



# 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

## CSE (AIML) II Year I Semester

DEPARTMENT OF COMPUTER SCIENCE AND  
ENGINEERING (AIML)

ACADEMIC YEAR 2025-2026



# **SRIINDU COLLEGE OF ENGINEERING & TECHNOLOGY**

## **(An Autonomous Institution under UGC, New Delhi)**

(Permanently Affiliated to JNTUH, Approved by AICTE, New Delhi and Accredited by NBA, NAAC)  
Sheriguda Village, Ibrahimpatnam Mandal, Ranga Reddy Dist. – 501 510

## **DEPARTMENT OF COMPUTER SCIENCE ENGINEERING (AIML)**

### **HANDOUT- INDEX**

| <b>S. No</b> | <b>Contents</b>                         |
|--------------|-----------------------------------------|
| 1            | Vision, Mission, PEOs, POs, PSOs & Cos  |
| 2            | Institution Academic Calendar           |
| 3            | Department Academic Calendar            |
| 4            | Subject wise                            |
| i)           | Syllabus Copy                           |
| ii)          | Lesson Plan                             |
| iii)         | Question Bank                           |
| iv)          | End Examination Questions (Model Paper) |
| v)           | Mid-1 & Mid-2 Questions (Model Paper)   |



# **SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY**

## **(An Autonomous Institution under UGC, New Delhi)**

**(Permanently Affiliated to JNTUH, Approved by AICTE, New Delhi and Accredited by NBA, NAAC)**

**Sheriguda Village, Ibrahimpatnam Mandal, Ranga Reddy Dist. – 501 510**

### **DEPARTMENT VISION**

To develop competent engineers in the domain of Artificial Intelligence & Machine Learning for note worthy 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 AIML to successfully complete Software related projects to meet customer business objectives and/or productively engage in research.

### Program Outcomes(POs)

|             |                                                                                                                                                                                                                                                                                                    |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>PO1</b>  | <b>Engineering Knowledge:</b> Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.                                                                                                            |
| <b>PO2</b>  | <b>Problem Analysis:</b> Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.                                                           |
| <b>PO3</b>  | <b>Design / Development of Solutions:</b> 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. |
| <b>PO4</b>  | <b>Conduct investigations of complex problems:</b> 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.                                                          |
| <b>PO5</b>  | <b>Engineering Tool Usage:</b> 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)                                                 |
| <b>PO6</b>  | <b>The Engineer and The World:</b> 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)..                  |
| <b>PO7</b>  | <b>Ethics:</b> Apply ethical principles and commit to professional ethics, human values, diversity and inclusion; adhere to national & international laws. (WK9).                                                                                                                                  |
| <b>PO8</b>  | <b>Individual and Collaborative Team work:</b> Function effectively as an individual, and as a member or leader in diverse/multi-disciplinary teams.                                                                                                                                               |
| <b>PO9</b>  | <b>Communication:</b> 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  |
| <b>PO10</b> | <b>Project Management and Finance:</b> 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.                      |
| <b>PO11</b> | <b>Life-Long Learning:</b> 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)

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

## Program Specific Outcomes(PSO's)

|             |                                                                                                              |
|-------------|--------------------------------------------------------------------------------------------------------------|
| <b>PSO1</b> | Register mathematical methodology to crack problems using suitable data structures.                          |
| <b>PSO2</b> | Competence to design and develop software for web based and mobiles androids under real world environment.   |
| <b>PSO3</b> | 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-I SEM.

**Course Name** : SOFTWARE ENGINEERING

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

|               |                                                                              |
|---------------|------------------------------------------------------------------------------|
| <b>C223.1</b> | Define the key software engineering tasks and software engineering process.  |
| <b>C223.2</b> | Explain requirement engineering process and design concepts.                 |
| <b>C223.3</b> | Describe object oriented design process and design evolution.                |
| <b>C223.4</b> | Explain strategic approach to software testing.                              |
| <b>C223.5</b> | Explain risk strategies and refinement and quality concepts                  |
| <b>C223.6</b> | 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          | -    |
| <b>C223</b>    | <b>3</b> | <b>1.5</b> | <b>1.8</b> | <b>1.3</b> | <b>1</b> | -   | -   | -   | -   | -    | -    | <b>1.3</b> | <b>3</b> | <b>2.7</b> | -    |



**Lr.No.SICET/AUTO/DAE/II<sup>o</sup> 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 – II<sup>nd</sup> Year Students (2024 - 25 Batch), BR-22 Regulation.**

**I – Semester**

| S.No.                                                                    | EVENT                                                                          | PERIOD                     | DURATION |
|--------------------------------------------------------------------------|--------------------------------------------------------------------------------|----------------------------|----------|
| 1.                                                                       | Commencement of class work.                                                    | <b>01.08.2025 (Monday)</b> |          |
| 2.                                                                       | 1 <sup>st</sup> 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 <sup>nd</sup> 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  |
| <b>Commencement of Class-Work for II B.Tech - II Semester 19.01.2026</b> |                                                                                |                            |          |

**Note: No of Working/instructional days : 92**

**II – Semester**

| S.No. | EVENT                                                                          | PERIOD                     | DURATION |
|-------|--------------------------------------------------------------------------------|----------------------------|----------|
| 1.    | Commencement of class work.                                                    | <b>19.01.2026 (Monday)</b> |          |
| 2.    | 1 <sup>st</sup> 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 <sup>nd</sup> Spell of Instructions for Remaining Two and a half Units.      | 20.03.2026 – 09.05.2026    | 7 Weeks  |
| 6.    | Continuation of remaining 2 <sup>nd</sup> Spell of Instructions                | 25.05.2026 – 10.06.2026    | 2 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**  
Sri Indu College of Engineering & Technology  
(An Autonomous Institution Under UGC)  
Sheriguda (V), Ibrahimpatnam, R.R. Dist-501510

**DIRECTOR**  
Sri Indu College of Engineering & Technology  
(An Autonomous Institution Under UGC)  
Sheriguda (V), Ibrahimpatnam, R.R. Dist-501510

**PRINCIPAL**  
Sri Indu College of Engineering & Technology  
(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)

|           |    |                                               |                                   |    |                                                 |    |                                                         |    |                      |                |                                                                          |                        |                        |
|-----------|----|-----------------------------------------------|-----------------------------------|----|-------------------------------------------------|----|---------------------------------------------------------|----|----------------------|----------------|--------------------------------------------------------------------------|------------------------|------------------------|
| TUESDAY   | 1  | DEPARTMENT MEETING FOR IV-I & III-I 2025-2026 |                                   | 2  | IV-I MID I EXAMS                                |    | OCTOBER                                                 |    | 2                    | IV-I END EXAMS |                                                                          |                        |                        |
| WEDNESDAY | 2  |                                               |                                   | 3  | IV-I MID I EXAMS                                | 1  | III-I CRT CLASSESS                                      |    | 3                    | IV-I END EXAMS |                                                                          | JANUARY                |                        |
| THURSDAY  | 3  |                                               | AUGUST                            | 4  | IV-I SPELL 2 CLASSES                            | 2  | GANDHI JAYANTI & DASHA RA                               |    | 4                    | IV-I END EXAMS | 1                                                                        | II-I & III-I END EXAMS |                        |
| FRIDAY    | 4  |                                               | II-I SPELL I CLASSES COMMENCEMENT | 5  |                                                 | 3  | III-I CRT CLASSESS                                      |    | 5                    | IV-I END EXAMS | 2                                                                        | II-I & III-I END EXAMS |                        |
| SATURDAY  | 5  |                                               | DEPARTMENT MEETING                | 6  |                                                 | 4  | III-I CRT CLASSESS                                      | 1  | WOKSHOP UNDER AI LUB | 6              | IV-I END EXAMS                                                           | 3                      | II-I & III-I END EXAMS |
| SUNDAY    | 6  |                                               |                                   | 7  |                                                 | 5  |                                                         | 2  |                      | 7              |                                                                          | 4                      |                        |
| MONDAY    | 7  | IV-I SPELL I CLASSES COMMENCEMENT             |                                   | 8  |                                                 | 6  | III-I CRT CLASSESS                                      | 3  |                      | 8              | IV-I END EXAMS                                                           | 5                      | II-I & III-I END EXAMS |
| TUESDAY   | 8  |                                               |                                   | 9  |                                                 | 7  | III-I CRT CLASSESS                                      | 4  |                      | 9              | IV-I END EXAMS                                                           | 6                      | II-I & III-I END EXAMS |
| WEDNESDAY | 9  |                                               |                                   | 10 | IV-I MID I EXAMS SUBMISSION                     | 8  | III-I MID I EXAMS & II-I MID I EXAMS                    | 5  |                      | 10             | IV-I END EXAMS                                                           | 7                      | II-I & III-I END EXAMS |
| THURSDAY  | 10 |                                               |                                   | 11 |                                                 | 9  | III-I MID I EXAMS & II-I MID I EXAMS                    | 6  |                      | 11             | IV-I END EXAMS                                                           | 8                      | II-I & III-I END EXAMS |
| FRIDAY    | 11 |                                               |                                   | 12 | DEPARTMENT MEETING REVIEW ON IV-I SLOW LEARNERS | 10 | III-I MID I EXAMS & II-I MID I EXAMS                    | 7  |                      | 12             | IV-I END EXAMS                                                           | 9                      | II-I & III-I END EXAMS |
| SATURDAY  | 12 | AI CLUB MEETING                               | WOKSHOP UNDER AI LUB              | 13 | AI CLUB MEETING                                 | 11 |                                                         | 8  |                      | 13             | IV-I END EXAMS                                                           | 10                     | II-I & III-I END EXAMS |
| SUNDAY    | 13 |                                               |                                   | 14 |                                                 | 12 |                                                         | 9  |                      | 14             |                                                                          | 11                     |                        |
| MONDAY    | 14 | III-I SPELL I CLASSES COMMENCEMENT            |                                   | 15 | III-I CRT CLASSESS                              | 13 | II-I & III-I SPELL 2 CLASSESS                           | 10 |                      | 15             | II-I & III-I MID II EXAMS                                                | 12                     |                        |
| TUESDAY   | 15 |                                               |                                   | 16 | III-I CRT CLASSESS                              | 14 |                                                         | 11 |                      | 16             | II-I & III-I MID II EXAMS                                                | 13                     |                        |
| WEDNESDAY | 16 |                                               |                                   | 17 | III-I CRT CLASSESS                              | 15 |                                                         | 12 |                      | 17             | II-I & III-I MID II EXAMS                                                | 14                     |                        |
| THURSDAY  | 17 |                                               |                                   | 18 | III-I CRT CLASSESS                              | 16 | II-I & III-I MID I EMARKS SUBMISSION                    | 13 |                      | 18             | II-I & III-I PREPARATION & PRACTICAL EXAMS                               | 15                     |                        |
| FRIDAY    | 18 |                                               | INDEPENDENCE DAY                  | 19 | III-I CRT CLASSESS                              | 17 | DEPARTMENT MEETING REVIEW ON III-I & II-I SLOW LEARNERS | 14 |                      | 19             | II-I & III-I PREPARATION & PRACTICAL EXAMS                               | 16                     |                        |
| SATURDAY  | 19 |                                               |                                   | 20 | III-I CRT CLASSESS                              | 18 | AI CLUB MEETING                                         | 15 |                      | 20             | II-I & III-I PREPARATION & PRACTICAL EXAMS                               | 17                     |                        |
| SUNDAY    | 20 |                                               |                                   | 21 | BATHUKAMMA                                      | 19 |                                                         | 16 |                      | 21             |                                                                          | 18                     |                        |
| MONDAY    | 21 | BONALU HOLIDAY                                |                                   | 22 | III-I CRT CLASSESS                              | 20 | DIWALI                                                  | 17 |                      | 22             | II-I & III-I PREPARATION & PRACTICAL EXAMS                               | 19                     |                        |
| TUESDAY   | 22 |                                               |                                   | 23 | III-I CRT CLASSESS                              | 21 |                                                         | 18 |                      | 23             | II-I & III-I MID II MARKS SUBMISSION III-I PREPARATION & PRACTICAL EXAMS | 20                     |                        |

|           |    |  |  |    |                    |    |  |    |                   |    |                                      |    |  |
|-----------|----|--|--|----|--------------------|----|--|----|-------------------|----|--------------------------------------|----|--|
| WEDNESDAY | 23 |  |  | 24 | III-I CRT CLASSESS | 22 |  | 19 | IV-I MID II EXAMS | 24 | II-I & III-I PREPARATION & PRACTICAL | 21 |  |
|-----------|----|--|--|----|--------------------|----|--|----|-------------------|----|--------------------------------------|----|--|

|           |    |                                        |    |                 |    |                       |    |                    |    |                                    |    |                                            |    |  |
|-----------|----|----------------------------------------|----|-----------------|----|-----------------------|----|--------------------|----|------------------------------------|----|--------------------------------------------|----|--|
| AY        |    |                                        |    |                 |    |                       |    |                    |    |                                    |    | EXAMS                                      |    |  |
| THURSDAY  | 24 |                                        | 21 |                 | 25 | III-I CRT CLASSESS    | 23 |                    | 20 | IV-I MID II EXAMS                  | 25 | CHRISTMAS DAY                              | 22 |  |
| FRIDAY    | 25 |                                        | 22 |                 | 26 | III-I CRT CLASSESS    | 24 |                    | 21 | IV-I MID II EXAMS                  | 26 | II-I & III-I PREPARATION & PRACTICAL EXAMS | 23 |  |
| SATURDAY  | 26 |                                        | 23 |                 | 27 | GANESH CHATURTHI      | 25 | DEPARTMENT MEETING | 22 | AI CLUB MEETING                    | 27 | II-I & III-I PREPARATION & PRACTICAL EXAMS | 24 |  |
| SUNDAY    | 27 |                                        | 24 |                 | 28 |                       | 26 |                    | 23 |                                    | 28 |                                            | 25 |  |
| MONDAY    | 28 | DEPARTMENT MEETING FOR II YR 2025-2026 | 25 |                 | 29 | III-I CRT CLASSESS    | 27 |                    | 24 | IV-I PREPARATION & PRACTICAL EXAMS | 29 | II-I & III-I END EXAMS                     | 26 |  |
| TUESDAY   | 29 |                                        | 26 |                 | 30 | III-I CRT CLASSESS    | 28 |                    | 25 | IV-I PREPARATION & PRACTICAL EXAMS | 30 | II-I & III-I END EXAMS                     | 27 |  |
| WEDNESDAY | 30 |                                        | 27 |                 |    |                       | 29 |                    | 26 | IV-I PREPARATION & PRACTICAL EXAMS | 31 | II-I & III-I END EXAMS                     | 28 |  |
| THURSDAY  | 31 |                                        | 28 |                 |    |                       | 30 |                    | 27 | IV-I PREPARATION & PRACTICAL EXAMS |    |                                            | 29 |  |
| FRIDAY    |    |                                        | 29 |                 |    |                       | 31 |                    | 28 | IV-I PREPARATION & PRACTICAL EXAMS |    |                                            | 30 |  |
| SATURDAY  |    |                                        | 30 | AI CLUB MEETING |    | WOKSHOP UNDER AI CLUB |    |                    | 29 | IV-I PREPARATION & PRACTICAL EXAMS |    |                                            | 31 |  |
| SUNDAY    |    |                                        | 31 |                 |    |                       |    |                    | 30 |                                    |    |                                            |    |  |

CALENDAR INCHARGE

HOD/AIML

PRINCIPAL

# **SOFTWARE ENGINEERING**

## **SYLLABUS**

## SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY

(An Autonomous Institution under UGC, New Delhi)

B.Tech. - II Year – I 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.

**Prepared  
on  
2025**

**R22CSE2215 – Software Engineering**

|                          |             |
|--------------------------|-------------|
| <b>Year/Sem./Section</b> | <b>II/I</b> |
|--------------------------|-------------|

**VASUDEVA CHARY. SRIRAMADASU**  
**Assistant. Professor**

| Unit/<br>Item<br>No. | Topic (s)                                                                     | Book<br>Reference                       | Page<br>(s) |    | Teaching<br>Methodology | Proposed<br>No. of<br>Periods | Actual<br>Date of<br>Handled | CO/RBT |
|----------------------|-------------------------------------------------------------------------------|-----------------------------------------|-------------|----|-------------------------|-------------------------------|------------------------------|--------|
|                      |                                                                               |                                         | From        | To |                         |                               |                              |        |
| <b>UNIT-I</b>        |                                                                               |                                         |             |    | <b>8</b>                |                               |                              |        |
| 1.1                  | Introduction to software engineering:<br>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                  | <b>A Generic view of process :</b> 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                  | <b>Process models :</b> 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 |
|                      | <b>Review</b>                                                                 | <b>Signature of the HOD/Coordinator</b> |             |    |                         |                               |                              |        |

|                                                                                  |                                                                   |             |  |                                 |
|----------------------------------------------------------------------------------|-------------------------------------------------------------------|-------------|--|---------------------------------|
|  | <b>SRI INDU COLLEGE OF ENGINEERING &amp; TECHNOLOGY</b>           |             |  | <b>Prepared<br/>on<br/>2025</b> |
|                                                                                  | <b>LESSON PLAN</b>                                                |             |  |                                 |
|                                                                                  | <b>(Regulation :R22)</b>                                          |             |  |                                 |
|                                                                                  | <b>Department of AIML</b>                                         |             |  |                                 |
| <b>Sub. Code &amp; Title</b>                                                     | <b>R22CSE2215 – Software Engineering</b>                          |             |  |                                 |
| <b>Academic Year :2025-26</b>                                                    | <b>Year/Sem./Section</b>                                          | <b>II/I</b> |  |                                 |
| <b>Faculty Name &amp; Designation</b>                                            | <b>VASUDEVA CHARY. SRIRAMADASU</b><br><b>Assistant. Professor</b> |             |  |                                 |

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

|                                                                                  |                                                                                                                                        |  |                                          |                                                                  |  |             |                         |  |  |
|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|--|------------------------------------------|------------------------------------------------------------------|--|-------------|-------------------------|--|--|
|  | <b>SRI INDU COLLEGE OF ENGINEERING &amp; TECHNOLOGY</b><br><b>LESSON PLAN</b><br><b>(Regulation :R22)</b><br><b>Department of AIML</b> |  |                                          |                                                                  |  |             | <b>Prepared on 2025</b> |  |  |
|                                                                                  | <b>Sub. Code &amp; Title</b>                                                                                                           |  | <b>R22CSE2215 – Software Engineering</b> |                                                                  |  |             |                         |  |  |
|                                                                                  | <b>Academic Year: 2025-26</b>                                                                                                          |  |                                          | <b>Year/Sem./Section</b>                                         |  | <b>II/I</b> |                         |  |  |
|                                                                                  | <b>Faculty Name &amp; Designation</b>                                                                                                  |  |                                          | <b>VASUDEVA CHARY. SRIRAMDASU</b><br><b>Assistant. Professor</b> |  |             |                         |  |  |

| Unit/<br>Item<br>No.                                         | Topic (s)                                                                   | Book<br>Reference                       | Page<br>(s) |     | Teaching<br>Methodology | Proposed<br>No. of<br>Periods | Actual<br>Date of<br>Handled | CO/RBT |
|--------------------------------------------------------------|-----------------------------------------------------------------------------|-----------------------------------------|-------------|-----|-------------------------|-------------------------------|------------------------------|--------|
|                                                              |                                                                             |                                         | From        | To  |                         |                               |                              |        |
| <b>UNIT-III</b> <span style="float: right;"><b>15</b></span> |                                                                             |                                         |             |     |                         |                               |                              |        |
| 3.1                                                          | <b>Design Engineering</b> : 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                                                          | <b>Creating an architectural design</b> :<br>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 |
|                                                              | <b>Review</b>                                                               | <b>Signature of the HOD/Coordinator</b> |             |     |                         |                               |                              |        |

**Prepared  
on  
2025**

## R22CSE2215 – Software Engineering

|                          |             |
|--------------------------|-------------|
| <b>Year/Sem./Section</b> | <b>II/I</b> |
|--------------------------|-------------|

**VASUDEVA CHARY. SRIRAMADASU**  
**Assistant. Professor**

| Unit/<br>Item<br>No. | Topic (s)                                                               | Book<br>Reference                       | Page<br>(s) |     | Teaching<br>Methodology | Proposed<br>No. of<br>Periods | Actual<br>Date of<br>Handled | CO/RBT |
|----------------------|-------------------------------------------------------------------------|-----------------------------------------|-------------|-----|-------------------------|-------------------------------|------------------------------|--------|
|                      |                                                                         |                                         | From        | To  |                         |                               |                              |        |
| <b>UNIT-IV</b>       |                                                                         |                                         |             |     | <b>10</b>               |                               |                              |        |
| 4.1                  | <b>Testing Strategies :</b><br>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                  | <b>Metrics for Process and Products :</b><br>Software Measurement       | T1                                      | 530         | 532 | Black board             | 01                            |                              | CO5/L2 |
| 4.6                  | Metrics for software quality                                            | W6                                      |             |     | Presentation            | 01                            |                              | CO5/L4 |
|                      | <b>Review</b>                                                           | <b>Signature of the HOD/Coordinator</b> |             |     |                         |                               |                              |        |

**Prepared  
On  
2025**

**R22CSE2215 – Software Engineering**

|                          |             |
|--------------------------|-------------|
| <b>Year/Sem./Section</b> | <b>II/I</b> |
|--------------------------|-------------|

**VASUDEVA CHARY. SRIRAMADASU**  
**Assistant. Professor**

| Unit/<br>Item<br>No. | Topic (s)                                                          | Book<br>Reference                       | Page<br>(s) |     | Teaching<br>Methodology | Proposed<br>No. of<br>Periods | Actual<br>Date of<br>Handled | CO/RBT |
|----------------------|--------------------------------------------------------------------|-----------------------------------------|-------------|-----|-------------------------|-------------------------------|------------------------------|--------|
|                      |                                                                    |                                         | From        | To  |                         |                               |                              |        |
| <b>UNIT-V</b>        |                                                                    |                                         |             |     |                         |                               |                              |        |
| <b>10</b>            |                                                                    |                                         |             |     |                         |                               |                              |        |
| 5.1                  | <b>Risk management :</b><br>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                  | <b>Quality Management :</b><br>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 |
|                      | <b>Review</b>                                                      | <b>Signature of the HOD/Coordinator</b> |             |     |                         |                               |                              |        |

## **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](http://www.tutorialspoint.com/software_testing_dictionary/software_requirement_specification.htm)

W3: [https://elsmar.com/pdf\\_files/cmmi-overview05.pdf](https://elsmar.com/pdf_files/cmmi-overview05.pdf)

W4: [www.tutorialspoint.com/uml/uml\\_basic\\_notations.html](http://www.tutorialspoint.com/uml/uml_basic_notations.html)

|                                                                                  |                                                        |                                 |      |                        |
|----------------------------------------------------------------------------------|--------------------------------------------------------|---------------------------------|------|------------------------|
|  | SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY           |                                 |      | Prepared<br>on<br>2025 |
|                                                                                  | LESSON PLAN<br>(Regulation :R22)<br>Department of AIML |                                 |      |                        |
|                                                                                  | Sub. Code & Title                                      | R22csE2215 SOFTWARE ENGINEERING |      |                        |
|                                                                                  | Academic Year: 2025-26                                 | Year/Sem./Section               | II/I |                        |
| Faculty Name & Designation                                                       | VASUDEVA CHARY. SRIRAMADASU<br>Assistant. Professor    |                                 |      |                        |

### UNIT-1 : Introduction To Software Engineering

|      | Multiple choice Questions                                                                                                                                                                                                                                                                                                 | BT Level | Course Outcome |
|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------------|
| 1C-1 | Software is defined as _____<br>a) set of programs, documentation & configuration of data<br>b) set of programs<br>c) documentation and configuration of data<br>d) None of the mentioned                                                                                                                                 | L4       | CO1            |
| 1C-2 | Which <b>of</b> the following is not the characteristic of a software?<br>a). Software does not wear out<br>b). Software is not manufactured<br>c). Software is always correct<br>d). Software is flexible                                                                                                                | L1       | CO1            |
| 1C-3 | Which one of the following models is not suitable for accommodating any change?<br>a) Build & Fix Model<br>b) Prototyping Model<br>c) RAD Model<br>d) Waterfall Model                                                                                                                                                     | L1       | CO1            |
| 1C-4 | Select the incorrect statement: "Software engineers should<br>a) not knowingly accept work that is outside your competence."<br>b) not use your technical skills to misuse other people's computers."<br>c) be dependent on their colleagues."<br>d) maintain integrity and independence in their professional judgment." | L2       | CO1            |
| 1C-5 | Select the option that suits the Manifesto for Agile Software Development<br>a) Individuals and interactions<br>b) Working software<br>c) Customer collaboration<br>d) All of the mentioned                                                                                                                               | L4       | CO1            |
| 1C-6 | Which of the following is not a phase of CMMI?<br>a) Initial<br>b) Quantitatively managed<br>c) Integrated<br>d) Defined                                                                                                                                                                                                  | L1       | CO1            |

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

|                           |                                                                                                                                                                                |    |     |
|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|-----|
|                           | b) Accessibility<br>c) Modularity<br>d) All of the above                                                                                                                       |    |     |
| 1C-17                     | Agile Software Development is based on<br>a) Incremental Development<br>b) Iterative Development<br>c) Linear Development<br>d) Both Incremental and Iterative Development     | L1 | CO1 |
| 1C-18                     | 12. Attributes of good software is _____<br>a) Development<br>b) Maintainability & functionality<br>c) Functionality<br>d) Maintainability                                     | L1 | CO1 |
| 1C-19                     | What are the features of Software Code?<br>a) Simplicity<br>b) Accessibility<br>c) Modularity<br>d) All of the above                                                           | L5 | CO1 |
| 1C-20                     | What is Software Engineering?<br>a) Designing a software<br>b) Testing a software<br>c) Application of engineering principles to the design a software<br>d) None of the above | L6 | CO1 |
| <b>Fill in the blanks</b> |                                                                                                                                                                                |    |     |
| 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 analaysis                                       | 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       |
| <p style="text-align: center;"><b>Match the following</b></p> |                                                                                                                                  |                                                                                                                                                                          |           |
| 1M-1                                                          | a)System software<br>b)Application software<br>c) Embedded software<br>d)Scientific /Engineering software                        | i) c, java<br>ii) Gps Devices<br>iii)Compiler Aided design<br>iv)Operating system                                                                                        | L1<br>CO1 |
| 1M -2                                                         | a)Waterfall<br>b) Spiral/Iterative system<br>c) Agile<br>d) Scrum                                                                | i)Continuous collaboration & improvement<br>ii)Inflexible Partitioning of the project into<br><br>iii)Framework for agile development<br>iv)Explicit Recognition of risk | L1<br>CO1 |
| 1M -3                                                         | a)Level 1<br>b)Level 2<br>c)Level 3<br>d)Level 4<br>e)Level 5                                                                    | i)Work is quantitatively<br>ii)Work is based upon continuous improvement<br>iii)Work is performed informally<br>iv)Work is planned and Tracked<br>v)Work is well defined | L1<br>CO1 |
| 1M -4                                                         | a)Quality focus<br>b)Process<br>c)Tools<br>d)Method                                                                              | i)Technical Question<br>ii)Supports automated & semi automated<br>iii)Bedrock support<br>iv)Foundation layer                                                             | L1<br>CO1 |
| 1M -5                                                         | a)Planning & Analysis<br>b)Define Requirements<br>c)Testing<br>d)Designing<br>e)Developing                                       | i)Implementation of design<br>ii)Unit, Integration process<br>iii)Identification of the risks<br>iv)Defines architectural modules of the product<br>v)SRS document       | L1<br>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 types of software available                                                                | L1 | CO1 |
| 1D-11               | A. Explain software myths?<br>B. Explain the 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 Chateristics 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<br>on<br>2025 |
|                                                                                  | LESSON PLAN<br>(Regulation :R22)<br>Department of AIML |                                  |      |                        |
|                                                                                  | Sub. Code & Title                                      | R22csE2215- SOFTWARE ENGINEERING |      |                        |
|                                                                                  | Academic Year: 2025-26                                 | Year/Sem./Section                | II/I |                        |
| Faculty Name & Designation                                                       | VASUDEVA CHARY. SRIRAMADASU<br>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?<br>a) elicitation<br>b) design<br>c) analysis<br>d) documentation                                                                                                        | L1 | CO2 |
| 2C-2                                                               | The user system requirements are the parts of which document ?<br>a) SDD<br>b) SRS<br>c) DDD<br>d) SRD                                                                                                                                        | L1 | CO2 |
| 2C-3                                                               | Which one of the following is a requirement that fits in a developer's module ?<br>a) Availability<br>b) Testability<br>c) Usability<br>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 ?<br>a) Functional<br>b) Non-Functional<br>c) Known Requirement<br>d) None of the mentioned | L1 | CO2 |
| 2C-5                                                               | What is the first step of requirement elicitation ?<br>a) Identifying Stakeholder<br>b) Listing out Requirements<br>c) Requirements Gathering<br>d) All of the mentioned                                                                      | L1 | CO2 |
| 2C-6                                                               | _____ and _____ are the two viewpoints discussed in Controlled Requirements Expression (CORE).<br>a) Functional, Non-Functional<br>b) User, Developer                                                                                         | L2 | CO2 |

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

|       |                                                                                                                                                                                                                                                                                                                                                                                                                   |    |     |
|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|-----|
| 2C-14 | Which of these are true for non functional requirements?<br>a) A non-functional requirement is also called behavioral requirements<br>b) A non-functional requirement is a statement that a software product must have certain properties<br>c) It consists of Development and operational requirements<br>d) All of the mentioned                                                                                | L2 | CO2 |
| 2C-15 | SRS consists of?<br>a) Problem statement<br>b) Product design<br>c) Problem statement & Product design<br>d) None of the mentioned                                                                                                                                                                                                                                                                                | L1 | CO2 |
| 2C-16 | Which one of the following is a functional requirement ?<br>a) Maintainability<br>b) Portability<br>c) Robustness<br>d) None of the mentioned                                                                                                                                                                                                                                                                     | L2 | CO2 |
| 2C-17 | Requirements analysis is critical to the success of a development project.<br>a) True<br>b) False                                                                                                                                                                                                                                                                                                                 | L1 | CO2 |
| 2C-18 | The SRS is said to be <i>consistent</i> if and only if<br>a) its structure and style are such that any changes to the requirements can be made easily while retaining the style and structure<br>b) every requirement stated therein is one that the software shall meet<br>c) every requirement stated therein is verifiable<br>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 ?<br>a) User and Developer<br>b) Functional and Non-functional<br>c) Enduring and Volatile<br>d) All of the mentioned                                                                                                                                                                                                        | L5 | CO2 |
| 2C-20 | Requirements should specify 'what' but not 'how'.<br>a) True<br>b) False                                                                                                                                                                                                                                                                                                                                          | L2 | CO2 |
| 2C-21 | Arrange the tasks involved in requirements elicitation in an appropriate manner.<br>i. Consolidation<br>ii. Prioritization<br>iii. Requirements Gathering<br>iv. Evaluation                                                                                                                                                                                                                                       | L1 | CO2 |
| 2C-22 | Validation mechanism is a,<br>a) Technical review<br>b) Design overview<br>c) Testing mechanism<br>d) None of the mentioned above                                                                                                                                                                                                                                                                                 | L3 | CO2 |
|       |                                                                                                                                                                                                                                                                                                                                                                                                                   |    |     |

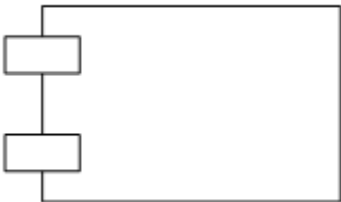
| Fill in the blanks  |                                                                                                                                       |                                                                                                                                                                                |     |     |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-----|
| 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<br>b)Requirement Elicitation throughout the<br>c)Requirements Analysis &<br>d)Requirement Management     | i)Documenting the Requirements<br>ii)Managing the requirements<br>SDLC<br>iii)Gathering information about needs<br>expectations of stake holders<br>iv)Scrutinize the gathered | L1  | CO2 |

|                           |                                                                                                                                                                                                                                                                                                                                                                                                                     |    |         |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|---------|
|                           | <p>requirements to</p> <p>make consistent &amp; unambiguous</p> <p>requirements</p>                                                                                                                                                                                                                                                                                                                                 |    |         |
| 2M-2                      | <p>a)User Requirements i) describes what the software will do and how it will be expected to perform</p> <p>b)System Requirements ii)system operate with other system</p> <p>c)Interface Specification iii)specify the technical characteristics of the software system</p> <p>d)Software specification iv) describe what the end-user wants from the software system</p>                                           | L1 | CO2     |
| 2M-3                      | <p>a)Requirements review i) checking expected and actual outputs</p> <p>b)Test case generation ii) Checking whether the requirements will be done in real world</p> <p>c)Consistency check iii) To check any constraints in the requirements</p> <p>d)Realism check iv)Group of people discussing about requirements</p>                                                                                            | L1 | CO2     |
| 2M-4                      | <p>Users of requirement document</p> <p>a)Managers i)use the requirement to understand what system is to be developed</p> <p>b)system test engineers ii)specify the requirements and specify changes to the requirements</p> <p>c)system engineers iii)use the requirements document to plan a bid for the system</p> <p>d)system customers iv)use the requirement to understand what system is to be developed</p> | L1 | CO2     |
| 2M-5                      | <p>a)Product complexity i)software requirements definition</p> <p>b)Structured system analysis ii)software design</p> <p>c)Coupling and Cohesion iii)Validation Technique</p> <p>d)Symbolic Execution iv)Software cost estimation</p>                                                                                                                                                                               | L1 | CO2     |
| <b>5- MARKS QUESTIONS</b> |                                                                                                                                                                                                                                                                                                                                                                                                                     |    |         |
| 2D-1                      | What are functional and Nonfunctional requirements of software? Discuss in detail.                                                                                                                                                                                                                                                                                                                                  |    | CO<br>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<br>2 |
| 2D-4  | Elaborate on software requirements document.                                                                                               |    | CO<br>2 |
| 2D-5  | Elaborate on requirements management.                                                                                                      | L6 | CO<br>2 |
| 2D-6  | Elaborate on requirements elicitation and analysis process.<br>OR<br>Explain the requirements analysis techniques.                         |    | CO2     |
| 2D-7  | What is feasibility study? Describe the feasibility study process.<br>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<br>2 |
| 2D-9  | Define software requirements document. Explain the structure of it in detail.                                                              |    | CO<br>2 |
| 2D-10 | Explain the requirements analysis techniques.                                                                                              |    | CO<br>2 |
| 2D-11 | Explain in detail on interface specification.                                                                                              |    | CO5     |
| 2D-12 | Does Requirements Validation have an important role in Requirements Engineering Process?<br>Explain in detail.                             |    | CO<br>2 |
| 2D-13 | Discuss in detail the system requirements along with the notations for requirements specifications with suitable examples                  |    | CO<br>2 |
| 2D-14 | Explain Software requirement document and explain along with its contents                                                                  |    | CO<br>2 |
| 2D-15 | Explain viewpoints and types of viewpoints?<br>or<br>Requirements discovery (or) Elicitation approaches: interviewing, usecases, scenarios |    |         |

|                                                                                   |                                                                                                                                                                                                                                                                                                                            |                                                     |      |  |    |     |
|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|------|--|----|-----|
|  | SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY<br>LESSON PLAN<br>(Regulation :R22)<br>Department of AIML                                                                                                                                                                                                                     |                                                     |      |  |    |     |
|                                                                                   | Sub. Code & Title                                                                                                                                                                                                                                                                                                          | R22csE2215 SOFTWARE ENGINEERING                     |      |  |    |     |
|                                                                                   | Academic Year: 2025-26                                                                                                                                                                                                                                                                                                     | Year/Sem./Section                                   | II/I |  |    |     |
|                                                                                   | Faculty Name & Designation                                                                                                                                                                                                                                                                                                 | VASUDEVA CHARY. SRIRAMADASU<br>Assistant. Professor |      |  |    |     |
|                                                                                   | Unit-III Design Engineering                                                                                                                                                                                                                                                                                                |                                                     |      |  |    |     |
| 3C-1                                                                              | Which of these are followed in case of software design process?<br>a) Analysis occurs at start of product design with a product idea<br>b) Analysis occurs at the end of engineering design with the SRS<br>c) Product design resolution produces the design document<br>d) Engineering design resolution produces the SRS |                                                     |      |  | L1 | CO3 |
| 3C-2                                                                              | In Design phase, which is the primary area of concern ?<br>a) Architecture<br>b) Data<br>c) Interface<br>d) All of the mentioned                                                                                                                                                                                           |                                                     |      |  | L1 | CO3 |
| 3C-3                                                                              | Actual programming of software code is done during the step in the SDLC.<br>a) Maintenance and Evaluation<br>b) Design<br>c) Analysis<br>d) Development and Documentation                                                                                                                                                  |                                                     |      |  | L1 | CO3 |
| 3C-4                                                                              | Debugging is:<br>a) creating program code<br>b) finding and correcting errors in the program code<br>c) identifying the task to be computerized<br>d) creating the algorithm                                                                                                                                               |                                                     |      |  | L1 | CO3 |
| 3C-5                                                                              | The component-level design transforms structural elements of the software architecture,<br><br>True<br><br>False                                                                                                                                                                                                           |                                                     |      |  | L1 | CO3 |
| 3C-6                                                                              | The primary work product produced during software design is / are<br>a)Architectural design<br>b)Interface design<br>c)Creation of components and deployment<br>d)All of the mentioned above                                                                                                                               |                                                     |      |  | L1 | CO3 |
| 3C-7                                                                              | Which of the following is not included in Architectural design decisions?<br>a) type of application<br>b) distribution of the system<br>c) architectural styles<br>d) testing the system                                                                                                                                   |                                                     |      |  | L1 | CO3 |

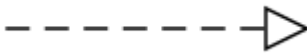
|       |                                                                                                                                                                                                                                                                                                                                                              |    |     |
|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|-----|
| 3C-8  | Data-Flow Architectures is suitable to apply when,<br><br>a) Input data transformed through a series of computational or manipulative components<br><br>b) Input data transformed through recursive process<br><br>c) Input data does not transform through defined process<br><br>d) None of the mentioned above                                            | L2 | CO3 |
| 3C-9  | Which of the following diagram is time oriented?<br>a) Collaboration<br>b) Sequence<br>c) Activity<br>d) None of the mentioned                                                                                                                                                                                                                               | L1 | CO4 |
| 3C-10 | According to components of FURPS+, which of the following does not belong to S?<br>a) Testability<br>b) Speed Efficiency<br>c) Serviceability<br>d) Installability                                                                                                                                                                                           | L1 | CO3 |
| 3C-11 | Which architectural style goal is to achieve Integrability?<br>a) Data Flow Architecture<br>b) Call and Return Architecture<br>c) Data Centered Architectures<br>d) None of the mentioned                                                                                                                                                                    | L1 | CO3 |
| 3C-12 | Which architectural style goal is to achieve Modifiability with Scalability?<br>a) Data Flow Architecture<br>b) Call and Return Architecture<br>c) Virtual Machine Architecture<br>d) None of the mentioned                                                                                                                                                  | L1 | CO3 |
| 3C-13 | What are the notations for the Use case Diagrams?<br>a) Use case<br>b) Actor<br>c) Prototype<br>d) Use case and Actor                                                                                                                                                                                                                                        | L1 | CO4 |
| 3C-14 | What are the different interaction diagram notations does UML have?<br>a) A sequence diagram<br>b) A communication diagram<br>c) An interaction overview diagram<br>d) All of the mentioned                                                                                                                                                                  | L1 | CO4 |
| 3C-15 | According to components of FURPS+, which of the following does not belong to S ?<br>a) Testability<br>b) Speed Efficiency<br>c) Serviceability<br>d) Installability                                                                                                                                                                                          |    |     |
| 3C-16 | What is multiplicity for an association?<br>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<br>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<br>d) None of the mentioned                                                                                                                                      |    |     |
| 3C-17                     | Which of the following is not included in Architectural design decisions?<br>a) type of application<br>b) distribution of the system<br>c) architectural styles<br>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?<br>a) physical<br>b) development<br>c) logical<br>d) process                   | L1 | CO3 |
| 3C-19                     | Which of the following is a type of Architectural Model?<br>a) Static structural model<br>b) Dynamic process model<br>c) Distribution model<br>d) All of the mentioned                   | L1 | CO3 |
| 3C-20                     | 7. Architecture once established can be applied to other products as well.<br>a) True<br>b) False                                                                                        | L2 | CO3 |
| <b>Fill in the blanks</b> |                                                                                                                                                                                          |    |     |
| 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<br>                                            | 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<br>b)Usability                          ii)Mean Time between Failures<br>c)Reliabilty                        iii)capability of program<br>d)Performance                    iv)Userfriendly,consistency,Documentation<br>e)Suppotability                  v)Response time,Processing speed                                                                                                                                                                                    | L1 | CO3 |
| 3M-2 | a)Abstraction module            i)Degree of relationship between elements of the same<br>b)Refactoring                      ii)Process of elaboration<br>c)Cohesion                         iii)Process of changing a software system<br>d)Refinement                      iv)Degree of interdependence between the modules<br>e)Coupling                         v)Background details or unnecessary implementation                                                                                                                                       | L1 | CO3 |
| 3M-3 | Match the following:<br>(a)State Diagram                      (i)Describe how the external entities can interact with the system<br>(b)Use case Diagram                  (ii)Used to describe the static or structural view of a system<br>(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<br>(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 |                                                                                   | L1 | CO4 |
|                   | b)Framework model system                                                                                                            | ii)Used to represent functional hierarchy of the system              |                                                                                   |    |     |
|                   | c)Dynamic model process                                                                                                             | iii)Focuses on design of business or technical process               |                                                                                   |    |     |
|                   | d)Process model                                                                                                                     | iv)Organized collection of program components                        |                                                                                   |    |     |
|                   | e)Funtional model                                                                                                                   | v)Addresses the behavioral aspects of the program architecture       |                                                                                   |    |     |
| 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<br>(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<br>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 |
| <b>Unit-IV: Testing Strategies</b> |                                                                                                                                                                                                                                                                                                                                                                                                |    |     |
| <b>Multiple choice questions</b>   |                                                                                                                                                                                                                                                                                                                                                                                                |    |     |
| 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?<br>(A) Regression testing<br>(B) Usability testing<br>(C) Alpha testing<br>(D) User acceptance testing                                                                                                                                                                                                               |    |     |
| 4C-3                               | Software Debugging is a set of activities that can be planned in advance and conducted systematically.<br>a) True<br>b) False                                                                                                                                                                                                                                                                  | L1 | CO5 |
| 4C-4                               | Which of the following is not a software testing generic characteristics?<br>a) Different testing techniques are appropriate at different points in time<br>b) Testing is conducted by the developer of the software or an independent test group<br>c) Testing and debugging are different activities, but debugging must be accommodated in any testing strategy<br>d) None of the mentioned | L2 | CO5 |
| 4C-5                               | Test cases should uncover errors like<br>a) Nonexistent loop termination<br>b) Comparison of different data types<br>c) Incorrect logical operators or precedence<br>d) All of the mentioned                                                                                                                                                                                                   | L1 | CO5 |
| 4C-6                               | The testing in which code is checked<br>a) Black box testing<br>b) White box testing<br>c) Red box testing<br>d) Green box testing                                                                                                                                                                                                                                                             | L1 | CO5 |
| 4C-7                               | Acceptance testing is also known as<br>a) Grey box testing<br>b) White box testing<br>c) Alpha Testing<br>d) Beta testing                                                                                                                                                                                                                                                                      | L1 | CO5 |
| 4C-8                               | Which of the following is not a direct measure of SE process?<br>a) Efficiency<br>b) Cost                                                                                                                                                                                                                                                                                                      | L5 | CO5 |

|       |                                                                                                                                                                                                                           |    |     |
|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|-----|
|       | c) Effort Applied<br>d) All of the mentioned                                                                                                                                                                              |    |     |
| 4C-9  | A graphical technique for finding if changes and variation in metrics data are meaningful is known as<br>a) DRE (Defect Removal Efficiency)<br>b) Function points analysis<br>c) Control Chart<br>d) All of the mentioned | L1 | CO5 |
| 4C-10 | What do you understand by V&V in software testing?<br>a) Verified Version<br>b) Version Validation<br>c) Verification and Validation<br>d) Version Verification                                                           | L1 | CO5 |
| 4C-11 | Which of the following is black box testing<br>a) Basic path testing<br>b) Boundary value analysis<br>c) Code path analysis<br>d) None of the mentioned                                                                   | L4 | CO5 |
| 4C-12 | Defects removal efficiency (DRE) depends on:<br>a) E – errors found before software delivery<br>b) D – defects found after delivery to user<br>c) Both E and D<br>d) Varies with project                                  | L4 | CO5 |
| 4C-13 | Which of the following is non-functional testing?<br>a) Black box testing<br>b) Performance testing<br>c) Unit testing<br>d) None of the mentioned                                                                        | L5 | CO5 |
| 4C-14 | Test should be conducted for every possible<br>a) data<br>b) case<br>c) variable<br>d) all of the mentioned                                                                                                               | L1 | CO5 |
| 4C-15 | Which of the following does not affect the software quality and organizational performance?<br>a) Market<br>b) Product<br>c) Technology<br>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<br>b)Validation<br>c)White box testing<br>d)Black box testing                                                                             | i) Dynamic testing<br>ii) Static testing<br>iii) Behavioural testing<br>iv) Glass box testing                                                                                                                                                                                                                                                                                                | L1 | CO5 |
| 4M-2  | a)Unit testing a code introduced no new bugs.<br>b)Integration testing software requirements<br>c)System testing modules.<br>d)Regression testing system | i)a type of software testing conducted after update to ensure that the update works as intended and meets the requirements<br>ii) To validate that each unit of the software works as intended and meets the requirements<br>iii)Process of testing the interface between two software units or modules.<br>iv)To evaluate the compliance of the system with the corresponding requirements. | L1 | CO5 |

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

|                                                  |                                                                                                                                                                                                                                                |    |     |
|--------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|-----|
| 4D-1.                                            | a)Compare System Testing and Validation Testing.<br>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<br>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                                            |                                                                                                                                                                                                                                                |    |     |
| <b>Unit-V-Risk management,Quality management</b> |                                                                                                                                                                                                                                                |    |     |
| <b>Multiple choice questions</b>                 |                                                                                                                                                                                                                                                |    |     |
| 5C-1                                             | Which one of the following is not a software process quality?<br>a) Productivity<br>b) Portability<br>c) Timeliness<br>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.”?<br>a) Staff turnover<br>b) Technology change<br>c) Management change<br>d) Product competition | L5 | CO6 |

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

|       |                                                                                                                                                                                                                          |    |     |
|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|-----|
| 5C-11 | Which of the following risks are derived from the software or hardware technologies that are used to develop the system?<br>a) Managerial risks<br>b) Technology risks<br>c) Estimation risks<br>d) Organizational risks | L3 | CO6 |
| 5C-12 | Software process and improvement are assessed by ____?<br>A). ISO 9000<br>B). ISO 9001<br>C). SPICE (ISO/IEC15504)<br>D). Both B and C                                                                                   | L3 | CO6 |
|       | <b>Fill in the blanks</b>                                                                                                                                                                                                |    |     |
| 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 | <p>Match the following:</p> <p>a)project risk produced                      i)Threaten the quality and timeliness of software</p> <p>b)Technical risk                                      ii) Risk can be recovered from careful evaluation</p> <p>c)Business risk resultant                      iii)Threaten the project plan and affect schedule and cost</p> <p>d)known risk                                      iv)Threaten the viability of software to be built</p>                           |    | CO6 |
| 5M-2 | <p>Match the following</p> <p>A)Risk Mitigation loss                      i) process to identify, analyze, evaluate, and treat exposures and monitor risk control</p> <p>B)Risk Monitoring                      ii)Removing causes that are the reason for risk Creation.</p> <p>C)Risk Management activities.                      iii) document that outlines all risk analysis</p> <p>D)RMMM plan                      iv)To ensure proper application of risk aversion steps defined for risk.</p> | L1 | CO6 |
| 5M-3 | <p>ISO Certification</p> <p>a)Application:                      i)ISO certification after the successful completion of all the phases</p> <p>b)Compliance Audit:                      ii) to monitor the organization time by time.</p> <p>c)Registration:                      iii)the registrar checks whether the organization has compiled</p> <p>d)Continued Inspection                      iv)it applies to the registrar for registration.</p>                                                 | L1 | CO6 |
| 5M-4 | <p>a)performance risk software will                      i) the degree of uncertainty that the resultant be easy to correct</p> <p>b)Cost risk meet its                      ii) the degree of uncertainty that the product will requirements</p> <p>c)Support risk schedule will be                      iii) the degree of uncertainty that the project maintained</p> <p>d)Schedule risk will be                      iv) the degree of uncertainty that the project budget maintained.</p>         | L1 | CO6 |

|                          |                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                           |    |     |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|-----|
| 5M-5                     | a)Quality of design<br>b)Quality of conformance<br>c)Quality control<br>d)Quality assurance                                       | i) Series of inspections, reviews, and tests used to ensure conformance<br>ii) set of auditing and reporting functions that assess the effectiveness and completeness<br>iii) Refers to characteristics that designers specify for the end product<br>iv) Degree to which design specifications are followed in manufacturing the product | L1 | CO6 |
|                          |                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                           |    |     |
| <b>5- MARK QUESTIONS</b> |                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                           |    |     |
| 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<br>a. Formal Technical Reviews.<br>b. RMMM Model.                                         |                                                                                                                                                                                                                                                                                                                                           |    | CO6 |
| 5D-8                     | Write notes on the following a) Reactive and Proactive Risk Strategies.<br>b) Software Quality Assurance                          |                                                                                                                                                                                                                                                                                                                                           |    | CO6 |
| 5D-9                     | a)Explain Statistical Software Quality Assurance.<br>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:<br>a) Cost of quality<br>b) Software reviews<br>c) The ISO 9000 quality standards<br>d) Review guidelines. |                                                                                                                                                                                                                                                                                                                                           |    | CO6 |

|                                                                                  |                                                                                           |                                          |       |                                     |
|----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------------------------------------------|-------|-------------------------------------|
|  | SRI INDU COLLEGE OF ENGG & TECH<br>LESSON PLAN<br>(Regulation :R22)<br>Department of AIML |                                          |       | Prepared<br>onRev1:<br>Page: 5 of 6 |
|                                                                                  | Sub. Code & Title                                                                         | R22CSE2215 & SOFTWARE ENGINEERING        |       |                                     |
|                                                                                  | Academic Year: 2025-26                                                                    | Year/Sem                                 | III/I |                                     |
|                                                                                  | Faculty Name & Designation                                                                | VASUDEVA CHARY. SRIRAMADASU, ASST. PROF. |       |                                     |

### **ASSIGNMENT QUESTIONS (MID-I & MID-II)**

#### **ASSIGNMENT-I**

| <b>Batch. No</b> | <b>Assignment Questions</b>                                                                                                                                                                                                                                                                                                                                                   | <b>Register Number</b>         | <b>Course outcome</b>           | <b>Level</b>          |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|---------------------------------|-----------------------|
| 1.               | 1. what is meant by software ? Discuss in detail the evolving role of software.<br>2. Explain in detail various software engineering layers<br>3. . Write short notes on user requirements & system requirements<br>4. What are the functional requirements of software?<br>5. Discuss briefly on data design the architectural level and data design at the component level. | 24D41A6601<br>to<br>24D41A6605 | CO1<br>CO1<br>CO2<br>CO2<br>CO3 | 1<br>2<br>3<br>5<br>4 |
| 2.               | 1. Discuss in detail about a process framework.<br>2. Explain software myths.<br>3. Explain the non-functional requirements of software in detail.<br>4. Discuss the user requirements in detail.<br>5. Explain Data Centered Architecture and Data Flow Architecture with the help of diagrams                                                                               | 24D41A6606<br>to<br>24D41A6611 | CO1<br>CO1<br>CO2<br>CO2<br>CO3 | 4<br>2<br>2<br>4<br>3 |
| 3.               | 1.Explain the Agile methodology in detail?<br>2. Elaborate about Capability Maturity Model Integration<br>3. Discuss in detail requirement elicitation and analysis process<br>4. Elaborate on Feasibility studies<br>5.Explain design process and design quality in detail.                                                                                                  | 24D41A6612<br>to<br>24D41A6616 | CO1<br>CO1<br>CO2<br>CO2<br>CO3 | 2<br>5<br>4<br>5<br>3 |

|    |                                                                                                                    |                  |     |   |
|----|--------------------------------------------------------------------------------------------------------------------|------------------|-----|---|
| 4. | 1.What is meant by “Software myth”? Discuss on various types of software myths and the true aspects of these myths | 24D41A6617       | CO1 | 1 |
|    | 2.explain about waterfall model? Give certain reasons for its failure.                                             | to<br>24D41A6621 | 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.                                              | 24D41A6622       | CO1 | 2 |
|    |                                                                                                                    | to<br>24D41A6626 | CO2 | 4 |
|    | 2. Discuss in detail the system requirements along with interface specification.                                   |                  | CO3 | 3 |
|    | 3.Explain design concepts in detail.                                                                               |                  | CO1 | 6 |
|    | 4.What is a process framework activity? Explain in detail.                                                         |                  | CO3 | 3 |
| 6. | 5..Explain Data Centered Architecture and Data Flow Architecture with the help of diagrams                         |                  |     |   |
|    | 1. What do you mean by software Engineering? Explain the software engineering layers.                              | 24D41A6627       | CO1 | 6 |
|    | 2. What is meant by “Software myth”? Discuss on various types of software myths                                    | to<br>24D41A6631 | 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 |
| 7. | 5. Discuss the user requirements in detail.                                                                        |                  | CO2 | 3 |
|    | 1. Discuss the working methodology of Waterfall model in Process Models                                            | 24D41A6632       | CO1 | 5 |
|    | 2. Explain the non-functional requirements of software in detail.                                                  | to<br>24D41A6636 | 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.  | <p>1. Explain the evolving role of software.</p> <p>2. What do you mean by Interface Specification, explain in detail</p> <p>3. Write short notes on the following:<br/>           (a) Abstraction (b) Architecture (c) Patterns (d) Modularity<br/>           (e) information hiding (f) functional independence (g) refinement<br/>           (h) Refactoring.</p> <p>4. Explain briefly on Data design elements and architectural design elements.</p> <p>5. Elaborate on Feasibility studies</p> | <p>24D41A6637<br/>to<br/>24D41A6641</p> | <p>CO1</p> <p>CO2</p> <p>CO3</p> <p>CO3</p> <p>CO2</p> | <p>2</p> <p>3</p> <p>6</p> <p>2</p> <p>2</p> |
| 9.  | <p>1. Write down the advantages and disadvantages of water-fall model.</p> <p>2. What is a process framework activity? Explain in detail.</p> <p>3. What do you mean by Interface Specification, explain in detail.</p> <p>4. Write a short notes on :<br/>           (a) Architectural style.<br/>           (b) Architectural pattern.<br/>           (d) Architectural design</p> <p>5. Discuss in detail the system requirements along with interface specification</p>                          | <p>24D41A6642<br/>to<br/>24D41A6646</p> | <p>CO1</p> <p>CO1</p> <p>CO2</p> <p>CO3</p> <p>CO2</p> | <p>6</p> <p>4</p> <p>4</p> <p>6</p> <p>2</p> |
| 10. | <p>1. Explain in detail about changing nature of software</p> <p>2...Explain the Agile methodology? Discuss Agile manifesto</p> <p>3. Give the complete description and details of the Software Requirements Document</p> <p>4. Explain the following terms with respect to the architectural patterns:<br/>           (a) Concurrency.<br/>           (b) Persistence.<br/>           (c) Distribution</p> <p>5. explain design concepts in detail.</p>                                             | <p>24D41A6647<br/>to<br/>24D41A6651</p> | <p>CO1</p> <p>CO1</p> <p>CO2</p> <p>CO3</p> <p>CO3</p> | <p>3</p> <p>2</p> <p>6</p> <p>3</p> <p>2</p> |

|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                         |                                                                |                                                      |
|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|----------------------------------------------------------------|------------------------------------------------------|
| 11. | <p>1. Discuss in detail about a process framework.</p> <p>2. What are the functional requirements of software?</p> <p>3. explain about design process and design quality</p> <p>4. what is meant by software ? Discuss in detail the evolving role of software</p> <p>5. Explain data design at the Architecture level and data design at the component level with an example</p>                                                                                                                                     | <p>24D41A6652<br/>to<br/>24D41A6656</p> | <p>CO1<br/>CO2<br/>CO3<br/>CO1<br/><br/>CO3</p>                | <p>2<br/>4<br/>4<br/>3<br/><br/>6</p>                |
| 12. | <p>1.. Explain about Capability Maturity Model Integration</p> <p>2..Explain the Agile methodology in detail?</p> <p>3. Elaborate on requirements validation and requirement management.</p> <p>4.Explain Data Centered Architecture and Data Flow Architecture with the help of diagrams</p> <p>5.Discuss the user requirements in detail</p>                                                                                                                                                                        | <p>24D41A6657<br/>to<br/>24D41A6661</p> | <p>CO1<br/>CO1<br/>CO2<br/><br/>CO3<br/><br/>CO2</p>           | <p>2<br/>6<br/>2<br/><br/>6<br/><br/>2</p>           |
| 13. | <p>1. what is meant by software ? Discuss in detail the evolving role of software.</p> <p>2. Explain the non-functional requirements of software in detail.</p> <p>3. Elaborate on requirements management.</p> <p>4. Explain Architectural styles and pattern in detail.</p> <p>5..Explain design concepts in detail.</p>                                                                                                                                                                                            | <p>24D41A6662<br/>to<br/>25D45A6602</p> | <p>CO1<br/><br/>CO2<br/>CO2<br/><br/>CO3<br/><br/>CO3</p>      | <p>6<br/><br/>2<br/>3<br/><br/>6<br/><br/>2</p>      |
| 14. | <p>1.. Explain in detail various software engineering layers</p> <p>2. Elaborate on Feasibility studies</p> <p>3. Write short notes on the following:<br/>(a) Abstraction (b) Architecture (c) Patterns (d) Modularity (e) information hiding (f) functional independence (g) refinement (h) Refactoring.</p> <p>4. Write a short notes on :<br/>(a) Architectural style.<br/>(b) Architectural pattern.<br/>(d) Architectural design</p> <p>5.. Write down the advantages and disadvantages of water-fall model.</p> | <p>25D45A6603<br/>to<br/>25D45A6606</p> | <p>CO1<br/><br/>CO2<br/>CO3<br/><br/><br/>CO3<br/><br/>CO1</p> | <p>4<br/><br/>6<br/>2<br/><br/><br/>1<br/><br/>3</p> |

**ASSIGNMENT-II**

| Batch. No | Assignment Questions                                                                                                                                                                                                                                                                                                           | Register Number                       | Course outcome                  | Level                 |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|---------------------------------|-----------------------|
| 1.        | 1.Explain in detail about Class diagram with an example<br>2.Write the test strategies for conventional software.<br>3.Compare System Testing and Validation Testing.<br>4.Discuss ISO 9000 Quality Standards in detail.<br>5.Write important points on the following<br>a. Formal Technical Reviews.<br>b. Software reviews   | 23D41A6601<br>to<br>23D41A6605<br>(1) | CO4<br>CO5<br>CO5<br>CO6<br>CO6 | 2<br>6<br>3<br>2<br>6 |
| 2.        | 1.Explain in detail about component and deployment diagram<br>2.Compare reactive with proactive risk strategies?<br>3.Discuss black box testing in a detailed view?<br>4.Explain about Product metrics?<br>5.Explain in detail about software Risk.                                                                            | 23D41A6606<br>to<br>23D41A6611        | CO4<br>CO5<br>CO5<br>CO6<br>CO6 | 2<br>4<br>2<br>2<br>4 |
| 3.        | 1.Discuss in detail about conceptual model of uml<br>2.Define Software Testing. Give few generic characteristics of it.<br>3.Discuss briefly on (a) Verification (b) Validation.<br>4.Explain various activities performed by software quality assurance or SQA group.<br>5.Explain about Quality concepts?                    | 23D41A6612<br>to<br>23D41A6616        | CO4<br>CO5<br>CO5<br>CO6<br>CO6 | 2<br>5<br>2<br>4<br>4 |
| 4.        | 1.Explain in detail about usecase diagram<br>2.Explain in detail art of debugging process.<br>3.Discuss Metrics for Software Quality in detail<br>4.Discuss ISO 9000 Quality Standards in detail.<br>5.Why Risk Refinement is needed?                                                                                          | 23D41A6617<br>to<br>23D41A6621        | CO4<br>CO5<br>CO5<br>CO6<br>CO6 | 4<br>2<br>2<br>4<br>6 |
| 5.        | 1.Explain in detail about component diagram<br>2. Why test strategies are needed for Conventional Software?<br>3. Explain in detail about Software Measurement?<br>4. Write notes on the following a) Reactive and Proactive Risk Strategies. b) Software Quality Assurance<br>5. Discuss ISO 9000 Quality Standards in detail | 23D41A6622<br>to<br>23D41A6626        | CO4<br>CO5<br>CO5<br>CO6<br>CO6 | 2<br>6<br>2<br>6<br>2 |

|     |                                                                                                                                                                                                                                                                                                                  |                                |                                         |                           |
|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|-----------------------------------------|---------------------------|
| 6.  | 1. Discuss basic structural modelling<br>2. Compare System Testing and Validation Testing.<br>3. Explain Debugging Strategies in brief<br>4. Define software reliability along with its terms?<br>5. Explain about RMMM                                                                                          | 23D41A6627<br>To<br>23D41A6631 | CO4<br>CO5<br>CO5<br>CO6<br>CO6         | 2<br>4<br>2<br>1<br>2     |
| 7.  | 1. Discuss in detail about component diagram.<br>2. Discuss Metrics for Software Quality in detail<br>3. Describe various types of testings<br>4. Explain in detail ISO 9000 quality standards?<br>5. Explain Statistical Software Quality Assurance                                                             | 23D41A6632<br>to<br>23D41A6636 | CO4<br>CO5<br>CO5<br>CO6<br>CO6         | 2<br>4<br>2<br>2<br>4     |
| 8.  | 1. Explain in detail about UML diagrams<br>2. Discuss black box testing and white box testing in a detailed view?<br>3. Explain strategic approach to software testing?<br>4. Explain software reviews in brief?<br>5. Write notes on the following a) Reactive and Proactive Risk Strategies. b) Software risks | 23D41A6637<br>to<br>23D41A6641 | CO4<br><br>CO5<br>CO5<br>CO6<br><br>CO6 | 2<br>2<br>4<br>4<br><br>6 |
| 9.  | 1. Draw an interaction diagram for ATM withdrawal.<br>2. Explain in detail about Software Measurement?<br>3. Write the test strategies for conventional software.<br>4. Define software reliability along with its terms?<br>5. Elaborate the concepts of Risk management Reactive vs Proactive Risk strategies? | 23D41A6642<br>to<br>23D41A6646 | CO4<br>CO5<br>CO5<br><br>CO6<br>CO6     | 1<br>2<br>6<br><br>1<br>3 |
| 10. | 1. Discuss in detail class diagram with an example? purpose of class diagram<br>2. Compare System Testing and Validation Testing.<br>3. Describe various types of testings<br>4. Discuss ISO 9000 Quality Standards in detail.                                                                                   | 23D41A6647<br>to<br>23D41A6651 | CO4<br>CO5<br>CO5<br>CO6<br>CO6         | 2<br>4<br>2<br>4<br>2     |

|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                |                                             |                                   |
|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|---------------------------------------------|-----------------------------------|
|     | 5.. Explain Statistical Software Quality Assurance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                |                                             |                                   |
| 11. | 1. a) Explain usecase modeling with an example ?purpose of usecase<br>b) What are the use cases? Draw the use cases for library system.<br>2. Describe the following terms with respective validation testing (a) Validation test criteria (b) configuration review (c) Alpha & Beta Testing.<br>3. Define “Software Testing”. Give few generic characteristics of it.<br>4. Explain the process of risk identification.<br>5. Explain the reactive and proactive risk strategies.                                                                                                          | 23D41A6652<br>to<br>23D41A6656 | CO4<br><br>CO5<br><br>CO5<br><br>CO6<br>CO6 | 2<br><br>2<br><br>1<br><br>2<br>4 |
| 12. | 1. Explain Basic Structural Modeling<br>2. Explain in detail about Software Measurement?<br>3. Describe test strategies for conventional software?<br>4. Discuss any four useful indicators for software quality.<br>5. Explain Statistical Software Quality Assurance                                                                                                                                                                                                                                                                                                                      | 23D41A6657<br>to<br>23D41A6661 | CO4<br>CO5<br>CO5<br><br>CO6<br><br>CO6     | 2<br>4<br>6<br><br>4<br><br>2     |
| 13. | 1. Explain Conceptual Model of UML in detail.<br>2. Discuss an overview of quality metrics?<br>3. Explain Debugging Strategies in brief<br>4. Explain about Quality concepts?<br>5. Elaborate the concepts of Risk management Reactive vs Proactive Risk strategies                                                                                                                                                                                                                                                                                                                         | 23D41A6662<br>to<br>23D45A6602 | CO4<br>CO5<br>CO5<br>CO6<br>CO6             | 4<br>2<br>2<br>4<br><br>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<br>2.a) Discuss Metrics for Software Quality in detail<br>b) Why test strategies are needed for Conventional Software?<br>3. Describe the following terms with respective validation testing (a) Validation test criteria (b) configuration review (c) Alpha & Beta Testing.<br>4. Explain in detail RMMM<br>5. Write important points on the following<br>a) Formal Technical Reviews.<br>b) Software reviews | 23D45A6603<br>to<br>23D45A6606 | CO4<br><br>CO5<br><br>CO5<br><br>CO6<br>CO6 | 6<br><br>2<br><br>2<br><br>4<br>6 |

## **Previous years question papers**

BR-22

**SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY**  
**II B.Tech - I Semester - I Mid Term Examination, SEP/OCT- 2024**  
**(R22CSE2215) SOFTWARE ENGINEERING**

D4

Duration: 2 Hrs

Dt: 03-10-2024, Day-3 (FN)

Max Marks: 30M

**Part – A**Answer All multiple choice questions.

Marks: 10Qx1/2M = 5M

\* (L1-Remembering, L2-Understanding, L3-Appling, L4-Analyzing, L5-Evaluating, and L6-Creating.)

| Bloom's<br>Taxonomy<br>Level | Course<br>Outcomes |
|------------------------------|--------------------|
| IV                           | CO1                |
| IV                           | CO1                |
| V                            | CO1                |
| II                           | CO1                |
| I                            | CO2                |
| II                           | CO2                |
| V                            | CO2                |
| I                            | CO3                |
| I                            | CO3                |
| II                           | CO3                |

- 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  
 [   ]      IV      CO1
- 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  
 [   ]      IV      CO1
- Software evolution does not comprises: \_\_\_\_\_  
 A) Development activities      B) Negotiating with client  
 C) Maintenance activities      D) Re-engineering activities  
 [   ]      V      CO1
- 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  
 [   ]      II      CO1
- Which one of the following is a requirement that fits in a developer's module?  
 A) Availability      B) Testability      C) Usability      D) Flexibility  
 [   ]      I      CO2
- 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  
 [   ]      II      CO2
- 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  
 [   ]      V      CO2
- 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  
 [   ]      I      CO3
- 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  
 [   ]      I      CO3
- 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  
 [   ]      II      CO3

Answer All fill in the blank questions.

Marks: 6Qx1/2M = 3M

11. \_\_\_\_\_ are applied throughout the software process. I CO1
12. \_\_\_\_\_ is a set of programs that are built by software engineers. II CO1
13. \_\_\_\_\_ is not suitable for accommodating any change. IV CO1
14. Example of non-functional requirements are \_\_\_\_\_. I CO2
15. The distinct tasks encompasses by requirements engineering are inception, elicitation, elaboration, negotiation, specification, \_\_\_\_\_. VI CO2
16. \_\_\_\_\_ are the taxonomy of architectural styles II CO3

Answer All Match the following questions.

Marks: 2Qx1M = 2M

17.
 

|    |                       |    |                                              |
|----|-----------------------|----|----------------------------------------------|
| 1. | Planning and Analysis | A. | Implementation of design                     |
| 2. | Define Requirements   | B. | Unit, Integration process                    |
| 3. | Testing               | C. | Identification of the risks                  |
| 4. | Designing             | D. | Defines architectural modules of the product |
| 5. | Developing            | E. | SRS document                                 |

 I CO1
18.
 

|    |                         |    |                                                                            |
|----|-------------------------|----|----------------------------------------------------------------------------|
| 1. | User Requirements       | A. | describes what the software will do and how it will be expected to perform |
| 2. | System requirements     | B. | system operate with other system                                           |
| 3. | Interface Specification | C. | specify the technical characteristics of the software system               |
| 4. | Software specification  | D. | describe what the end- software system                                     |

 I CO2

### Part – B

Answer any **FOUR** questions.

Marks: 4Qx5M = 20M

19. What is meant by software? Discuss in detail the evolving role of software. I CO1
20. i) With the help of a diagram, discuss on software process framework. II CO1  
 ii) What are the five generic process frame work activities?
21. Write about Changing nature of software and Characteristics of software. I CO1
22. Discuss in detail the system requirements along with locations for requirements specification. V CO2
23. Explain Software requirement document and explain along with its contents. II CO2
24. Explain design concepts in detail. II CO3

BR-22

**SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY**  
**II B.Tech - I Semester - II Mid Term Examination, December- 2024**  
**(R22CSE2215) SOFTWARE ENGINEERING**

D4

Duration: 2 Hrs

Dt: 19-12-2024, Day-3 (FN)

Max Marks: 30M

**Part - A**Answer All multiple choice questions.

Marks: 10Qx1/2M = 5M

\* (L1-Remembering, L2-Understanding, L3-Applying, L4-Analyzing, L5-Evaluating, and L6-Creating.)

| Bloom's<br>Taxonomy<br>Levels | Course<br>Outcomes |
|-------------------------------|--------------------|
| I                             | CO3                |
| I                             | CO3                |
| I                             | CO4                |
| V                             | CO4                |
| IV                            | CO4                |
| I                             | CO4                |
| II                            | CO5                |
| I                             | CO5                |
| V                             | CO5                |
| V                             | CO5                |

- |                                                                                                                                                                                                                                |       |    |     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|----|-----|
| 1. Which of the following diagram is time oriented?<br>A) Collaboration      B) Sequence<br>C) Activity              D) None of the mentioned                                                                                  | [   ] | I  | CO3 |
| 2. What are the notations for the Use case Diagrams?<br>A) Use case              B) Actor<br>C) Prototype            D) Use case and Actor                                                                                     | [   ] | I  | CO3 |
| 3. Which type of testing is typically associated with software verification?<br>A) Regression testing      B) Usability testing<br>C) Alpha testing            D) User acceptance testing                                      | [   ] | I  | CO4 |
| 4. Which of the following is not a direct measure of SE process?<br>A) Efficiency              B) Cost<br>C) Effort Applied          D) All of the mentioned                                                                   | [   ] | V  | CO4 |
| 5. Which of the following is black box testing<br>A) Basic path testing      B) Boundary value analysis<br>C) Code path analysis      D) None of the mentioned                                                                 | [   ] | IV | CO4 |
| 6. Which of the following does not affect the software quality and organizational performance?<br>A) Market                  B) Product<br>C) Technology              D) People                                                | [   ] | I  | CO4 |
| 7. What assess the risk and your plans for risk mitigation and revise these when you learn more about the risk?<br>A) Risk monitoring          B) Risk planning<br>C) Risk analysis            D) Risk identification          | [   ] | II | CO5 |
| 8. Who performs technical reviews?<br>A) Software engineer      B) Network engineer<br>C) System administrator   D) All of the mentioned above                                                                                 | [   ] | I  | CO5 |
| 9. Which of the following risks are derived from the organizational environment where the software is being developed?<br>A) People risks            B) Technology risks<br>C) Estimation risks        D) Organizational risks | [   ] | V  | CO5 |
| 10. Which one of the following is not a software process quality?<br>A) Productivity            B) Portability      C) Timeliness   D) Visibility                                                                              | [   ] | V  | CO5 |

Answer All fill in the blank questions.

Marks: 6Qx1/2M = 3M

- |                                                                                                                      |    |     |
|----------------------------------------------------------------------------------------------------------------------|----|-----|
| 11. UML stands for _____                                                                                             | II | CO3 |
| 12. Software Design consists of _____                                                                                | I  | CO3 |
| 13. Validation Testing is also known as _____                                                                        | I  | CO4 |
| 14. In the maintenance phase the product must be tested against previous test cases. This is known as _____ testing. | I  | CO4 |
| 15. RMMM stands _____                                                                                                | II | CO5 |
| 16. Three categories of risk are _____                                                                               | I  | CO5 |

P.T.O

Answer All Match the following questions.

Marks: 2Qx1M = 2M

17. 

|    |                     |    |                                                                                                           |
|----|---------------------|----|-----------------------------------------------------------------------------------------------------------|
| 1. | Unit testing        | A. | a type of software testing conducted after a code update to ensure that the update introduced no new bugs |
| 2. | Integration testing | B. | To validate that each unit of the software works as intended and meets the requirements                   |
| 3. | System testing      | C. | Process of testing the interface between two software units or modules                                    |
| 4. | Regression testing  | D. | To evaluate the compliance of the system with the corresponding requirements.                             |

 IV CO4
18. 

|    |                        |    |                                                                                        |
|----|------------------------|----|----------------------------------------------------------------------------------------|
| 1. | Quality of design      | A. | Series of inspections, reviews, and tests used to ensure conformance                   |
| 2. | Quality of conformance | B. | set of auditing and reporting functions that assess the effectiveness and completeness |
| 3. | Quality control        | C. | Refers to characteristics that designers specify for the end product                   |
| 4. | Quality assurance      | D. | Degree to which design specifications are followed in manufacturing the product        |

 III CO5

### Part – B

Answer any **FOUR** questions.

Marks: 4Qx5M = 20M

19. Explain Basic Structural Modeling II CO3
20. i) Explain use-case modelling with an example? purpose of use-case  
ii) What are the use cases? Draw the use cases for library system. II CO3
21. i) Compare System Testing and Validation Testing.  
ii) Explain Debugging Strategies in brief. II CO4
22. Explain strategic approach to software testing? I CO4
23. Write important points on the following  
i) Formal Technical Reviews. VI CO5  
ii) RMMM Model.
24. i) Explain Statistical Software Quality Assurance. IV CO5  
ii) What do you mean by Risk Projection

\*\*\*\*\*

BR-22

HT.No.

D4  
QC2609

# SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY

(An Autonomous Institution under UGC, New Delhi) - Recognized under 2(f) and 12(B) of UGC Act 1956

II B.Tech. I Semester (REG & SUPPL) End Examinations, JANUARY- 2025.

(R22CSE2215) SOFTWARE ENGINEERING

(For AIML & IoT)

10/01/2025

Day-5(FN)

Duration: 3 Hrs

Maximum Marks: 60M

**Blooms Taxonomy :** (I-Remembering, II-Understanding, III-Applying, IV-Analyzing, V-Evaluating and VI-Creating)

**Course Outcomes :** CO

## PART - A

Answer ALL the following questions.

(10Qx1M=10M)

- |                                                                          |     |     |
|--------------------------------------------------------------------------|-----|-----|
| 1. a) Software is Engineered, justify this statement.                    | II  | CO1 |
| b) Define Software myths.                                                | IV  | CO1 |
| c) What is User requirement and System requirement?                      | III | CO2 |
| d) Write about Feasibility from the perspective of software engineering. | II  | CO2 |
| e) What is Cohesion? Explain briefly.                                    | III | CO3 |
| f) How is Sequence Diagram useful in modeling?                           | II  | CO3 |
| g) Discuss about Brute Force Debugging.                                  | III | CO4 |
| h) Write the importance of S/W Reliability?                              | III | CO4 |
| i) Define FTR.                                                           | II  | CO5 |
| j) Analyze about RMMM.                                                   | II  | CO5 |

## PART - B

Answer FIVE questions choosing at least one from each unit.

(5Qx10M=50M)

### UNIT-I

- |                         |    |     |
|-------------------------|----|-----|
| 2a. Discuss about CMMI. | II | CO1 |
| (OR)                    |    |     |

- |                                         |    |     |
|-----------------------------------------|----|-----|
| 2b. What is Agile Methodology? Explain. | II | CO1 |
|-----------------------------------------|----|-----|

### UNIT-II

- |                                                                      |     |     |
|----------------------------------------------------------------------|-----|-----|
| 3a. What are the distinct tasks of requirements engineering? Explain | III | CO2 |
| (OR)                                                                 |     |     |

- |                                            |    |     |
|--------------------------------------------|----|-----|
| 3b. Explain about Requirements Validation. | II | CO2 |
|--------------------------------------------|----|-----|

### UNIT-III

- |                                                                                                                           |    |     |
|---------------------------------------------------------------------------------------------------------------------------|----|-----|
| 4a. Explain about five different types of design classes, each representing a different layer of the design architecture. | II | CO3 |
|---------------------------------------------------------------------------------------------------------------------------|----|-----|

(OR)

- |                                                   |     |     |
|---------------------------------------------------|-----|-----|
| 4b. Discuss about different Architectural Styles. | III | CO3 |
|---------------------------------------------------|-----|-----|

### UNIT-IV

- |                                                              |    |     |
|--------------------------------------------------------------|----|-----|
| 5a. Describe about testing tactics for software engineering. | II | CO4 |
|--------------------------------------------------------------|----|-----|

(OR)

- |                                           |    |     |
|-------------------------------------------|----|-----|
| 5b. Explain about Function based metrics. | II | CO4 |
|-------------------------------------------|----|-----|

### UNIT-V

- |                                                                                             |     |     |
|---------------------------------------------------------------------------------------------|-----|-----|
| 6a. Elaborate on Risks based on perspectives like identification, projection and refinement | III | CO5 |
|---------------------------------------------------------------------------------------------|-----|-----|

(OR)

- |                             |     |     |
|-----------------------------|-----|-----|
| 6b. Discuss about ISO 9000. | III | CO5 |
|-----------------------------|-----|-----|