

(Please write your Exam Roll No.)

Exam Roll No. 05714 202011

# END TERM EXAMINATION

FOURTH SEMESTER [BCA] MAY-JUNE-2013

Paper Code: BCA208

Subject: Software Engineering (New)

Time : 3 Hours

Maximum Marks : 75

Note: Attempt any five questions including Q.no.1 which is compulsory.  
Select one question from each unit. Scientific calculator is allowed.

Q1. Attempt any five of the following: 5x5 = 25

- Write a short note on Cause Effect Graphing Technique.
- What is data dictionary? Why is it useful?
- Write short notes on Regression Testing and Reverse Engineering.
- Explain various Risk Management Activities.
- Why is the primary goal of software development now shifting from producing good quality software to good quality maintainable software?
- Write a short note on FAST (Facilitated Application Specification Technique).

## Unit I

- Q2. a) Explain in detail prototype model. What are the advantages and disadvantages of developing a prototype of a system? 6.5
- b) Consider the problem of Student Admission System of a University, which is to be automated. For this system: Draw a Use Case Diagram and 1-level DFD (Write your assumptions, if any) 6

OR

- Q3. a) Explain Spiral Model in detail. What are its advantages and disadvantages? 6.5
- b) Consider the following problem statement: 6
- A Police Vehicle & Control System ensures that incidents are logged and routed to the most appropriate police vehicle. Some incidents are more serious than others and require a more urgent response. The classes of response are identified and incidents are allocated to these classes. The position of the vehicle is also taken into account so that the closest vehicle is sent to respond to the incident. Some incidents may require more than one vehicle and some incidents, like accidents, may require specialized vehicles. Location of incident may also decide the number of vehicles to be sent. The emergency services like the fire and ambulance services are automatically alerted. The details of the reporter of the incident are also logged. At the end, the report of the police on the incident is produced.
- Draw a Use Case Diagram and 1-level DFD (Write your assumptions, if any)

## Unit II

- Q4. a) A project size of 400 KLOC is to be developed. Software development team has very little previous experience. The project schedule is very tight. Calculate the effort, development time, average staff size and productivity of the project. Refer "Basic COCOMO coefficients" table below. 6

Project	$a_b$	$b_b$	$c_b$	$d_b$
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

- b) Explain in brief "The Management Spectrum" and its role in Software Development. 6.5

OR

- Q5. a) The value of size of program in KLOC and different cost drivers are given below:  
Size = 300 KLOC, Complexity = 0.85, Analyst Capability = 1.19, Modern Programming Practices = 0.82  
Required Software Reliability = 0.75,  
Calculate the effort, development time, average staff size and productivity for the project using COCOMO Model. 6

P.T.O.

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

- b) Explain Size Estimation Techniques in brief with suitable examples. 6.5

#### Unit III

- Q6. a) Write a short note on Object Oriented Design. 4.5  
 b) Explain Halstead Software Science Measures for: Program Length, Potential Volume, Program Level and Language Level 8

OR

- Q7. a) Explain Data Structure Metrics in brief. 4.5  
 b) What do you mean by Modularity? Explain Module Cohesion in detail and its relationship with Coupling. 8

#### Unit IV

- Q8. a) Consider a program to determine whether a number is "odd" or "even" and print the message "Number is EVEN" or "Number is ODD". The no. may be any valid integer in range 1 to 1000. Generate test cases using Boundary Value Analysis Technique and Equivalence class testing technique. 8  
 b) Write a short note on Configuration Management. 4.5

OR

- Q9. a) Consider a program given below for the selection of the largest number 8

```

1  main()
2  { float a,b,c;
3  printf(" Enter three values\n");
4  scanf("%f%f%f, &a,&b,&c);
5  printf("\n Largest value is");
6  if(a>b)
7  { if(a>c)
8  printf("%f\n",a);
9  else
10 printf("%f\n",c);
11 }
12 else
13 { if(c>b)
14 printf("%f\n",c);
15 else
16 printf("%f\n",b);
17 }
18 }
```

Draw a flow graph and DD path graph for the above program and find all independent paths. Also check whether all du paths are definition clear or not.

- b) Explain Maintenance Process in brief. 4.5

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