

# END TERM EXAMINATION

THIRD SEMESTER [MCA] DECEMBER 2007

Paper Code: MCA209

Subject: Software Engineering

Time: 3Hours

Maximum Marks: 60

Note: Attempt Five Questions including Q.1 and selecting one question from each unit.

Q.1 Answer the following: -

- Project risk factor is consider in (i) Waterfall model (ii) Spiral model (iii) Quick & Fix model (iv) (ii) and (iii).
- In s/w requirement analysis and specification, FAST stands for \_\_\_\_\_
- In Requirements Engineering QFD stands for \_\_\_\_\_
- How technology factor 'C' is defined in Putnam Resource allocation model? What is its significance?
- Differentiate between flow chart and structure chart
- Write formula for Language level and Program volume.
- Reliability of software is measured at \_\_\_\_\_ phase
- In logarithmic Poisson execution model, 0 is known as \_\_\_\_\_. What is its significance?
- Will exhaustive testing guarantee that the program is 100% correct?
- For a function of n variables robustness testing of boundary value analysis yields: (i)  $4n+1$  (ii)  $6n+1$  (iii)  $4n+3$  (iv) none of above

## UNIT-I

- Q.2 (a) What are advantages of developing the prototype of a system? Is there any disadvantage? Explain
- (b) Discuss the election process parameters for a life cycle model.

- Q.3 (a) An airline reservation is an association between a passenger, a flight and a seat. Select few Pertinent attributes for each of these entity types and represent a reservation in E-R diagram.
- (b) What are crucial process steps of requirement engineering? Discuss with help of a diagram.
- (c) Which one is most popular requirements elicitation and why?

## UNIT-II

- Q.4 (a) Explain Walston-Felix model and compare it with SEL model.
- (b) Assuming Putnam model with  $S=100,000$ ,  $C=5000$ ,  $D_0=15$ , compute development time  $t_d$  and manpower development  $k_d$ .
- (c) What is risk exposure? What techniques can be used to control each risk?

- Q.5 (a) If a module has logical cohesion, what kind of coupling is the module likely to have with others? Justify.
- (b) Give at least one example for each of cohesion. The example should be either from O.S or from any of widely used software.
- (c) List points of a simplified design process.

## UNIT-III

- Q.6 (a) Define each of following term and derive/show their formula-
- (i) Program level (ii) Potential volume (iii) Average life of a variable (iv) FANOUT
- (b) Differentiate between various categories of metrics.

- Q.7** (a) Explain Baehm Software Quality model with help of a block diagram.
- (b) Assume that a program will experience 150 failures in infinite time. It has now experienced 80. The initial failure intensity was 10-failures/CPU hr.
- Determine current failures intensity
  - Calculate the failures experienced and failure intensity after 25 and 40 CPU hrs of execution.
  - Compute additional execution time required to reach the failure intensity objectives of 2-failures/CPU-hr.
- Q.8** (a) Consider program for determination of date in a calendar. Its input is a triple of day, month And year with following range  $1 \leq \text{month} \leq 12$   $1 \leq \text{day} \leq 31$   $1900 \leq \text{year} \leq 2005$ . The possible Outputs would be Net date or invalid input date. Design boundary value, robust and worst test cases for this program.
- (b) Describe equivalence class testing method.
- (c) Explain usefulness of decision table during testing.
- Q.9** (a) Draw flow graph for a program of largest of three numbers. Find out all independent paths that will guarantee that all statements in the flow graph have been tested.
- (b) Discuss suggestions that may be useful for modification of the legacy code.
- (c) What are configuration management activities? Explain.