Reg. No. | | | | | | | | | | | | |

Question Paper Code : 51745

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2016

Seventh Semester

Computer Science and Engineering

IT 2032/IT 702/10177 ITE 24/10144 CSE 15 – SOFTWARE TESTING

(Common to Information Technology)

(Regulations 2008/2010)

(Common to PTIT 2032/10144 CSE 15 – Software Testing for B.E. (Part-Time) Sixth Semester Computer Science and Engineering – Regulations 2009/2010)

Time : Three Hours **Maximum : 100 Marks**

Answer ALL questions.

PART – A (10 × 2 = 20 Marks)

1. Define software quality.
2. What is a test case ? Give example.
3. State the difference between white-box testing and black-box testing.
4. What is boundary value analysis ? Give example.
5. Define regression testing.
6. What is alpha testing ?
7. List the organization structures for testing teams.
8. What are the skills needed by a test specialist ?
9. State the advantages of using automated tools for software testing.
10. What is a metric ? Give examples for software metrics.

PART – B (5 × 16 = 80 Marks)

11. (a) "Principles play an important role in all engineering disciplines and are usually introduced as part of an educational background in each branch of engineering". List and discuss the software testing principles related to execution-based testing. **(16)**

OR

(b) What is a defect ? List the origins of defects and discuss the developer / tester support for developing a defect repository. **(16)**

12. (a) Consider the following set of requirements for the triangle problem :

R1 : If $x < y + z$ or $y < x + z$ or $z < x + y$ then it is a triangle

R2 : If $x \neq y$ and $x \neq z$ and $y \neq z$ then it is a scalene triangle

R3 : If $x = y$ or $x = z$ or $y = z$ then it is an isosceles triangle

R4 : If $x = y$ and $y = z$ and $z = x$ then it is an equilateral triangle

R5 : If $x > y + z$ or $y > x + z$ or $z > x + y$ then it is impossible to construct a triangle. Now, consider the following causes and effects for the triangle problem :

Causes (inputs) :

- C1 : Side "x" is less than sum of "y" and "z"
- C2 : Side "y" is less than sum of "x" and "z"
- C3 : Side "z" is less then sum of "x" and "y"
- C4 : Side "x" is equal to side "y"
- C5 : Side "x" is equal to side "z"
- C6 : Side "y" is equal to side "z"

Effects:

- E1 : Not a triangle
- E2 : Scalene triangle
- E3 : Isosceles triangle.
- E4 : Equilateral triangle
- E5 : Impossible

What is a cause-effect graph ? Model a cause-effect graph for the above. **(16)**

OR

(b) Consider the following fragment of code :

```
i = 0;
while (i < n – 1) do
j = i + l;
while (j < n) do
if A[i] < A[j] then
swap (A[i], A[j]);
end do;
i = i + l;
end do;
```

Identify bug (s) if any in the above program segment, modify the code if you have identified bug (s). Construct a control flow graph and compute Cyclomatic complexity. **(16)**

13. (a) What is unit testing ? Explain with an example the process of designing the unit tests, running the unit tests and recording results. **(16)**

OR

(b) What is integration testing ? Explain with examples the different types of integration testing. **(16)**

14. (a) What is a test plan? List and explain the test plan components. **(16)**

OR

(b) Explain the role played by the managers, developers/testers, and users/clients in testing planning and test policy development. **(16)**

15. (a) What is software test automation ? State the major objectives of software test automation and discuss the same. **(16)**

OR

(b) Discuss with diagrammatic illustration the testing maturity model. **(16)**