R18

Code No: 155DB

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech III Year I Semester Examinations, January - 2025

SOFTWARE ENGINEERING

(Common to CSE, IT, ITE, AI&DS, CSD)

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 prime objective of software engineering?	[2]
b)	Generalize any two characteristics of software as a product.	[3]
c)	Write the steps in requirements validation.	[2]
d)	What are the major elements of software requirements document.	[3]
e)	What are the various models produced by the software design process?	[2]
f)	Compare the sequence diagrams, and collaboration diagrams.	[3]
g)	What is static and dynamic testing?	[2]
h)	What are the metrics for design models?	[3]
i)	What are the different ways for risk identification?	[2]
j)	Why to perform statistical software quality assurance?	[3]

PART – B

(50 Marks)

2.a) What are the Practitioner's myths? Also state the reality that accompanies the Practitioner's myth.

b) Explain with example why the incremental development is the most effective approach for developing business software systems. Why is this model less appropriate for real-time systems engineering? [5+5]

OR

3.a) Describe a process framework in your own words. When we say that framework activities are applicable to all projects, does this mean that the same work tasks are applied for all projects, regardless of size and complexity? Explain.

b) The use of "scripts" (a required mechanism in TSP) is not universally praised within the software community. Make a list of pros and cons regarding scripts and suggest at least two situations in which they would be useful and another two situations where they might provide less benefit. [5+5]

4.a) What is the purpose of domain analysis? How is it related to the concept of requirements patterns?

b) What does win-win mean in the context of negotiation during the requirements engineering activity? What do you think happens when requirement validation uncovers an error? Who is involved in correcting the error? [5+5]

OR

5.a) What do you think happens when requirement validation uncovers an error? Who is involved in correcting the error? Explain.

b) Explain how an engineer responsible for drawing up a system requirements specification might keep track of the relationships between functional and non-functional requirements. [5+5]

6.a) How are the concepts of coupling and software portability related? Provide examples to support your discussion.

b) Develop a Class diagram showing the interactions involved when a student registers for a course in a university. Courses may have limited enrolment, so the registration process must include checks that places are available. Assume that the student accesses an electronic course catalog to find out about available courses. [5+5]

OR

7.a) What are the Constraints in UML? Describe the five different constraints that may apply to association relationships in UML.

b) Explain with a neat diagram, how does the class diagram is used for Modelling the Logical Database Schema of a *Hospital management System*. [5+5]

8.a) Explain the structured approach of software testing.

b) Explain the Testing of web-based systems. Provide the list of test cases prior to your description and state the basic and alternate flows to each testcases. [5+5]

OR

9.a) Describe the concept of "process maturity" in your own words.

b) Use the COCOMO II model to estimate the effort required to build software for a simple ATM that produces 12 screens, 10 reports, and will require approximately 80 software components. Assume average complexity and average developer/environment maturity. Use the application composition model with object points. [5+5]

10.a) Explain about the Metrics for Testing.

b) The reuse of software raises a number of copyright and intellectual property issues. If a customer pays a software contractor to develop a system, who has the right to reuse the developed code? Does the software contractor have the right to use that code as a basis for a generic component? What payment mechanisms might be used to reimburse providers of reusable components? Discuss these issues and other ethical issues associated with the reuse of software. [5+5]

OR

11.a) Define SQA. Explain in brief about software reliability.

b) Discuss in brief about ISO 9000 quality standards. [5+5]

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