Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

A Constituent Institution of Manipal University

V SEMESTER B.TECH. (COMPUTER SCIENCE & ENGINEERING)

END SEMESTER EXAMINATIONS, NOV/DEC 2016

SUBJECT: SOFTWARE ENGINEERING [CSE 3104]

REVISED CREDIT SYSTEM
(29/11/2016)

Time: 3 Hours MAX. MARKS: 50

Instructions to Candidates:

- Answer **ALL** the questions.
- Missing data may be suitable assumed.

1A. Write a brief note on each of the following emergence of the software design techniques. **4M**
(a)Control Flow-Based Design (b)Data Structure-Oriented Design
(c)Data flow-Oriented Design (d)Object-Oriented Design

1B. With the help of a diagram explain the components of computer systems engineering. **4M**

1C. Define the term 'phase containment error'. How can the developer detect almost all errors that they commit in the same phase? **2M**

2A. Ensure when a prototype model needs to be developed for software product development. Write the prototype model representation with relevant details. **4M**

2B. Briefly discuss three important parts of a System Requirements Specification (SRS) document. Mention any three characteristics of a good SRS document. **4M**

2C. Mention the importance of cohesion and coupling in software product design. **2M**

3A. **4M**

A software system called root mean square calculating software, would read three integral numbers from the user in the range of -1000 and +1000 and then determine the root mean square of the three input numbers and display it. The system accepts three integers from the user and returns the result. (a)Demonstrate the concept of balanced data flow diagram (b) Write the context diagram and Level 1 data flow diagram. (c) Write the structure chart diagram using transformation analysis technique.

3B. **4M**

After a design is complete, the design is required to be reviewed. Why is design review important? Further the review team consists of members with design, implementation, testing and maintenance perspectives. What aspects are checked by each of this team?

3C. (a)Define the term Unified modelling language. **2M**
(b)Write complete UML Class notation for the following code.

```
class Point {
    private double x, y;

    Point(double x, double y) { this.x = x; this.y = y; }
    public double getX( ) { return x; }
    public double getY( ) { return y; }

    public double getDistFromOrigin( ) { ... }
    }
```

4A. **5M**
Consider the following scenario related to a "University Management System":
A student can submit assignments, the teacher assign marks/grades to those assignments and then uploads the result. The student is allowed to view the results.
(a)Identify the actors in this system? (b) Identify the use-cases in this system?
(c) Combine actors and use-cases in one use case diagram.

4B. Represent the following Unified Modelling Language standard notations for Class diagram relationships. **3M**
(a)Multiplicity of associations (b)Generalization
(c)Aggregation (d)Composition

4C. Distinguish between the following: **2M**
(a)Activity diagram and State Chart diagram
(b)Sequence diagram and Collaboration diagram

5A. (a)List any two representative coding standards for good software product development. **2M**
(b)State internal documentation and external documentation.

5B. (a)Distinguish between Black box testing and White box testing approaches of test case design. **3M**
(b) List any two desirable characteristics that a good user interface should possess.
(c) List the GUI design methodology.

5C. (a)Write the block diagram of precedence ordering among planning activities. **5M**
(b)Write a note on basic COCOMO model. Assume that the size of an org organic type software product has been estimated to be 32,000 lines of source code. Assume that the average salary of software engineers be Rs. 15,000/- per month. Let a1=2.4, a2=1.05, and b1=2.5, b2=0.38. Determine the effort required to develop the software product and the nominal development time.
(c)Putnam's work on staff level estimation.
(d)Mention two principle configuration management activities.