Code No: 155GD **R18**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, March - 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) "Testing is the process of executing a program with the intent of finding errors". Comment on this statement. [2]
b) What are the factors for determining the limit of testing? [3]
c) Define transaction flow testing and explain its significance in software testing. [2]
d) How do domains and paths relate to each other in software testing? [3]
e) What are path products and path expressions? [2]
f) How do path expressions aid in identifying critical paths for testing in complex software systems? [3]
g) How does automation impact state-based testing? [2]
h) How can state-based testing can be integrated into the software development lifecycle? [3]
i) Define graph matrices. [2]
j) What is the power of a matrix in the context of graph analysis? [3]

PART – B

(50 Marks)

2.a) Discuss the states of the bug with a suitable diagram.
b) What is the significance of cyclomatic complexity? How do you calculate the cyclomatic complexity number of the program having many connected components? Explain. [5+5]

OR

3.a) Classify the bugs based on criticality and explain each of them.
b) Define path, segment, path segment, length of path and independent path in the context of path testing. [5+5]

4.a) How does data flow testing differ from control flow testing? Discuss.
b) Explain the significance of domain and interface testing in ensuring software quality. [5+5]

OR

5.a) Explain the role of interfaces in transaction flow testing and domain testing.
b) Discuss the application of dataflow testing in identifying bugs or vulnerabilities in software. [5+5]

6.a) How are regular expressions used in flow anomaly detection? Give a detailed explanation.

b) What are decision tables, and how are they used in logic-based testing? Explain. [5+5]

OR

7.a) Discuss the principles of logic-based testing and its importance in software quality assurance.

b) Explain how flow anomaly detection using regular expressions enhances software security. [5+5]

8.a) Differentiate between good and bad state graphs with examples.

b) How can partitioning techniques be applied to state-based testing? Explain with examples. [5+5]

OR

9.a) Describe the concept of state testing and its objectives in software quality assurance.

b) Discuss the challenges associated with testing systems with large state spaces. [5+5]

10.a) Define relations in the context of graph matrices and discuss their relevance in software testing.

b) Explain the role of JMeter in software testing and how it relates to graph matrices. [5+5]

OR

11.a) Describe how WinRunner utilizes graph matrices for test automation and analysis.

b) Explain how a matrix represents a graph and discuss its applications in real-world scenarios. [5+5]

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