

Code No: 155GD

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD**B. Tech III Year I Semester Examinations, August/September - 2024****SOFTWARE TESTING****(Computer Science and Information Technology)****Time: 3 Hours****Max. Marks: 75****Note:** i) Question paper consists of Part A, Part B.

ii) Part A is compulsory, which carries 25 marks. In Part A, Answer all questions.

iii) In Part B, Answer any one question from each unit. Each question carries 10 marks and may have a, b as sub questions.

PART – A**(25 Marks)**

- 1.a) What is path predicates. [2]
- b) What are the types of software bugs? [3]
- c) What is transaction flow testing? [2]
- d) Define control flows in a software system. [3]
- e) What is Karnaugh-Veitch (KV) charts? [2]
- f) What is logic-based testing approach? [3]
- g) What are the principles of state testing? [2]
- h) What do you mean by testability tips for state testing? [3]
- i) What is the motivation behind using graph matrices? [2]
- j) What are the properties of a graph matrix representation? [3]

PART – B**(50 Marks)**

- 2.a) Discuss the significance of path sensitizing in path testing.
 - b) Explain why control flow graph is important in path testing? [5+5]
- OR**
- 3.a) Discuss the advantages and limitations of path testing.
 - b) What is path instrumentation, and how is it used in the application of path testing techniques? [5+5]
- 4.a) Describe the techniques used in transaction flow testing.
 - b) Discuss "nice" and "ugly" with their impact on the testability of a program. [5+5]
- OR**
- 5.a) Describe all-definitions, all-uses, and all-du-paths dataflow testing's.
 - b) Discuss the need for program slicing in dataflow testing. [5+5]
- 6.a) Describe the role of path expressions in logic-based testing techniques.
 - b) Describe the reduction procedure used to simplify path products and expressions. [5+5]
- OR**
- 7.a) Explain how regular expressions can be used for flow anomaly detection in software systems.
 - b) Discuss the importance of formal specifications in logic-based testing approaches. [5+5]

- 8.a) Explain the characteristics of "good" and "bad" state graphs.
b) Explain the importance of testing all possible state transitions in a state-based system. [5+5]

OR

- 9.a) Discuss the relationship between path testing or domain testing.
b) Discuss the role of state testing to uncover errors. [5+5]

- 10.a) Explain the basic structure of a graph matrix representation of a control flow graph.
b) Explain steps of the node reduction algorithm and discuss its purpose in simplifying graph matrices. [5+5]

OR

- 11.a) Explain how the power of a graph matrix is used to analyze paths between nodes in a graph?
b) Discuss the role of graph matrices in developing automated testing tools and algorithms. [5+5]

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