Code No: 155DB **R18**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, August/September - 2024
SOFTWARE ENGINEERING
(Computer Science and Engineering - IOT)

Time: 3 Hours **Max. Marks: 75**

Note: i) Question paper consists of Part A, Part B.
ii) Part A is compulsory, which carries 25 marks. In Part A, Answer all questions.
iii) In Part B, Answer any one question from each unit. Each question carries 10 marks and may have a, b as sub questions.

PART – A

(25 Marks)

1.a) What is the significance of software engineering in today's technology-driven world? [2]
b) How does the concept of continuous improvement apply to software engineering processes? [3]
c) How do object models differ from other types of system models? [2]
d) How do functional requirements contribute to defining the behavior of a software system? [3]
e) What is a software architecture, and why is it important in software development? [2]
f) Identify two key components depicted in a collaboration diagram and explain their roles. [3]
g) What is cyclomatic complexity, and how does it relate to software maintainability? [2]
h) What is the difference between top-down and bottom-up integration testing approaches? [3]
i) Describe the difference between direct and indirect measures in software metrics. [2]
j) Differentiate between reactive and proactive risk management strategies in software projects. [3]

PART – B

(50 Marks)

2.a) Describe the Capability Maturity Model Integration (CMMI) and its significance in software engineering.
b) Explain the unified process and its key characteristics. [5+5]

OR

3.a) Explain the waterfall model of software development, highlighting its advantages and limitations.
b) Describe the role of feedback loops in improving software development processes. [5+5]

4.a) Explain the difference between user requirements and system requirements.
b) Write a software requirement specification document for an online customer service web portal for an online cosmetic company. [5+5]

OR

5.a) Describe techniques for prioritizing and managing conflicting requirements during the requirements engineering process.
b) Describe various techniques for requirements elicitation and analysis. [5+5]

6.a) Discuss the importance of design quality in software development.
b) How do sequence diagrams illustrate the flow of messages and interactions between objects over time? Give an example. [5+5]

OR

7.a) How do component diagrams represent the physical components and dependencies of a software system? Discuss their role.
b) Create a class diagram for a simple library management system, including classes for books, library members, and library staff. [5+5]

8.a) Discuss various validation techniques and their relevance in different contexts.
b) What are the metrics commonly used for evaluating the effectiveness of testing processes? [6+4]

OR

9.a) Compare and contrast unit and integration testing techniques.
b) Describe metrics commonly used for assessing the design model in software development. [4+6]

10.a) Evaluate the significance of software quality metrics in assessing the overall quality of software products.
b) Explain the concept of risk identification in software projects. [5+5]

OR

11.a) Explain the ISO 9000 quality standards and their relevance to software engineering.
b) Describe techniques for measuring and improving software reliability. [5+5]

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