

(Please write your Exam Roll No.)

Exam Roll No.

END TERM EXAMINATION

THIRD SEMESTER [MCA] DECEMBER-2009

Paper Code: MCA209	Subject: Software Engineering
Paper Id-44209	(Batch: 2004-2008)
Time : 3 Hours	Maximum Marks :60
Note : Attempt any five questions.	

- Q1 (a) Write down the major characteristics of software. Illustrate with a diagram that the software does not wear out. (4)
- (b) What are the components of a software? Discuss how a software differs from a program. (4)
- (c) List out requirement elicitation techniques. Discuss any two techniques in detail. (4)
- Q2 (a) Discuss the spiral model. What are its advantages and disadvantages? (6)
- (b) Compare and contrast various software development life cycle models. (6)
- Q3 (a) Suppose that a project was estimated to be 600 KLOC. Calculate the effort and development time for each of the three models i.e., organic, semidetached and embedded. (6)
- (b) Consider the problem of result preparation automation system of B. Tech courses (or MCA program) of any university and design the following: (6)
- (i) DFD upto level 1
- (ii) Use case diagram
- (iii) Use case description for any one use case
- Q4 (a) Define coupling and explain various types of coupling? Which one is best and why? (6)
- (b) What are software metrics ? Describe information flow based metrics. (6)

Q5 (a) Consider the program for the determination of previous date in a calendar. Its input is a triple of day, month and year with the following range

```
1 <= month <= 12
1 <= day <= 31
1801 <= year <= 2009
```

The possible outputs would be previous date or invalid date. Design the boundary value, robust and worst test cases for the program. **(6)**

(b) Consider the following program segment.

```
1. void sort{ int b[],int n} {
2.   int i,j;
3.   for(i=0;i<n;i++)
4.     for(j=i+1;j<n;j++)
5.       if(b[i]>b[j])
6.         {
7.           temp=b[i];
8.           b[i] =b[j];
9.           b[j] =temp;
10.        }
11. }
```

(i) Draw the control flow graph and DD path graph for this program segment. **(4)**

(ii) Determine the cyclomatic complexity for this program using all the methods. (Show the intermediate steps in your computation. Writing only the final result is not sufficient). **(2)**

Q6 (a) Describe various maintenance cost estimation models. **(6)**

(b) Write a short note on Boledy and Lehman model for the calculation of maintenance effort. **(6)**

Q7 (a) What are various debugging approaches? Discuss them with the help of examples. **(6)**

(b) Describe the Mc Call software quality model. How many product quality factors are defined and why? **(6)**

Q8 Write short notes on the following:- **(4 x 3 = 12)**

(a) Reverse engineering and reengineering

(b) Use case diagram

(c) Integration Testing
