No. of Printed Pages : **2**

Sl. No.

B1.3-R5 : SOFTWARE ENGINEERING

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.**

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

1. (a) Cite the difference between Object-Oriented Analysis (OOA) and Object-Oriented Design (OOD).

(b) State the objective of architectural design in designing the software.

(c) What do you understand by formal requirements specification ? List its advantages over informal specifications.

(d) What is DFD ? What is its importance in software engineering ?

(e) What is Component-Based Software Engineering ?

(f) Explain the meaning of data dictionary in software engineering. What information does a data dictionary include in general ?

(g) What is RTM and why is it used ? List the types of requirements for traceability. How can we create a Requirement Traceability Matrix ? **(7x4)**

2. (a) Explain the concepts of encapsulation, inheritance and polymorphism with examples.

(b) Differentiate between the following :

(i) Procedural and Object Oriented Design

(ii) SRS and Business Requirements Document

(iii) Internal and External design **(6+(4x3))**

3. (a) What is Software crisis ? Give example.

(b) What is prototyping model ? Explain its various phases.

(c) List the advantage of Incremental over Evolutionary development model. **(5+6+7)**

4. (a) Consider a Bank management system in which there are two users Admin and User. The admin has the entire responsibility for managing the system. Admin can manage users (add/update/delete), handle their transactions, check balance and payments history, etc. Consider the scenario where the admin can access Administration and Log in/Log out use cases.

The User can access the transaction details, view the account balance, check their monthly transaction reports etc. Admin can also ADD/EDIT/UPDATE Bank records, manage Users data and bank transactions under the Administration use case. The admin can also view reports like fund transfer reports, user reports, all transaction reports and bank reports etc. under the Report use case. Draw a use case diagram for the given scenario.

(b) Draw a component diagram for the bank management system scenario given above in part (a). **(9+9)**

5. (a) What is Scrum and its advantages ? Explain in detail the two perspectives on scaling of agile methods : scaling up and scaling down.

(b) What are CASE Tools in Software Engineering ? State its Characteristics. What is CASE Environment ? **(9+9)**

6. (a) What's the difference between Path Coverage, Statement Coverage, Branch Coverage, Condition Coverage, Multiple Condition Coverage and Decision Coverage ? Which ones are considered to be the most important ?

(b) What are test drivers and stubs ? Why they are used ? Explain through an example.

(c) Explain the difference between a Test Plan and a Test Strategy. How does the Test Plan Document differ from the Test Strategy Document ? Explain with the help of a suitable example. **(8+5+5)**

7. (a) Discuss in brief the SEIs CMM process maturity levels.

(b) List the series of tasks with respect to a software configuration management process.

(c) Using UML modelling draw a class diagram to represent the working of a restaurant management system. Assume that there is a receptionist who is responsible for handling reservation request and linking each reservation to a specific table. The customers can select the dishes from the menu. The customers can place their order by informing the waiters. The waiter delivers the order to the kitchen where the chef prepares the order. In the end, the waiter gives the customer the food bill. Describe all the classes with their attributes, methods and relationships. **(6+5+7)**

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