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Total Number of Pages : 02

B.Tech/IDD (B.Tech and M.Tech)  
RCS6C001

6<sup>th</sup> Semester Reg/Back Examination: 2024-25

Software Engineering

BRANCH(S): CSE, CSEAI, CSEAIML, CSEDS, CSIT, CST, ELECTRICAL & C.E,  
ELECTRONICS & C.E, IT

Time : 3 Hour

Max Marks : 100

Q. Code : S040

Answer Question No.1 (Part-1) which is compulsory, any eight from Part-II and any two from Part-III.

The figures in the right hand margin indicate marks.

**Part-I**

**Q1 Answer the following questions:**

**(2 x 10)**

- Define software crisis and mention its key causes.
- Explain the difference between functional and non-functional requirements.
- What is the role of abstraction in software development?
- What is software reuse, and why is it beneficial?
- Define Cyclomatic Complexity.
- What are Decision tables and trees in software requirements engineering?
- Explain software reverse engineering briefly.
- Define cohesion and coupling in software design.
- What are the essential guidelines of IEEE 830 for software requirement specification (SRS)?
- What is the significance of modularity in software engineering?

**Part-II**

**Q2 Only Focused-Short Answer Type Questions- (Answer Any Eight out of Twelve) (6 x 8)**

- Compare the classical waterfall model and the spiral model, highlighting their advantages and limitations.
- Describe the prototyping model and state situations where this model is appropriate.
- Discuss Agile methodologies, specifically Extreme Programming and Scrum.
- Explain structured analysis using Data Flow Diagrams (DFDs).
- Detail the steps involved in software requirement gathering and analysis.
- Differentiate between high-level and detailed design with suitable examples.
- Explain the concept and importance of User Interface Design in software engineering.
- Discuss white-box and black-box testing techniques with examples.
- Discuss Client-Server software engineering along with its merits and demerits.
- Describe the characteristics and goals of software maintenance.
- Outline the concept of software quality and discuss SEI CMM briefly.
- Explain software reengineering. How does it differ from reverse engineering?

**Part-III**

**Only Long Answer Type Questions (Answer Any Two out of Four)**

- Q3** Explain in detail the various software process models highlighting their applicability, strengths, and weaknesses. Provide real-world examples to justify your points. **(16)**
- Q4** Explain in depth various software testing methods including Unit Testing, Integration Testing, System Testing, and discuss how each contributes to software reliability and quality assurance. **(16)**
- Q5** Discuss software reliability thoroughly, including concepts, measurement methods, and reliability growth modeling. Explain how reliability impacts the overall software lifecycle. **(16)**
- Q6** Elaborate on emerging topics in software engineering such as Service-oriented Architecture (SOA) and Software as a Service (SaaS). Discuss their relevance, implementation challenges, and potential future directions. **(16)**