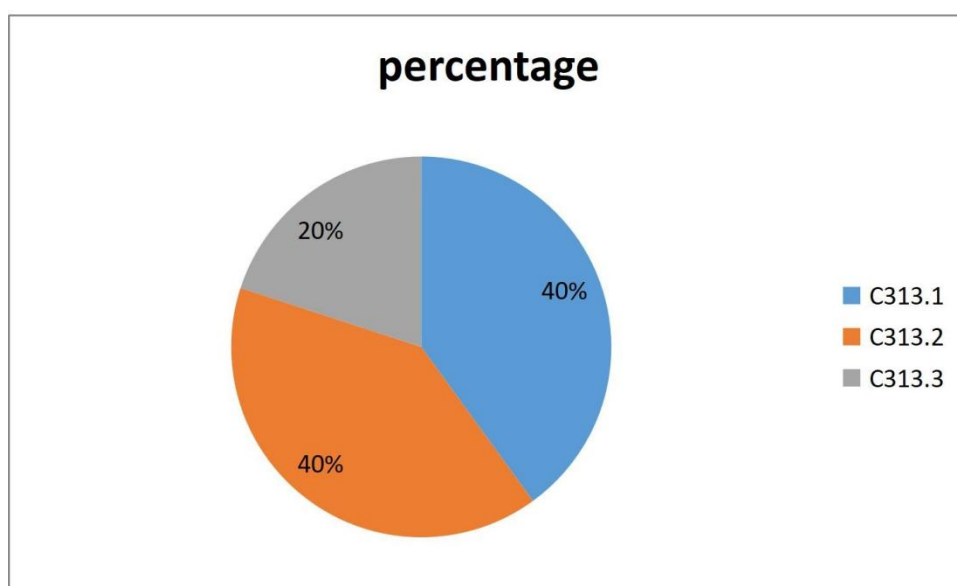
Question no.	Marks	Percentage (%)	Course outcome mapping	Bloom's Taxonomy level mapping
1	1	20	C314.1	Understanding
2	1	20	C314.1	Understanding
3	1	20	C314.2	analyzing
4	1	20	C314.2	Understanding
5	1	20	C314.3	Understanding

Understanding: 4M (80%); Analyzing: 1M(20%);



UNIT WISE MARKS GIVEN IN ASSIGNMENT FOR MID-I EXAM

Course outcomes	Max.marks	percentage
C313.1	2M	40%
C313.2	2M	40%
C313.3	1M	20%





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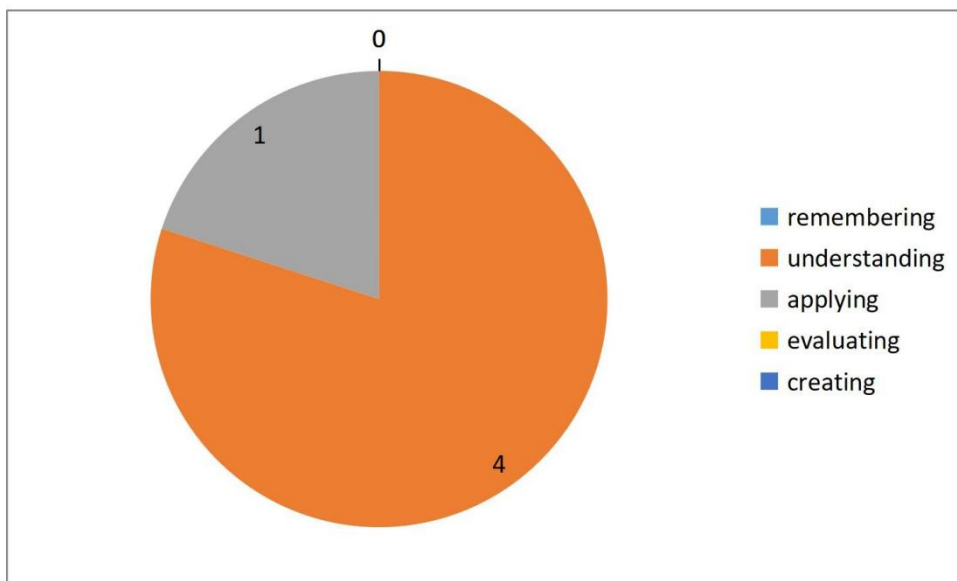
Assignment — Mid – II

1. What are the commonly used architectural styles ? Explain any one of them in detail.
2. Describe various types of testing's .
3. Discuss the MOOD metric suit .
4. Discuss about Reactive vs Proactive Risk strategies
5. Write short notes on a) Quality b) Quality control c) Review guidelines

CO & BT for Assignment- Mid-II

Question no.	Marks	Percentage (%)	Course outcome mapping	Bloom's Taxonomy level mapping
1	1	20	C313.3	K2- Understanding
2	1	20	C313.4	K2- Understanding
3	1	20	C313.4	K2- Understanding
4	1	20	C313.5	K2- Understanding
5	1	20	C313.5	K3- Applying

Understanding: 4M (80%); Applying: 1M (20%)



Course outcomes	Max.marks	percentage
C313.1	1M	20%
C313.4	2M	40%
C313.5	2M	40%

