

C10-R4 : SOFTWARE SYSTEMS

NOTE :

1. Answer question 1 and any FOUR questions from 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) Give the relative strengths and weaknesses of Waterfall Model and Incremental Model.
 - (b) "Software doesn't wear out but it deteriorates". Explain with the help of bath tub curve.
 - (c) Give reasons why analysis phase should be given sufficient time and implementation decisions should be deferred to design phase ?
 - (d) What is the difference between primary actor and secondary actor ?
 - (e) Depict and explain the relationship between modularity and software cost.
 - (f) Differentiate between software reliability and software availability measures and provide method of evaluating both measures.
 - (g) What is Architecture Tradeoff Analysis method ? (7x4)

2.
 - (a) How are requirements validated during Requirements Engineering ?
 - (b) Describe Problem Domain Model and Scope for Online Shopping Mall.
 - (c) Develop a Use Case diagram for Online Shopping Mall. (5+5+8)

3.
 - (a) What is the relative importance of formal technical reviews and informal reviews.
 - (b) Draw an ERD for Airline Reservation System.
 - (c) Draw a Context Diagram and First Level DFD for an ATM Software. (6+6+6)

4.
 - (a) What is functional independence and how is it achieved during design. Hence enumerate types of coupling and cohesion in order of worst to best for a maintainable software.
 - (b) Develop a set of classes for Food Delivery App Software and draw the Class diagram.
 - (c) What is the 4+1 architectural view of UML ? (8+5+5)

5.
 - (a) Draw State Chart Diagram for uploading prescription in online pharmacy.
 - (b) What is more important: Product or Process ? Justify your answer.
 - (c) Draw Sequence Diagram for prescription upload on online pharmacy system. (5+6+7)

6. (a) What is the difference between functional testing and structural testing ? Is it advisable to skip functional testing of a program unit, if thorough structural testing has been carried out ? Justify your answer.
- (b) Consider a program for classification of a triangle. Its input is a triple of positive (say a, b and c) from the interval [1,100]. The output may be [Scalene, Isosceles, Equilateral, Not a triangle]. Draw the flow graph & DD Path graph. Also find the independent paths from the DD Path graph and hence find its Cyclomatic Complexity.
- (c) Describe the McCall software quality model. How many product quality factors are defined and why ? How is it different from ISO 25010 quality Model ? (5+6+7)
7. (a) Draw an Activity diagram for placing Online order from a Shopping Mall.
- (b) Explain Architectural Complexity with the help of an example.
- (c) Explain the differences and similarities between Agents and Objects. (6+6+6)

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