

# END TERM EXAMINATION

FOURTH SEMESTER [BCA] MAY- JUNE 2015

Paper Code: BCA-208

Subject: Software Engineering  
(Batch 2011 onwards)

Time: 3 Hours

Maximum Marks: 75

Note: Attempt any five questions including Q.1 which is compulsory.  
Select one question from each unit.

- Q1 Answer the following question briefly: (2.5x10=25)
- (a) What do you mean by Prototyping?
  - (b) List out requirements elicitation techniques. Which one is most popular and why?
  - (c) What is more important: Product or process? Justify your answer.
  - (d) Differentiate between function point and LOC.
  - (e) What problem are likely to arise if a module has low cohesion?
  - (f) What is the importance of language level in Halstead theory of software science?
  - (g) Discuss the limitations of testing.
  - (h) What is the difference between Alpha and Beta testing?
  - (i) What are the various categories of maintenance. Which category consume maximum effort.
  - (j) Define software Re-Engineering.

### Unit-I

- Q2. (a) Discuss the prototype model. What is the effect of designing a prototype on the overall cost of the software project. (6.5)
- (b) Draw 1-level DFD and E-R diagram of hospital management system. (6)
- Q3. (a) List five desirable characteristics of a good SRS document. Discuss the relative advantages of formal requirement specifications. List the important issues, which an SRS must address. (6.5)
- (b) Consider the problem of railway reservation system and design the following: (6)
- (i) Problem statement
  - (ii) Use case diagram
  - (iii) Use cases

### Unit-II

- Q4. (a) What are the various factors of management dependency in software development? Discuss each factor in detail. (6)
- (b) A project size of 200 KLOC is to be developed. Software development team has average experience on similar type of projects. The project schedule is not very tight. Calculate the effort, development time, average staff size and productivity of the project. Refer "Basic COCOMO coefficients" table below: (6.5)

Project	a <sub>b</sub>	b <sub>b</sub>	c <sub>b</sub>	d <sub>b</sub>
Organic	2.4	1.05	2.5	0.38
Semidetached	3.0	1.12	2.5	0.35
Embedded	3.6	1.20	2.5	0.32

- Q5. (a) Discuss the various types of COCOMO model. Explain the phase wise distribution of effort. (6.5)

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- (b) The value of size of program in KLOC and different cost drivers are given below:

Size=400KLOC, Complexity=0.85, Analyst capability=1.19, Modern in programming Practices=0.82, Required software reliability=0.75 (6)  
 Calculate the effort, development time, average staff size and productivity of the project using COCOMO model.

Project	$a_i$	$b_i$	$c_i$	$d_i$
Organic	3.2	1.05	2.5	0.38
Semidetached	3.0	1.12	2.5	0.35
Embedded	2.8	1.20	2.5	0.32

**Unit-III**

- Q6. (a) What is modularity? Explain different type of coupling. (6)  
 (b) For a program with number of unique operators  $n_1=20$  and number of unique operands  $n_2=40$ , Compare the following.  
 (i) Program volume (ii) Effort and time  
 (iii) program length (iv) program level (6.5)
- Q7. (a) Define Data Structures matrices. How can we calculate amount of data in a program? (6.5)  
 (b) Differentiate between Function oriented design and object oriented design. (6)

**Unit-IV**

- Q8. (a) What are the various debugging approaches? Discuss them with the help of examples. (6)  
 (b) Consider a program to determine whether a number is 'odd' or 'even' and print the message NUMBER IS EVEN OR NUMBER IS ODD. The number may any valid integer. Design equivalence class test cases.(6.5)
- Q9. (a) What is software maintenance? Describe various categories of maintenance. Which category Consumes maximum effort and why?(6.5)  
 (b) Write short note on the following: (2x3=6)  
 (i) Configuration Management  
 (ii) Documentation

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