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Eighth Semester B.E. Degree Examination, June/July 2011
Software Testing

Time: 3 hrs.

Max. Marks:100

**Note: Answer FIVE full questions selecting
at least TWO questions from each part.**

PART – A

- 1 a. Explain errors, faults and failures in the process of programming and testing with a flow diagram. (08 Marks)
- b. What are the quality attributes of software? Explain in detail. (12 Marks)
- 2 a. Explain control flow graph. Write CFG for the following code:
 1. Begin
 2. Int a, b, large
 3. Input a, b
 4. if a > b
 5. large = a;
 6. else
 7. large = b;
 8. Output large
 9. End
 (10 Marks)
- b. Explain the five different types of classifiers. (10 Marks)
- 3 a. Write the systematic procedure for equivalence partitioning. (10 Marks)
- b. Explain the steps in the category partition method. (10 Marks)
- 4 a. Explain the notations used in cause effect graphing. (10 Marks)
- b. What is decision table? What is its composition? (10 Marks)

PART – B

- 5 a. What is structural (code based) testing? Why to use white box testing, when black box testing is used to test conformance to requirements? (06 Marks)
- b. Which are different code based testing and adequacy criteria? Explain in detail. (14 Marks)

- 6 a. Explain data dependence and control dependence graphs. (10 Marks)
- b. Construct PDG (Program dependence graph) for the following program:
1. Begin
 2. Int x, y, power
 3. float z
 4. input (x, y)
 5. if (y < 0)
 6. power = - y;
 7. else
 8. power = y;
 9. z = 1
 10. while (power != 0) {
 11. z = z * x
 12. power = power - 1;
 13. }
 14. if (y < 0)
 15. z = 1/z;
 16. output (z)
 17. end
- (10 Marks)
- 7 a. What is scaffolding? Explain the purpose of scaffolding. (05 Marks)
- b. What is test oracle? What are its advantages and disadvantages over human oracle? (05 Marks)
- c. Explain the following testing terms:
Test case, test case specification, test obligation, test suite, test or test execution, adequacy criteria. (10 Marks)
- 8 a. Explain cleanroom with neat diagram. (10 Marks)
- b. Write short notes on the following :
- i) Regression testing
 - ii) Walkthroughs and inspection. (10 Marks)

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PART – A

- 1 a. Explain the static and dynamic software quality attributes. (08 Marks)
b. Briefly explain the different types of test metrics. (08 Marks)
c. What are input domain and program correctness? (04 Marks)
- 2 a. Explain how the control flow graph assists the testers in the analysis of a program to understand its behavior in terms of the flow of control with relevant examples. (10 Marks)
b. Describe the following test classifiers :
i) Source of test generation ; ii) Life cycle phase ; iii) Test process models. (10 Marks)
- 3 a. Describe the steps involved in a systematic procedure for equivalence partitioning by considering boiler control system as an example. (10 Marks)
b. Explain the steps involved in the generation of tests using the category partition method with suitable examples. (10 Marks)
- 4 a. Explain the notations used in cause-effect graphing and describe the creation of cause – effect graphs for GUI – based computer system. (10 Marks)
b. Briefly explain the procedure for generating the BOR – constraint set and BRO – constraint set from abstract syntax tree of ca predicate Pr. (10 Marks)

PART – B

- 5 a. Describe the following with an example :
i) Statement testing ; ii) Branch testing. (10 Marks)
b. Explain the path testing for C-function for searching to nearly and dynamically re-arranging a linked list. Also describe the control flow graph for the above C – function. (10 Marks)
- 6 a. Describe the algorithms for available expressions classical data flow analysis with an example using control flow graph. (10 Marks)
b. Explain the data flow testing criteria ad data flow coverage with complex structures. (10 Marks)
- 7 a. Explain the adequacy criteria. (08 Marks)
b. Describe the test oracles with a neat diagram. (08 Marks)
c. What is scaffolding? Explain. (04 Marks)
- 8 a. Explain in detail the integration testing strategies. Describe the use of integration testing in detecting the memory leaks. (10 Marks)
b. Describe the following types of testing :
i) System testing ; ii) Acceptance testing. (10 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

