C10-R4 : SOFTWARE SYSTEMS

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**

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1. (a) What is Evolutionary Process Model of Software Engineering ? Explain the advantages of evolutionary process model.

(b) What is SDLC ? Draw Schematic diagram contains various phases of SDLC.

(c) What is Database Design ? Enlist steps for Database Design. What is importance of Normalization in Database Design ?

(d) What is the meaning of Prototype in System development ? Describe its use in application prototyping ?

(e) What is cohesion and coupling in modular design ? How are they different from each other ?

(f) Describe pros and cons of interview and questionaries' technique for requirement gathering.

(g) What is data flow analysis in structured system analysis ? Give list of tools used for data flow analysis.   **(7x4)**

2. (a) What is DFD ? What is significant of DFD in System modeling ? Differentiate physical DFD and logical DFD.

(b) What is Object Oriented Modeling ? Describe static and dynamic modeling in detail.   **(9+9)**

3. (a) What is Quality in terms of software ? List important attributes of Quality, which all software products should have. How Quality and Reliability of software are differing ?

(b) What is important of preliminary investigations ? What are the main activities in Preliminary Investigation ?

(c) What it Software Testing ? What is difference between White Box Testing, Black Box Testing and Gray Box Testing ?   **(6+6+6)**

4. (a) Explain Boundary Value analysis and Equivalence partitioning methods using example.

(b) How to do Object - Oriented System Testing? Explain process of Test case Design and Various Methods at Class level testing for Object-Oriented Software.

(c) Explain the following concept with suitable example in object - oriented Design: Association, Aggregation, Polymorphism, Overriding, Inheritance, and Multiple Inheritance   **(6+4+8)**

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5. (a) What is Object ? What is Agent ? Differentiate Agent Oriented Software Development and Object-Oriented Software Development.

(b) What is UML? What is use and purpose of UML in Software System ? Enlist types of UML Diagram with its purpose.

(c) What is purpose of Class Diagram ? Develop Class Diagram of "Hotel Management System" which should include the relationships between each object in a hotel management system, including guest information, staff responsibilities and room occupancy. **(8+5+5)**

6. (a) What is Software Architecture ? Why is Software Architecture Design important ? What is Goal and Principles of Software Architecture ?

(b) What is V&V of Software ? Differentiate Validation and Verification of Software System.

(c) What is significance of Use case diagram? Develop Use case diagram for Online Shopping System. **(7+6+5)**

7. (a) Write down the importance of data dictionary in the context of good software design.

(b) Write down some essential activities required to develop the DFD of a system. Develop DFD for Food Ordering System. In this system consider, Supplier, Kitchen, Manager and Customer are the entities who will interact with the system.

(c) What is an Entity Relationship Diagram (ERD) ? Explain various notations used to develop ERD. Develop ERD for University system, which should include entities like Professor, Student, Course, Section, Department. Assume suitable attributes and relationship for these entities. **(3+10+5)**

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