[Total No. of Questions - 9] [Total No. of Printed Pages - 3]
(2124)

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M. Tech 3rd Semester Examination

Advanced Software Engineering Concepts

CSE1-E01/MT-E01

Time : 3 Hours **Max. Marks : 100**

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : Attempt any five questions. Question no. 9 is compulsory.

1. (a) Is software a product or process? Justify your answer with examples. (10)

   (b) Mention at least two reasons as to why classical waterfall model can be considered impractical and cannot be used in real projects. (10)

2. (a) Discuss prototype model. What is the effect of designing a prototype on the overall cost of the project? (10)

   (b) Explain the spiral model of software development. What are the limitations of such a model? (10)

3. (a) Requirements analysis is unquestionably the most communication intensive step in the software engineering process. Why does the communication path frequently break down? (10)

   (b) What is software requirements specification (SRS)? List out the advantages of SRS standards. Why is SRS known as the black box specification of a system? (10)

4. (a) What do you understand with the term "requirement elicitation"? Discuss any two techniques in detail. (10)

   (b) Discuss the difference between the following:

   (i) Functional & nonfunctional requirements.

   (ii) User & system requirements. (10)

[P.T.O.]

5. (a) Identify different types of views of a system captured by UML diagrams. (10)

   (b) What are the advantages of iterative approach over sequential approach? Why is unified process called as iterative or incremental? (10)

6. Define the term object oriented modeling. In this context, what does UML provide to designers? What is doesn't provide. Discuss, what might the object modeling look like today if UML had not been developed. (20)

7. A safe has a combination lock that can be in one of three positions labeled 1, 2 and 3. The dial can be turned left or right (L or R). Thus there are six possible dial movements, namely 1L, 1R, 2L, 2R, 3L and 3R. The combination to the safe is 1L, 3R, 2L; any other dial movement will cause the alarm to go off. Draw the finite state machine for safe. (20)

8. (a) Draw a DFD for borrowing a book in a library which is explained below. "A borrower can borrow a book if it is available else he/she can resume for the book if he/she so wishes. He/she can borrow a maximum of three books." (10)

   (b) Draw the control flow graph for the following function named find-maximum. From the control flow graph, determine its cyclomatic complexity

```
int find-maximum (int, j, int j, int k)
{
    int max;
    if (i>j) then
        if (i>k) then max=i;
        else max=k;
        else if (i>k) max=i;
        else max=k;
        return (max);
{
```

(10)

9. Write a short notes for the following: (Compulsory question)

   (i) Collaboration Diagram.

   (ii) E-R diagram.

   (iii) Error sliding.

   (iv) Path testing.

   (v) Types of software maintenance.

   (vi) CMM.

   (vii) Measures metrics and measurement.

   (viii) Software crisis.

   (ix) Coupling and cohesion.

   (x) Structured chart. (10×2=20)