SREENIVASA INSTITUTE of TECHNOLOGY and MANAGEMENT STUDIES
(autonomous)

SOFTWARE TESTING METHODOLOGIES

Question bank

III - B.TECH / II - SEMESTER **Regulation: R16**

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

QUESTION BANK **SOFTWARE TESTING METHODOLOGIES (16CSE 325C)**

III B. TECH II-SEMESTER (CSE)

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16CSE 325C SOFTWARE TESTING METHODOLOGIES (CORE ELECTIVE-I)

Course Educational Objectives:

CEO1: To understand different testing levels on software models.

CEO2:To Identify structured and unstructured flow graphs and representing path and regular expressions

CEO3: To create control flow graphs from programs and specifying the requirements of complicated transaction flow.

CEO4: To model logic based testing with decision tables and state graphs.

CEO5: To Analyze the testing tools like JMeter or Win Runner.

UNIT-1: Introduction:

Purpose of testing – Dichotomies - model for testing - consequences of bugs - taxonomy of bugs.

Flow graphs and Path testing: Basic concepts of path testing – predicates - path predicates and achievable paths - path sensitizing - path instrumentation.

UNIT-2: Paths, Path products and Regular expressions

Path Products & Path Expression - Reduction Procedure - Applications - Regular expressions & Flow anomaly detection.

UNIT-3:

Transaction Flow Testing:-transaction flows - transaction flow testing techniques. Dataflow testing: Basics of dataflow testing - strategies in dataflow testing.

Domain Testing:-domains and paths - Nice & ugly domains - domain testing.

UNIT-4:

Logic Based Testing: overview - decision tables - path expressions - kv charts - State, State Graphs and Transition testing: state graphs - good & bad state graphs - state testing.

UNIT-5: Testing tools:

Winrunner - Loadrunner – Test director –Jmeter

Course Outcomes:

On successful completion of the course the student will be able to,

Course Outcomes		POs related to COs
CO1	Identify the various bugs and correcting them after knowing the consequences of the bug.	PO1, PO2
CO2	Design the path expression and reduce them very well when needed.	PO1, PO2, PO3
CO3	Perform functional testing using control flow and transaction flow graphs.	PO1, PO2, PO3
CO4	Test logic or an application and identifying the nice and ugly domains.	PO1, PO2, PO3,PO4
CO5	Use appropriate software testing tools, techniques and methods for even more effective systems during both the test planning and test execution phases of a software development project.	PO1,PO2,PO3,PO5

Text Books:

1. **"Software Testing Techniques", 2/e, 1990, Boris Beizer, Dreamtech, New Delhi, India.**
2. **"Software Testing Tools", 2/e, 2004, Dr.K.V.K.K.Prasad ,Dreamtech, New Delhi, India.**

Reference Books:

1. **"The craft of software testing", 2/e, 1995, BrianMarick, Pearson Education, New Delhi, India.**
2. **"Software Testing Techniques", 1/e, 2008 SPD (Oreille), New Delhi, India.**
3. **"Software Testing in the Real World", 1/e, 2008, Edward Kit, Pearson Education, New Delhi, India.**
4. **"Effective methods of Software Testing", 3/e, 2000, Perry, John Wiley, India.**
5. **"Art of Software Testing", 3/e, 2011, Meyers, John Wiley, India.**

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QUESTION BANK

Question No.	Questions	PO Attainment
UNIT – 1: Introduction, Flow graphs and Path testing		
PART-A (Two Marks Questions)		
1	Define Testing	PO1
2	State the differences between Flow Graph and Flow Chart.	PO1
3	Define the Purpose and Goal of Testing	PO1
4	Define Path Sensitization.	PO1
5	Define Path Instrumentation.	PO1
6	Distinguish between Error and Bug.	PO1
7	What type of testing is important for Web applications.	PO1
8	Define Path predicate.	PO1
9	Define Acceptance Testing	PO1
10	Write about bug prevention	PO1
11	List out the differences between White box testing and Black box testing	PO1
12	List out the differences between Verification and Validation	PO1
13	Define Static Testing?	PO1
14	Define beta testing?	PO1
15	Describe model for testing	PO1
16	List out the differences between Functional testing and Structural testing	PO1
17	State the differences between Designer and Tester	PO1
18	How to measure the bug importance	PO1
19	List out different types of Consequences of bugs	PO1
20	Define Traversal Marker or Link Marker	PO1
PART-B (Ten Marks Questions)		
1	Define testing and explain the purpose of testing.	PO1, PO2
2	Explain in detail about Taxanomy of Bugs	PO1, PO2
3	Discuss about requirements, features and functionality bugs.	PO1, PO2
4	Define control flow graphs? What are essential elements existing in flow graph representation? Explain with example.	PO1, PO2
5	List out the Phases of thinking of a Tester in detail	PO1, PO2
6	Define Testing Blindness. Explain the types of Testing Blindness.	PO1, PO2
7	Define Path Sensitization. Explain heuristic procedure for path sensitization using an example.	PO1, PO2
8	List out the various Testing Dichotomies in detail	PO1, PO2
9	Discuss about Verification and Validation with an example.	PO1, PO2
10	Draw and explain about the Types of Path Instrumentation?	PO1, PO2

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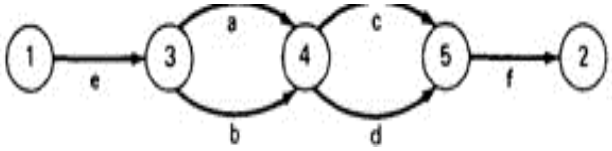
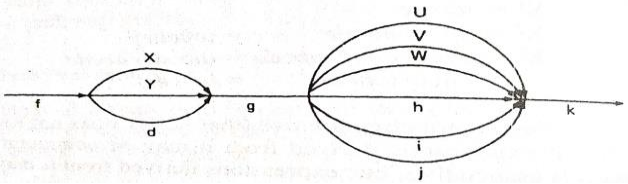
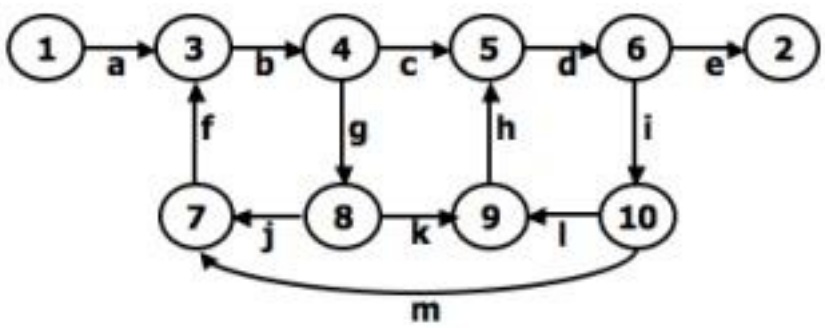
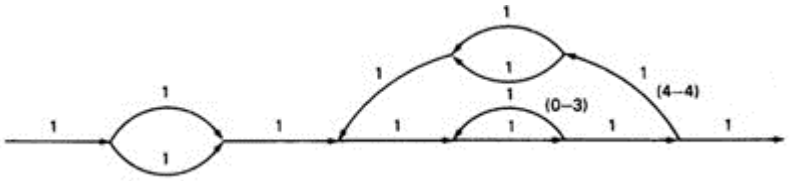
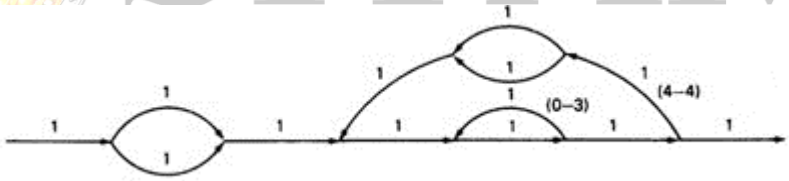
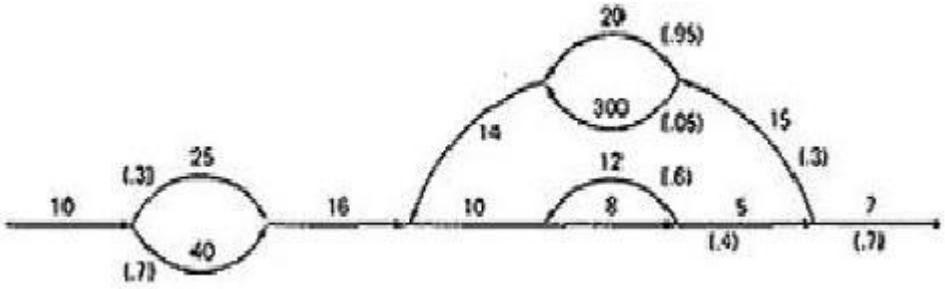
Question No.	Questions	PO Attainment
UNIT – 2: Paths, Path products and Regular expressions		
PART-A (Two Marks Questions)		
1	Define Path and Path Product.	PO1
2	Define Path and Path Sum.	PO1
3	Define Path Product with an example	PO1
4	Define Path Sum with an example	PO1
5	Draw a table of weight expressions for Maximum Path Count Arithmetic.	PO1
6	Draw a table of weight expressions for Minimum Path Count Arithmetic.	PO1
7	Draw a table of weight expressions for Probabilities of Getting There	PO1
8	Write Path Product for the following control flow graph. 	PO1
9	Write Path sum for the following control flow graph. 	PO1
10	Draw a table for PUSH/POP arithmetic.	PO1
11	Draw a table for GET/RETURN arithmetic.	PO1
12	Explain basic rules of Huang's theorem.	PO1
13	Define Path reduction Procedure	PO1
14	Define Maximum Path count arithmetic	PO1
15	Define Lower Path count arithmetic	PO1
16	List out the rules for Lower Path count arithmetic	PO1
17	List out the rules for Maximum Path count arithmetic	PO1
18	Define the mean processing time of a routine	PO1
19	List out the rules for PUSH/POP arithmetic	PO1
20	Define Regular expression	PO1
PART-B (Ten Marks Questions)		
1	Discuss about flow anomaly detection with an example	PO1, PO2, PO4

2	**Define reduction procedure with an example**	**PO1, PO2, PO4**
3	**Apply node reduction for the given graph** 	**PO1, PO2, PO4**
4	**Find maximum number of paths for the given graph.** 	**PO1, PO2, PO4**
5	**Find minimum number of paths for the given graph** 	**PO1, PO2, PO4**
6	**1. Find the probability of getting to the destination.** 	**PO1, PO2, PO4**
7	**Discuss PUSH/POP arithmetic using a graph in detail**	**PO1, PO2, PO4**
8	**Discuss GET/RETURN arithmetic using a graph in detail**	**PO1, PO2, PO4**
9	**Apply Huang's theorem for the given expression.** ***a(b + c)d(ef)*egh*i***	**PO1, PO2, PO4**

10	**Write short notes on** **a. Path Products** **b. Path Expressions** **c. Path Sums**	**PO1, PO2**

Question No.	Questions	PO Attainment
UNIT – 3: Transaction Flow Testing, Dataflow testing		
PART-A (Two Marks Questions)		
1	**Define Transaction?**	**PO1**
2	**Define Decision?**	**PO1**
3	**Define Biosis?**	**PO1**
4	**Define Mitosis?**	**PO1**
5	**Define Data flow testing?**	**PO1**
6	**Define Data flow graph?**	**PO1**
7	**Define Data object and its states?**	**PO1**
8	**Define All du paths?**	**PO1**
9	**Define AU strategy?**	**PO1**
10	**Define All p-uses/some c-uses strategy?**	**PO1**
11	**Define Slicing?**	**PO1**
12	**Define Dicing?**	**PO1**
13	**Define Domain testing?**	**PO1**
14	**List out the properties of nice domain?**	**PO1**
15	**Define Multi -instruction, Multi-data machines (MIMD) Architecture?**	**PO1**
16	**Define Static analysis?**	**PO1**
17	**Define Dynamic analysis?**	**PO1**
18	**Define Loop free path segment?**	**PO1**
19	**Define Convex?**	**PO1**
20	**Define interior point?**	**PO1**
PART-B (Ten Marks Questions)		
1	**Define Transaction? Explain with some transaction flow structure?**	**PO1, PO2**
2	**List out different transaction flow testing techniques explain in detail?**	**PO1, PO2,**
3	**Explain in detail about data flow testing?**	**PO1, PO2**
4	**Define data flow testing? Explain data flow testing strategies?**	**PO1, PO2**
5	**Define Domain? Explain Domain closure, domain dimensionality in detail?**	**PO1, PO2**
6	**Describe Nice and Ugly domains in detail?**	**PO1, PO2**
7	**Define Domain testing in detail**	**PO1, PO2**
8	**Define Domain and Interface testing in detail?**	**PO1, PO2**
9	**Define Domain testability explain in detail?**	**PO1, PO2**
10	**How Programmers and testers treat ugly domain explain with example?**	**PO1, PO2**

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Question No.	Questions	PO Attainment
UNIT – 4: Logic Based Testing, State, State Graphs and Transition testing		
PART-A (Two Marks Questions)		
1	Define Knowledge Based System	PO1
2	Define Decision Table	PO1
3	What is the expansion of I in Decision table	PO1
4	Define Literals	PO1
5	Define Product term	PO1
6	Define sum of products form	PO1
7	Define Prime Implicant	PO1
8	Define KV Charts	PO1
9	Explain KV Charts with Single variables	PO1
10	Define State graph	PO1
11	Give example for state graph	PO1
12	Define finite state machine	PO1
13	Define State table	PO1
14	Differentiate Time Vs Sequence	PO1
15	What are the Principles of judging a graph as a good or bad state graph	PO1
16	Define Impossible states	PO1
17	Define Equivalent states	PO1
18	Define Unreachable state	PO1
19	Define Dead state	PO1
20	Define State symbol product	PO1
PART-B (Ten Marks Questions)		
1	Define Decision table? Explain in detail about decision tables and structure	PO1, PO2, PO4
2	Explain KV charts in detail	PO1, PO2, PO4
3	Explain State graphs in detail	PO1, PO2, PO4
4	Discuss about Good and Bad state graphs in detail	PO1, PO2, PO4
5	With an example explain about State Transition Testing	PO1, PO2, PO4
6	Reduce the following functions using K-Maps F(A,B,C,D) = P(4,5,6,7,8,12,13)+d(1,15)	PO1, PO2, PO4
7	Explain with an example how to convert specification into state-graph. Also discuss how contradictions can come out.	PO1, PO2, PO3
8	Explain three variables and four variables in KV charts	PO1, PO2, PO4
9	Describe Knowledge based systems	PO1, PO2
10	Describe State testing in detail	PO1, PO2, PO4

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Question No.	Questions	PO Attainment
UNIT – 5: Testing tools		
PART-A (Two Marks Questions)		
1	Define Winrunner	PO1, PO2
2	Define the functionality of WinRunner	PO1, PO2
3	How to record a test case in WinRunner?	PO1, PO2
4	Define Test Script Language?	PO1, PO2
5	Define Rapid test script wizard?	PO1
6	Define Load Runner?	PO1, PO2
7	Define functionality of Load runner?	PO1
8	List out the LoadRunner components?	PO1
9	Define Transaction response time?	PO1
10	Define Hits Per Second?	PO1
11	Define Jmeter?	PO1
12	How JMeter Works?	PO1
13	Define Jmeter Test Plan Elements?	PO1
14	Define samplers?	PO1
15	Define Logic Controllers?	PO1
16	Define Test Fragments?	PO1
17	Define Listeners?	PO1
18	Define Test Director?	PO1, PO2
19	List out any 3 features of test director?	PO1
20	Define Test Management Process	PO1
PART-B (Ten Marks Questions)		
1	List and explain about Automated testing Tools in detail	PO1,PO2,PO3,PO5
2	Describe in detail about J meter Software Testing Tool	PO1,PO2,PO3,PO5
3	Describe in detail about Winrunner Software Testing Tool	PO1,PO2,PO3,PO5
4	Describe in detail about Load runner Software Testing Tool	PO1,PO2,PO3,PO5
5	Describe in detail about Test Director Software Testing Tool	PO1,PO2,PO3,PO5
6	Describe in detail about Test Management Process	PO1,PO2,PO3,PO5
7	Explain in detail about JMeter features	PO1,PO2,PO3,PO5
8	List out the steps for Creating Virtual Users Using Loadrunner Controller	PO1,PO2,PO3,PO5
9	List out the procedure for recording a test case is as follows	PO1,PO2,PO3,PO5
10	Discuss in detail about types of controller in JMeter tool	PO1,PO2,PO3,PO5

ALL THE BEST