B3.3-R4 : SOFTWARE ENGINEERING & CASE TOOLS

NOTE :

1.	**Answer question 1 and any FOUR from questions 2 to 7.**
2.	**Parts of the same question should be answered together and in the same sequence.**

Time : 3 Hours **Total Marks : 100**

1. (a) Justify the term "Software is engineered".

(b) What do you mean by CMM ? Explain its different levels.

(c) Define System Modeling.

(d) Give an example of design fault that leads to failure.

(e) Draw an UML diagram to show the structure of the Observer Pattern.

(f) Differentiate horizontal partitioning & vertical partitioning.

(g) What do you mean by backward and forward traceability ?

(7×4)

2. (a) What is the difference between SRS document and design document ? Mention the contents that should be present in SRS and design document.

(b) What is generalization? Give an example of generalization.

(9+9)

3. (a) Draw a data flow diagram for the simple library problem.

(b) Draw a data flow diagram for a grocery store.

(c) Draw a sequence diagram for the scenario of "Fred, a patron, goes to the library and checks out a book. Two months later, he brings the overdue library book back to the library".

(6+6+6)

4. (a) Identify the unique operators and operands in the below given code and calculate Halstead's length for the code :

```
Z = 0;
while X > 0
    Z = Z+ Y;
    X = X – 1;
end-while;
print (Z);
```

(b) Explain the alpha testing, beta testing, integration testing, unit testing, and system testing. Arrange them in a sequence of execution in SDLC.

(9+9)

5. (a) Where the Cyclomatic complexity is used in Software Testing? Explain.

(b) Design a SRS for an Airline reservation system.

(9+9)

6. (a) What are the characteristics of good test case? Develop a set of test cases for testing the routine that reads in three integer values representing the three sides of a triangle and define the type of triangle.

(b) Give two popular examples (an agile and a heavy process) for software development process. Explain and compare them.

(10+8)

7. (a) What are software metrics ? What is the role of metrics in project and process management ?

(b) Describe the principles of software design.

(9+9)

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