

# END TERM EXAMINATION

Second Semester [MCA] May-June 2012

Paper Code: MCA110

Subject: Software Engineering

Time: 3 Hours

Maximum Marks: 60

Note: Part-1 is compulsory. Attempt any one question from other parts.

## Part-I

(1 X 5=5)

- Define Software Crisis.
- Define Reliability.
- Define Scaffolding.
- Define CASE.
- Define Peak Manning.
- What notation you will use to represent call of module in Structure Chart?
- The Radial Dimension of Spiral Model represents the \_\_\_\_\_ and Angular dimension of spiral model represents the \_\_\_\_\_.

Q 2 Attempt any six of the following:-

(2.5 X 6 = 15)

- If a project required 100PM to produce 52000 LOC within 10 months period. Calculate the productivity and average staffing for the same project.
- What are various categories of maintenance? Which category consumes maximum effort and why?
- Differentiate Metric, Measure and Measurement with examples.
- Differentiate Software development testing Vs. Regression Testing.
- Differentiate Static Vs. Dynamic software estimation empirical Model.
- Annual change traffic (ACT) for a software system is 35% per year. The development effort is 400 PMS. Compute an estimate for Annual Maintenance Effort(AME).
- What are the various steps to analyse and design object oriented system?
- Identify the nature of relationship between two entities (X and Y) based on the outcomes of two questions given below:-
  - Can an occurrence of X to be associated with more than one Occurrence of Y?
  - Can an occurrence of Y to be associated with more than one occurrence of X?

a.	b.	Nature of relationship
Yes	Yes	
Yes	No	
No	Yes	
No	No	

## Part-II

- Q 3 a) what are the various Requirement Elicitation methods? Discuss FAST. (5)  
b) Discuss the various selection parameters to select software lifecycle model. (5)

OR

- Q 4 a) define term Software Engineering. Explain the major differences between software engineering and other traditional engineering disciplines. (5)

b) draw use case diagram for the Survey Management System. A survey Institution that performs/manages public survey data is collected, a senior staff adds a survey header into the database, senior or junior staff adds questions into the survey may categorizes questions or add a question category. Questions with sensitive content are restricted to senior staff. (5)

**Part-III**

- Q 5 a) discuss Information Flow Metrics with its limitation. How a more Sophisticated Information Flow Model can overcome them. (5)  
b) Define Module Coupling and explain different types of coupling. (5)

**OR**

- Q 6 a) explain the Putnam Resource Allocation model. Derive the time and effort equation. (6)  
b) what are risk management activities? How are risks prioritized? (4)

**Part-IV**

- Q 7 write a program of Binary Search in C. Find out the following:- (10)
- |                         |                       |
|-------------------------|-----------------------|
| a) Unique operator      | b) Vocabulary         |
| c) Program volume       | d) Program Length     |
| e) Potential Volume     | f) Program Difficulty |
| g) Estimated Length     | h) Difficulty         |
| i) Estimated Difficulty | j) Effort             |

**OR**

- Q 8 a) Discuss Five Levels of CMM with all KPAs. (5)  
b) Assume that a program will experience 150 failures in infinite time. It has now experience 80. The initial failure intensity was 10 failures/CPU hr. (5)  
i. determine current failures intensity.  
ii. calculate the failures experienced and failure intensity after 25 and 40 CPU hrs. Execution.

**Part – V**

- Q 9 a) Differentiate Functional Testing from Structural Testing. (4)  
b) write a program to find the largest of three numbers using C. Draw program graph, decision to decision graph and calculate cyclomatic complexity of the program. (6)

**OR**

- Q 10 write a short notes on the following:- (10)
- Configuration management.
  - Mutation testing
  - Debugging Approach
  - Re-engineering

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