Code: CT41 **Subject: SOFTWARE ENGINEERING**

ALCCS - NEW SCHEME

Time: 3 Hours | **AUGUST 2012** | Max. Marks: 100

PLEASE WRITE YOUR ROLL NO. AT THE SPACE PROVIDED ON EACH PAGE IMMEDIATELY AFTER RECEIVING THE QUESTION PAPER.

NOTE:
- **Question 1 is compulsory and carries 28 marks. Answer any FOUR questions from the rest. Marks are indicated against each question.**
- **Parts of a question should be answered at the same place.**

Q.1   a. Explain the problems that might be faced by an organization if it does not follow any software life cycle model.

 b. List at least five important items developed during software design phase.

 c. Write down the importance of data dictionary in the context of good software design.

 d. Briefly describe Unit testing.

 e. Distinguish between Graphical User Interface vs. Text-based User Interface.

 f. Write a brief note on Automated Cross-Referencing.

 g. State at least five advantages of object-oriented design techniques.   **(7 × 4)**

Q.2   a. What is software prototype? Identify three reasons for developing a prototype during software development. Identify when a prototype needs to be developed.   **(10)**

 b. What do you understand by requirement elicitation? Discuss any two techniques in detail?   **(8)**

Q.3   a. What are the different criterion that enables us to evaluate a design method?   **(5)**

 b. Define Software architecture. Describe a set of properties that should be specified as part of an architectural design.   **(7)**

 c. Briefly explain Bottom-up and Top-down software design strategy.   **(6)**

Q.4   a. What is software testing? What are Test Principles? What are the attributes of a "good" test?   **(3+3+4)**

b. Consider a program for determination of the nature of roots of a quadratic equation. Its input is a triple of positive integers (say a, b, c) and values may be from interval [0, 100]. The program output may have one of the following words:

   [Not a quadratic equation; Real roots; Imaginary roots; equal roots]

Design the boundary value test cases.   **(8)**

Q.5 a. What is Software Requirements Specification? Briefly explain the characteristics of a good SRS.   **(9)**

   b. Explain software re-engineering process model using a suitable diagram.   **(9)**

Q.6 a. Define Software Metrics. What are the different categories of Software Metrics?   **(8)**

   b. Explain the Jelinski-Moranda model of reliability theory. There are 100 errors estimated to be present in a program. We have experienced 60 errors. Use Jelinski-Moranda model to calculate failure intensity with a given value of $\Phi = 0.03$. What will be failure intensity after the experience of 80 errors?   **(5+5)**

Q.7 Write shorts notes on the following:

   (i)   Rapid Application Development Model
   (ii) Software Testability
   (iii) Software Configuration Management   **(3×6)**