|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Roll No. |  |  |  |  |  |  |  |  |  |  |  |  |

 **PRESIDENCY UNIVERSITY**

**Bengaluru**

|  |
| --- |
| **End - Term Examinations – JANUARY 2025** |
| **Date:** 11- 01-2025 **Time:** 01:00 pm – 04:00 pm |

|  |  |  |
| --- | --- | --- |
| **School:** SOCSE | **Program:** B. Tech – (ALL PROGRAMS) | |
| **Course Code :** CSE2014 | **Course Name :** Software Engineering | |
| **Semester**: III | **Max Marks**:100 | **Weightage**:50% |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **CO - Levels** | **CO1** | **CO2** | **CO3** | **CO4** |
| **Marks** | **24** | **24** | **26** | **26** |

**Instructions:**

1. *Read all questions carefully and answer accordingly.*
2. *Do not write anything on the question paper other than roll number.*

**Part A**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Answer ALL the Questions. Each question carries 2marks. 2M x 10Q=20Marks** | | | | |
| **1** | Explain the main goals of CMMI model. | **2 Marks** | **L2** | **CO1** |
| **2** | Explain the need for Software Engineering. | **2 Marks** | **L2** | **CO1** |
| **3** | List the characteristics of a Software Requirement Specification (SRS). | **2 Marks** | **L1** | **CO2** |
| **4** | Outline any two non-functional requirements of Food Ordering System. | **2 Marks** | **L1** | **CO2** |
| **5** | Explain the purpose of a Product Backlog in Agile Software Development | **2 Marks** | **L2** | **CO3** |
| **6** | List any two popular Agile frameworks. | **2 Marks** | **L1** | **CO3** |
| **7** | Explain different types of stakeholders in Agile software development. | **2 Marks** | **L2** | **CO3** |
| **8** | Differentiate between verification and validation in software testing. | **2 Marks** | **L2** | **CO4** |
| **9** | Describe any two popular automation tools for software testing. | **2 Marks** | **L2** | **CO4** |
| **10** | A software product needs to be updated to integrate a new payment gateway. Explain two potential risk which can be associated with this update. | **2 Marks** | **L2** | **CO4** |

**Part B**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Answer ALL Questions. Each question carries 20 marks. 4QX20M=80 Marks** | | | | | |
| **11** | **11a** | Compare lifecycle models based on their distinguished features, strengths and weakness. | **10 Marks** | **L2** | **CO1** |
| **11b** | A company is developing a new social media app. They plan to release a basic version first, and then gradually add features such as messaging, notifications, and media sharing in separate phases. **1. Choose** Which software process model aligns with the approach described in this scenario?  2. Demonstrate how this model would benefit the development process. | **10 Marks** | **L3** | **CO1** |
| **Or** | | | | | |
| **12** | **12a** | Describe the ethical responsibilities of software engineers when working with sensitive user data. How can they make sure that privacy and security are maintained during development? | **10 Marks** | **L2** | **CO1** |
| **12b** | You are starting a new project for a client who has a rapidly changing set of requirements. Your team is deciding whether to use Waterfall or other software process models for a project with well-defined requirements and a fixed deadline. Demonstrate the factors would influence your decision, and which software development process model would you choose, and why? | **10 Marks** | **L3** | **CO1** |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| **13** | **13a** | Explain the process of **eliciting requirements** in Requirements Engineering. Differentiate between **functional** and **non-functional requirements** with examples. | **10 Marks** | **L2** | **CO2** |
| **13b** | Consider a student enrolment system for a university. The student can register for courses, view course details, and drop courses. The administrator can add or remove courses and manage student registrations.   * + - 1. Prepare a use case diagram for the student enrolment system.       2. Choose two actors and their key use cases. | **10 Marks** | **L3** | **CO2** |
| **Or** | | | | | |
| **14** | **14a** | Explain the importance of **modularity** and **abstraction** in software design. How do these concepts contribute to the maintainability and scalability of a software system? Illustrate your answer with examples. | **10 Marks** | **L2** | **CO2** |
| **14b** | As a senior software developer, Prepare an SRS for a hospital management system. The system should manage patient records, appointments, billing, and inventory of medicines. | **10 Marks** | **L3** | **CO2** |
|  |  |  |  |  |  |
| **15** | **15a** | Describe user story in Agile development. How does user stories helps in gathering requirements, and what is their role in the development process? | **10 Marks** | **L2** | **CO3** |
| **15b** | Explain any five Agile Estimation techniques. Compare and contrast planning poker and T- Shirt Sizing Agile Estimation techniques. | **10 Marks** | **L2** | **CO3** |
| **Or** | | | | | |
| **16** | **16a** | Describe the key roles in Scrum and their responsibilities. How do these roles collaborate and contribute to the success of a typical Scrum sprint? | **10 Marks** | **L2** | **CO3** |
| **16b** | Explain the architecture of DevOps. How DevOps differ from Agile Development. | **10 Marks** | **L2** | **CO3** |
|  |  |  |  |  |  |
| **17** | **17a** | Explain the different phases of maintenance in the context of software Engineering. How do these phases contribute to the overall efficiency of the system? | **10 Marks** | **L2** | **CO4** |
| **17b** | A registration form requires the user's age to be between 18 and 60. Interpret test cases using Boundary Value Analysis to validate this field. | **10 Marks** | **L3** | **CO4** |
| **Or** | | | | | |
| **18** | **18a** | Describe the main activities involved in the Software Configuration Management (SCM) process | **10 Marks** | **L2** | **CO4** |
| **18b** | 1. begin int x, y;  2. input(x);  3. if(x % 2 == 0)  4. y = x / 2;  5. else  6. y = x \* 3 + 1;  7. output(y);  8. end  a. Draw the CFG for the given code.  b. Calculate cyclomatic complexity  c. Find the independent paths  d. Write the Test cases. | **10 Marks** | **L3** | **CO4** |