



**B.E DEGREE EXAMINATIONS: MAY 2017**

(Regulation 2014)

Sixth Semester

**COMPUTER SCIENCE AND ENGINEERING**

U14CSTE83: Software Quality Assurance and Testing

**COURSE OUTCOMES**

- CO1:** Outline software testing methods  
**CO2:** Summarize risk in software project development.  
**CO3:** Develop knowledge in understanding the importance of Software Quality Assurance.  
**CO4:** Utilize the appropriate testing techniques for information systems development.  
**CO5:** Apply the metrics involved in software development.

**Time: Three Hours**

**Maximum Marks: 100**

**Answer all the Questions:-**

**PART A (10 x 1 = 10 Marks)**

1. Matching type item with multiple choice code

CO1 [K3]

List I	List II
A. Execution testing	i. Testing at customers premises
B. Non-execution testing	ii. Cyclomatic complexity
C. Structural testing	iii. Inspection, peer reviews
D. Beta testing	iv. Boundary value analysis

- |    | A   | B   | C   | D  |
|----|-----|-----|-----|----|
| a) | ii  | i   | iii | iv |
| b) | iii | iv  | ii  | i  |
| c) | ii  | iv  | iii | i  |
| d) | iv  | iii | ii  | i  |

2. Which of these can be successfully tested using Loop Testing methodology?

CO1 [K2]

- |                       |                     |
|-----------------------|---------------------|
| a) Simple Loops       | b) Nested loops     |
| c) Concatenated loops | d) All of the above |

3. Which of the following statements are not true? CO2 [K2]
- 1) Unit testing is a type of black box testing
  - 2) Regression testing is performed by selected customers
  - 3) Risk implies future uncertainty about deviation from expected outcome.
- a) 1,3 b) 1,4  
c) 1,2 d) 2,3
4. To test a function, the programmer has to write a \_\_\_\_\_, which calls the function and passes it test data. CO2 [K2]
- a) Driver b) Stub  
c) Proxy d) None of the above
5. Assertion (A): Mutation testing is a type of white box testing which is mainly used for unit testing. CO1 [K2]
- Reason (R): It is a type of software testing where we change certain statements in the source code and check if the test cases are able to find the errors.
- a) Both A and R are Individually true and R is the correct explanation of A b) Both A and R are Individually true but R is not the correct explanation of A  
c) A is true but R is false d) A is false but R is true
6. How much testing is enough? CO4 [K3]
- a) This question is impossible to answer b) The answer depends on the risks for your industry, contract and special requirements  
c) The answer depends on the maturity of your developers d) The answer should be standardized for the software development industry
7. Arrange the following in a sequence in which they are executed CO3 [K2]
1. Integration testing
  2. Acceptance testing
  3. System testing
  4. Unit testing
- a) 2-3-4-1 b) 1-3-2-4  
c) 3-4-2-1 d) 4-1-3-2
8. Cyclomatic Complexity method comes under \_\_\_\_\_ testing method CO3 [K3]
- a) White box b) Yellow box  
c) Black box d) Red box

9. Assertion (A): Defect leakage is the number of defects left uncovered after the test passes to next phase. CO5 [K2]

Reason (R): Defect leakage could be avoided by using iterative development models

- a) Both A and R are Individually true and R is the correct explanation of A      b) Both A and R are Individually true but R is not the correct explanation of A  
c) A is true but R is false      d) A is false but R is true

10. A regression test CO4 [K3]

- a) Will help ensure unchanged areas of the software have not been affected      b) Will always be automated  
c) Will help ensure changed areas of the software have not been affected      d) Can only be run during user acceptance testing

**PART B (10 x 2 = 20 Marks)**

**(Answer not more than 40 words)**

11. What is requirement traceability matrix? CO1 [K2]  
12. Differentiate between defect and a failure CO1 [K2]  
13. Name few risks that occur in software development CO2 [K2]  
14. Give examples of the ways in which a risk can be handled? CO2 [K3]  
15. List down a few metrics for software quality CO3 [K2]  
16. What is defect density? CO3 [K2]  
17. What phase of software development is most crucial? Why? CO4 [K3]  
18. What do you mean by defect removal effectiveness? CO4 [K3]  
19. How is availability metric computed? CO5 [K3]  
20. Compare process and product quality CO5 [K2]

**Answer any FIVE Questions:-**

**PART C (5 x 14 = 70 Marks)**

**(Answer not more than 300 words)**

**Q.No. 21 is Compulsory**

21. When is testing carried out during software development? Give the salient features of a good testing CO1 [K2]

- |  |     |     |      |
|--|-----|-----|------|
| 22. Explain the automated software development process and discuss the advantages and disadvantages.             |     | CO2 | [K2] |
| 23. Explain the use of seven basic tools in software development   |     | CO3 | [K2] |
| 24. Discuss the quality management models  |     | CO4 | [K2] |
| 25. i) What are the do's and don'ts of software process improvement?   | (8) | CO5 | [K2] |
| ii) Explain how auditing helps in quality improvement?   | (6) | CO5 | [K3] |
| 26. Give critical comments on the statement "Development and Testing are to be carried out by independent teams" |     | CO1 | [K3] |
| 27. Discuss Rayleigh Model for software quality  |     | CO4 | [K2] |

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