A

***Course File Report***

**On**

**“Software Testing Methodologies”**

*In the department of*

***INFORMATION TECHNOLOGY***



***CMR TECHNICAL CAMPUS***

**(Affiliated to J.N.T.U, HYDERABAD)**

Kandlakoya(v),Medchal -501 401

CMR Technical Campus

Kandlakoya(V), Medchal Road, Hyderabad

**Department of Information Technology**

**COURSE FILE**

**Sub: STM**

**Year : III YEAR B.Tech–II SEM**

**Contents of Course file**

1. Department vision & mission
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12. Attainment of COs , POs and PSOs (Excel Sheet)
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**1. DEPARTMENT VISION & MISSION**

**Vision:** To produce globally competent and industry ready graduates in Computer Science &

Engineering by imparting quality education with a know-how of cutting edge technology and holistic personality

**Mission:**

**M1**. To offer high quality education in Computer Science & Engineering in order to

build core competence for the students by laying solid foundation in Applied Mathematics, and program framework with a focus on concept building

**M2**. The department promotes excellence in teaching, research, and collaborative activities to prepare students for professional career or higher studies

**M3**. Creating intellectual environment for developing logical skills and problem solving strategies, thus to develop, able and proficient computer engineer to compete in the current global scenario

**2. LIST OF PEOs AND POs**

**2.1 Program Educational Objectives (PEO):**

**PEO1:** Excel in professional career or higher education by acquiring knowledge in mathematical, computing and engineering principles

PE02:To provide intellectual environment for analyzing and designing computing systems for technical problems socially and economically.

**PEO 2: PEO 3:** Exhibit professionalism, multidisciplinary teamwork and adapt to current trends by engaging in lifelong learning and practice their profession with legal and ethical responsibilities.

**2.1 .Program Outcomes (PO):**

* **PO1**. An ability to apply knowledge of computing, mathematics, science and engineering fundamentals appropriate to the discipline.
* **PO2**. An ability to analyze a problem, and identify and formulate the computing requirements appropriate to its solution.
* **PO3.** An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs with appropriate consideration for public health and safety, cultural, societal and environmental considerations.
* **PO4**. An ability to design and conduct experiments, as well as to analyze and interpret data.
* **PO5**. An ability to use current techniques, skills, and modern tools necessary for computing practice.
* **PO6** An ability to analyze the local and global impact of computing on individuals, organizations, and society.
* **PO7.** Knowledge of contemporary issues.
* **PO8.** An understanding of professional, ethical, legal, security and social issues and responsibilities.
* **PO9.** An ability to function effectively individually and on teams, including diverse and multidisciplinary, to accomplish a common goal.
* **PO10.** An ability to communicate effectively with a range of audiences.
* **PO11.** An understanding of engineering and management principles and apply these to one’s own work, as a member and leader in a team, to manage projects.
* **PO12.** Recognition of the need for and an ability to engage in continuing professional development.

**NBA Graduate Attributes**

**PO1 Engineering knowledge**

**PO2 Problem analysis**

**PO3 Design/development of solutions**

**PO4 Conduct investigations of complex problems**

**PO5 Modern tool usage**

**PO6 The engineer and society**

**PO7 Environment and sustainability**

**PO8 Ethics**

**PO9 Individual and team work**

**PO10 Communication**

**PO11 Project management and finance**

**PO12 Life-long learning**

**3. List of Cos (Action Verbs as Per Blooms)**

CO-1: **Explain** different software testing methodologies for development of software

CO-2 : **Illustrate** Flow graphs and data flow testing.

CO-3: **Classify** Graph matrices and its Applications.

CO-4: **Choose** the path testing and regular Expressions.

CO-5: **Evaluate** the node reduction and domain testing

**CO-6: Design** the quality goals for software product through inspections/reviews of various testing strategies.

1. **Syllabus Copy and Suggested/Reference Books**

**Objectives**

To understand the software testing methodologies such as flow graphs and path testing, transaction flows testing, data flow testing, domain testing and logic base testing.

**UNIT – I**

**Introduction**:- Purpose of testing, Dichotomies, model for testing, consequences of bugs, taxonomy of bugs. Flow graphs and Path testing:- Basics concepts of path testing, predicates, path predicates and achievable paths, path sensitising, path instrumentation, application of path testing.

**UNIT –** **II**

**Transaction Flow Testing**:-transaction flows, transaction flow testing techniques.

**Dataflow testing**:- Basics of dataflow testing, strategies in dataflow testing, application of dataflow testing.

**UNIT – III**

**Domain Testing**:-domains and paths, Nice & ugly domains, domain testing. domains and interfaces testing, domain and interface testing, domains and test ability.

**UNIT–IV**

**Paths, Path products and Regular expressions**:- path products & path expression, reduction procedure, applications, regular expressions & flow anomaly detection.Logic Based Testing:- overview, decision tables, path expressions, kv charts, specifications.

**UNIT – V**

**State, State Graphs and Transition testing**:- state graphs, good & bad state graphs, state testing, Testa bility tips.Graph Matrices and Application:-Motivational overview, matrix of graph, relations, power of a matrix, node reduction algorithm, building tools. (Student should be given **an**exposure to a tool like JMeter or Win-runner).

**TEXT BOOKS**

* Software Testing techniques — Boris Beizer, Dreamtech, second edition.
* Software Testing Tools — Dr.K.V.K.K.Prasad,  Dreamtech.

**REFERENCE BOOKS**

* The craft of software testing – Brian Marick, Pearson Education.
* Software Testing,3rd edition,P.C. Jorgen sen, Aurbach publications (Dist.by SPD).
* Software Testing, N.Chauhan, Oxford University press.
* Introduction to Software Testing, P.Amman n & J offutt, cambridge Univ.Press.
* Effective methods of Software Testing, perry, John Wiley, 2nd Edition, 1999.
* Software Testing Concepts and Tools, P.Nageswara rao dreamtech Press.
* Software Testing, M.G.Limaye, TMH.
* Software Testing, S.Desikan, G.Ramesh, Pearson.
* Foundations of Software Testing, D.Graham & other, cengage Learning.
* Foundations of Software Testing, A.P.Mathur, Pearson.

1. **SESSION PLAN**

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| **S.NO** | **Topic (JNTU syllabus)** | | **Sub- Topic** | | **NO. OF**  **LECTURES REQUIRED** | | **Suggested Books** | | **Remarks** | | |
|  | | | | | | | | | | | |
| **1** | **Introduction** | | Introduction to Testing | | L1&L2 | | T1,T2,R1 | |  | | |
| **2** | Purpose of Testing | | L3&L4 | | T1,T2,R2 | |  | | |
| **3** | Dichotomies | | L5&L6 | | T1,T2,R2 | |  | | |
| **4** | Model for Testing | | L7&L8 | | T1,T2,R1 | |  | | |
| **5** | ***Consequences of Bugs*** | | L9,L10&L11 | | T1,T2,R1 | |  | | |
| **6** | ***Taxonomy of Bugs*** | | L12 | | T1,T2,R2 | |  | | |
| **7** | ***Tutorial/Class test*** | | L13 | |  | | 17 | | |
| **8** | **Flow graphs and Path testing** | | ***Basics of Path Testing*** | | L14,15&L16 | | T1,T2,R1 | |  | | |
| **9** | ***Predicates, Path Predicates and Achievable Paths*** | | L17,L18&L1 9 | | T1,T2,R2 | |  | | |
| **10** | ***Path Sensitizing*** | | L20 | | T1,T2,R1,R  2 | |  | | |
| **11** | ***Path Instrumentation*** | | L21 | | T1,T2,R1 | |  | | |
| **12** | ***Application of Path Testing*** | | L22&L23 | | T1,T2,R2 | |  | | |
| **13** | ***Tutorial/Class test*** | | L24 | |  | | 11 | | |
| **I** | | | | | | | | | | | |
| **14** | | **Transaction Flow Testing** | | Transaction Flows | | L25 | | T1,T2,R1,R  3 | |  | |
| **15** | | Transaction Flow Testing Techniques | | L26 | | T1,T2,R1,R 3 | |  | |
| **16** | | Transaction Flow Testing Implementation | | L27 | | T1,T2,R1,R 2 | |  | |
| **17** | | Basics of Data Flow Testing | | L28,L29,L30 &L31 | | T1,T2,R1,R 2 | |  | |
| **18** | | Strategies in Data Flow Testing | | L32&L33 | | T1,T2,R1,R 3 | |  | |
| **19** | | Application of Data Flow Testing | | L34&L35 | | T1,T2,R2,R 3 | |  | |
| **20** | | Tutorial/Class test | | L36 | |  | | **11** | |
| **UNIT-III** | | | | | | | | | | | |
| **21** | | | **Domain Testing** | | Domains and Paths | | L37&L38 | | T1,T2,R1,R 3 | |  |
| **22** | | | Nice Domains and Ugly Domains | | L39&L40 | | T1,T2,R3,R 2 | |  |
| **23** | | | Domain Testing | | L41&L42 | | T1,T2,R1,R  3 | |  |
| **24** | | | Domain and Interface Testing | | L43 | | T1,T2,R1,R 2 | |  |
| **25** | | | Domain and Testability | | L44 | | T1,T2,R1,R 3 | |  |
| **26** | | | Tutorial/Class test | | L45 | |  | | **9** |
| **UNIT-IV** | | | | | | | | | | | |
| **27** | | | **Paths, Path products and Regular expression** | | Path products and Path expressions | | L46&L47 | | T1,T2,R2,R 3 | |  |
| **28** | | | Reduction Procedure | | L48&L49 | | T1,T2,R1,R  4 | |  |
| **29** | | | Applications | | L50,L51&L5 2 | | T1,T2,R2,R 5 | |  |
| **30** | | | Regular Expressions  & Flow Anomaly Detection | | L53&L54 | | T1,T2,R1,R 4 | |  |
| **31** | | | Tutorial/Class test | | L55 | |  | | **10** |
| **32** | | | **Logic Based Testing** | | Overview of Logic based testing | | L56 | | T1,T2,R1,R 4 | |  |
| **33** | | | Decision Tables | | L57 | | T1,T2,R1,R  3 | |  |
| **34** | | | Path Expressions | | L58&L59 | | T1,T2,R1,R 4 | |  |
| **35** | | | KV Charts | | L60&L61 | | T1,T2,R2,R  5 | |  |

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| **36** |  | Specifications | L62 | T1,T2,R1,R  3 |  |
| **37** | Tutorial/Class test | L63 |  | **8** |
| **UNIT-V** | | | | | |
| **38** | **State, State Graphs and Transition testing** | state graphs | L64&L65 | T1,T2,R2,R 3 |  |
| **39** | good & bad state graphs, | L66&L67 | T1,T2,R1,R 4 |  |
| **40** | state testing | L68&L69 | T1,T2,R1,R  4 |  |
| **41** | Testability tips | L70 | T1,T2,R2,R  3 |  |
| **42** | Tutorial/Class test | L71 |  | **6** |
| **43** | **Graph Matrices and Application** | Motivational overview | L72 | T1,T2,R2,R  5 |  |
| **44** | matrix of graph | L73 | T1,T2 |  |
| **45** | relations | L74 | T1,T2,R2,R  5 |  |
| **46** | power of a matrix | L75 | R5 |  |
| **47** | node reduction algorithm | L77 | R5 |  |
| **48** | building tools | L78 | R5 |  |
| **49** | Tutorial/Class test | L79 |  | **7** |

**6. SESSION EXECUTION LOG**

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| **Lecture** | **JNTUH**  **Topic** | **Objective of each Topic** | **Learning Outcome** | **Practical Inferences** | **Method of** |

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| **No.** |  |  |  |  | **Teaching** |
| **UNIT 1 – Introduction** | | | | | |
| **L1,L2** | Introductio n to Testing | understand what is testing | **CO-1** | **understand need of testing** | **M1&M4** |
| **L3,L4** | Purpose of Testing | knows the  \* productivity and quality  \*phases in a testers mental life | **Useful to understand inspection method, design style ,static analysis methods**  **languages and development methodogies and development environment** | **M1&M4** |
| **L5,L6** | Dichotomie s | **Knows dichotomies among**   * **Testing verses debugging** * **Function versus structure** * **Designer versus tester** * **Modularity verses efficiency** * **Small verses large** * **Builder verses buyer** | **Useful to understand different roles and users in system** | **M1&M4** |
| L7&L8 | Model for Testing | **understand model of testing process** | **Useful to understand the functioning of environment**  **,program and bug model** | **M1&M4** |
| L9,L10& L11 | Consequenc es of Bugs | **Knows measuring of bugs in terms of human rather than machine and knows 10 most common consequences**  **of bugs** | **Understand the factors involved in bugs severity.** | **M1** |
| L12&L1 3 | Taxonomy of Bugs | **Knows the major categorize of bugs** | **Understand and knows how to deal with various**  **categorize of bugs** | **M1** |
| L14,15& L16 | Basics of Path Testing | **Understand what is**  **\*path testing**  **\*control flow graphs**  **\* path testing ,statement testing and branch** | **CO-1** | **Useful in path selection and kinds of loop with respect to path testing** | **M1,M4& M5** |

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|  |  | **testing**  **\*kinds of loops** |  |  |  |
| L17,L18 &L19 | Predicates, Path Predicates and Achievable Paths | **Understand what is**   * **Predicate** * **Path predicate expression** * **Predicate coverage** * **Testing**   **blindness and its categories** | **Understand how to evaluate the path predicate expression** | **M1** |
| L20 | Path Sensitizing | **\*Knows how to identify achievable and unachievable paths**  **\* knows the procedure for sensitizing paths** | **Implements path sensitizing procedure and identify the achievable and unachievable paths.** | **M1&M4** |
| L21 | Path Instrumenta tion | **Knows the concept of coincidental correctness and**  **Various instrumentation methods** | **Useful to understand interpretive trace program, line marker, two link marker and link counter** | **M1 &M4** |
| L22,L23  and L24 | Application of Path Testing | **Understand the different categories of implementation and applications of path testing** | **Understand what is**  **\*integration, coverage and paths**  **\* new code**  **\*maintenance**  **\*rehosting** | **M1,M4& M5** |
| **Lecture No.** | **JNTUH**  **Topic** | **Objective of each Topic** | **Learning Outcome** | **Practical Inferences** | **Method**  **of Teaching** |
| **UNIT – 2 Transaction Flow Testing** | | | | | |
| L25 | Transaction Flows | **Knows what is transaction and its contains.**  **Understand the transaction flow graph** | **CO-2** | **Useful in**  **understanding the complications, mergers and usages** | **M1 &M4** |
| **L26** | Transaction Flow Testing Techniques | **Understand various flow testing techniques such as**   * **Inspection** * **Reviews** * **Walk throughs** | **Used to find the errors by reading a group of code, check the semantics of a document and find**  **problems in written document.** | **M1 &M4** |
| **L27** | Transaction Flow Testing  Implementa | **Knows implementation of transaction flow in System control Structure** | **Knows about process queues and dispatch queues** | **M1**  **,M2&M5** |

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|  | tion |  |  |  |  |
| L28,L29  ,L30&L3 1 | Basics of Data Flow Testing | **Understand what is data flow testing**  **Understand what are data flow machines and their types**  **Knows Data object states and usages.**  **Data flow anomalies Classification and detection of anomalies What is data flow model**  **and its components** | **Understand and implement data flow testing.** | **M1&M4** |
| L32&L3 3 | Strategies in Data Flow Testing | **Know**  **\*what is definition- clear -path ,segment, loop free path, simple path segment and a du path.**  **\*static and dynamic anomaly detection**  **\*various types of dataflow testing strategies .**  **\*slicing and dicing** | **Knows the difference between transaction flow graph and data flow graph.** | **M1&M4** |
| L34,L35 &L36 | Application of Data Flow Testing | **Understand the relationship between dataobjects that represents the data.** | **Knows the limitation of data flow testing and used in developing the web applications with java technologies** | **M1**  **,M2&M5** |
| **UNIT – 3 Domain Testing** | | | | | |
| L37&L3 8 | Domains and Paths | **Understand what is domain. Domain testing based on specification and implementation.**  **Domain, path and predicate.**  **Domain closure and dimensionality**  **Domain errors** | **CO-5** | **Understand the domain test based specification and implementation** | **M1&M4** |
| L39&L4 0 | Nice Domains and Ugly Domains | **Understand what is nice domain and ugly domain.**  **Know the difference between nice domain and ugly domain.**  **Ambiguities And Contradictions.** | **Conversation of ugly domain to nice domain** |  |

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| L41&L4 2 | Domain Testing | **domain testing strategy**  **domain bugs and how to test for them. testing one and two**  **dimensional domains** |  | **Perform the boundary condition on the domain** | **M1&M4** |
| **L43** | Domain and Interface Testing | **Understand what is:**  d**omains and range:**   * **closure compatibility:** * **interface range / domain compatibility** | Identify the  difference between domain and range and check for the compatibility. | **M1&M4** |
| **L44&L4 5** | Domain and Testability | **Knows the**  **testability of the domain** | Understand the domain and testing of  domain | **M1&M4** |
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| **UNIT –4 PATHS, PATH PRODUCTS AND REGULAR XPRESSIONS** | | | | | |
|  | Path | **Know what is**   * **path product and path expression.** * **loops,identity elements** * **reduction procedure** |  | **Knows how to apply path sum and**  **implementation of**  **commutative and distributive law**  **Know how to apply reduction procedure** |  |
| L46&L4 | products |  | **M1,M4&** |
| 7 | and Path |  | **M5** |
|  | expressions |  |  |
| L48&L4 9 | Reduction Procedure | **Knows the conversion of flowgraph to path expression.**  **Knows node by node removal algorithm** |  | **Implements the reduction procedure with examples** | **M1,M4& M5** |
| L50,L51 &L52 | **Applications** | **Knows common pattern that all application follows**  **Understand maximum and minimum path count arithmetic Understand push/pop**  **,get/return arithmetic** | **CO-3** | **Under stand which test case to design.**  **Know the application of ush/pop ,get/return arithmetic** | **M1&M4** |
|  |  | **Understand structured flowgraph** |  |  |  |
| L53,L54 &L55 | **Regular Expressions & Flow**  **Anomaly Detection** | **Knows what is regular expression**  **Problem with generic flow anomaly detection Learn about HUANG’s** |  | **Know the**  **implementation of HUANG’s theorm** | **M1,M4& M5** |

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|  |  | **theorm** |  |  |  |
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| **Lecture No.** | **JNTUH**  **Topic** | **Objective of each Topic** | **Learning Outcome** | **Practical Inferences** | **Method of Teaching** |
| **L56** | Overview of Logic based testing | **LOGIC BASED**  **TESTING Understand what knowledge based system is.** | **CO-3** | **Implementation of knowledge based system** | **M1,M4& M5** |
| L57 | **Decision table** | **Learn what is**  **\*decision table and structure**  **\*decision table processor** | **Implementation of decision tables with condition stub and action stub** | **M1&M4** |
| L58&L5 9 | Path Expressions | **Knows what is predicate, Boolean algebra and its rule.**  **Knows how to**  **simplifying the path expression** | **Able to simplify the given path expression** | **M1&M4** |
| **L60&l61** | **Karnaugh – veitch chart(k-v chart)** | **knows what is k-v chart**  **.**  **handling the single variable, two variable**  **and three variable k-v chart** | **Able to apply k-v char for reduction of expression** | **M1,M4& M5** |
| **L62&l63** | **Specification** | **Understand the**  **specification of the logical based testing** | **Know the logical**  **based testing specifications** | **M1&M4** |
| **UNIT –5 State, State Graphs and Transition testing** | | | | | |
| **L64&L6 5** | **state graphs** | **Knows what is state graph, state table and software implementation.** | **CO-4** | **Knows the**  **implementation and operation, input encoding and output encoding. state and state code and state**  **symbols product** | **M1,M4& M5** |
| **L66&L6 7** | **good & bad state graphs,** | **Knows the principles for judging the good and bad state graphs.state bugs and transition bugs.** | **Able to identify the number of**  **states,imposible states and equivalent states. Able to identify unspecified and contradictory transition,unreached**  **states and dead states** | **M1&M4** |
| **L68&L6 9** | **state testing** | **Understand the impact of bugs, principles, limitations &extension** | **Knows the factors to be consider to catch the bugs.** | **M1&M4** |
| **L70&l71** | **Testability** | **Understand switches** | **Able to implement the** | **M1,M4&** |

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|  | **tips** | **,flags and unachievable paths**  **Knows the essential and**  **inessential finite state behaviors** |  | **design guidelines** | **M5** |
| L72 | Motivationa l overview | **Graph Matrices and Application Understand disadvantage of using graph path.**  **Know how to represent the graph as matrix and use matrix operation Know the basic algorithm such as**   * **partitioning algorithm** * **matrix multiplication** * **collapsing process** | **CO-6** | **Implement partitioning algorithm,**  **matrix multiplication collapsing process** | **M1,M4& M5** |
| **L73** | matrix of graph | **Know what is graph matrix.**  **Know how to generate**  **matrix from given graph** | **Able to find the connection graph and cyclomatic complexity** | **M1&M4** |
| L74 | relations | **Understand what is relation and how to represent the relation between two nodes.**  **Knows what is connected matrix and relation matrix**  **Knows the properties of relation.** | **Able to understand transition relation, reflexive symmetric, anti symmetric**  **,equivalence relation and partial ordering relation** | **M1&M4** |
| L75&L7 6 | power of a matrix | **Knows matrix power and product**  **Knows set of all paths and loops**  **Knows the algorithm such as partitioning**  **,transpose matrix** | **Able to implement the transpose of the matrix and**  **partitioning algorithms** | **M1,M4& M5** |
| L77 | node reduction algorithm | **Knows what is node reduction algorithm.**  **Implement the algorithm steps on the given graph** | **Able to apply the node reduction algorithm on the given graph and find the final path**  **expression.** | **M1,M4& M5** |
| L78&L7 9 | building tools | **Get the knowledge on the tools such as JMeter or win-runner** | **Able to get exposure on JMeter or Win- Runner** | **M1,M3, M4&M5** |

##### METHODS OF TEACHING:

|  |  |
| --- | --- |
| **M1 : Lecture Method** | **M6 : Tutorial** |
| **M2 : Demo Method** | **M7 : Assignment** |
| **M3 : Guest Lecture** | **M8 : Industry Visit** |
| **M4 : Presentation /PPT** | **M9 : Project Based** |
| **M5 : Lab/Practical** | **M10 : Charts / OHP** |

* 1. **LECTURE NOTES-added**
  2. **Assignment Question Paper Along With Sample Assignment Script-Added**

**Assignment 1**

1. Explain the model of testing in detail? (CO1)
2. Explain control flow graphs with neat diagram?(CO1)
3. Describe transaction flow testing techniques?(CO2)
4. Explain about transaction flow graph with its usage and complications?(CO2)
5. a) Illustrate model of domain testing?(CO3)

b) Define domains, paths and predicates?(CO3)

c) What is a domain closure?(CO3)

* 1. **Mid Exam Question Paper Along With Sample Assignment Script-Added**

**SET 1**

1. Explain the model of testing in detail? (CO1)
2. Explain control flow graphs with neat diagram?(CO1)
3. Explain about transaction flow graph with its usage and complications?(CO2)
4. a) Illustrate model of domain testing?(CO3)

b) Define domains, paths and predicates?(CO3)

**SET 2**

1. Write down the difference between a) Testing and Debugging?(CO1)

b) Functional and structural testing?(CO1)

2. Discuss path testing criteria with example?(CO1)

3. Describe transaction flow testing techniques?(CO2)

4. a) Define domains, paths and predicates?(CO3)

1. What is a domain closure?(CO3)

**SET3**

1. Explain the consequences of bugs?(CO1)
2. Define test blindness and briefly discuss about its types?(CO1)
3. Illustrate different data flow anomalies with examples?(CO2)
4. a) Illustrate model of domain testing?(CO3)

b) What is a domain closure?(CO3)

* 1. **SCHEME OF EVALUTION**

1.Write down the difference between a) Testing and Debugging?(CO1) 3 MARKS

b) Functional and structural testing?(CO1) 2 MARKS

2. Discuss path testing criteria with example?(CO1) 2 MARKS

Example 3 MARKS

3. Describe transaction flow testing techniques?(CO2) 5 MARKS

4. a) Define domains, paths and predicates?(CO3) 3 MARKS

1. What is a domain closure?(CO3) 2 MARKS

**11.MAPPING OF CO’S WITH PO’S &PSO’S**

**12.ATTAINMENT OF CO’S, PO’S&PSO’S (EXCEL SHEET)**

**13.UNIVERSITY QUESTION PAPERS**

1. Write down the difference between a) testing and debugging?

b) functional and structural testing?

2. explain the model of testing in detail?

3. explain the consequences of bugs?

4. explain a) **Requirements and Specifications Bugs:**

**b) Feature Bugs and Feature integration Bugs**

**5. explain external interfaces, internal interfaces, hardware architecture and software architecture of coding bugs?**

**6. explain control flow graphs with neat diagram?**

**7. discuss path testing criteria with example?**

8. Explain kinds of loops with respect to path testing?

9. define test blindness and briefly discuss about its types?

10. Illustrate with an example, the path sensitization?

11. define path instrumentation and explain its methods?

Unit 2:

1. Explain about transaction flow graph with its usage and complications?
2. Describe transaction flow testing techniques?
3. A) What is data flow testing and explains its machines?

b)define data object state and usage?

1. Illustrate different data flow anomalies with examples?
2. Describe data flow model with example?
3. Briefly explain about different data flow strategies?

Unit 3:

1. Illustrate model of domain testing?
2. Define domains, paths and predicates?
3. What is a domain closure?

**PART–A*(22 Marks)***

1. a) List any two goals of software testing. [3]

b) State at least two differences between verification and validation. [4]

c) Define basis path testing. [4]

d) Illustrate functional testing. [4]

e) Describe on test suit prioritization. [4]

f) List any two commercial software testing tools. [3]

**PART–B*(3x16 = 48 Marks)***

2. Explain the model of testing in detail. Also render software testing life cycle

model. Justify whether complete testing is possible or not.

[16]

3. a) Illustrate on Decision table based testing and Graph based testing. [8]

b) Explore on verification of requirements. [8]

4. a) Differentiate between white box testing and black box testing. [8]

b) Briefly discuss the pros and cons of Inspections and Structured Walkthroughs. [8]

5. Explain in detail about various validation techniques with examples. [16]

6. a) Discuss on how to minimize the test suit and its benefits. [8]

b) Discuss on SQA models. [8]

7. a) Testing a web based system is a tedious job. Do you agree? Justify. [8]

b) List various guidelines for automated testing process. [8]

1 of 1

**IV B.Tech I Semester Regular Examinations, November - 2016**

**SOFTWARE TESTING METHODOLOGIES**

**(Computer Science and Engineering)**

**Time: 3 hours Max. Marks: 70**

***Question paper consists of Part-A and Part-B***

***Answer ALL sub questions from Part-A***

***Answer any THREE questions from Part-B***

**\*\*\*\*\***

Code No:**RT41054 R13 Set No. 1**

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**PART–A*(22 Marks)***

1. a) Define a model for software testing. [3]

b) List any two activities of validation testing. [4]

c) Illustrate an example for loop testing. [4]

d) State the objectives of regression testing. [4]

e) Differentiate between bug and error. [4]

f) Briefly list any three challenges in testing web based software. [3]

**PART–B*(3x16 = 48 Marks)***

2. a) State the myths and facts about software testing. [8]

b) Explore on software testing methodology in detail. [8]

3. a) Illustrate on Boundary Value Analysis and Equivalence class Testing

techniques.

[8]

b) Explain in detail on how the verification of a code takes place. [8]

4. a) Discuss on Basis path testing with a neat sketch. [8]

b) How do you represent Graph matrices for testing process? Device the same

with example.

[8]

5. a) Differentiate between progressive and regressive testing process. [8]

b) List various regression testing techniques. [8]

6. Describe various measures to prioritize test suit. Also explain about basics of

testing management.

[16]

7. a) Categorize various testing tools necessary for testing. [8]

b) Explore on testing mobile systems. [8]

**IV B.Tech I Semester Regular Examinations, November - 2016**

**SOFTWARE TESTING METHODOLOGIES**

**(Computer Science and Engineering)**

**Time: 3 hours Max. Marks: 70**

***Question paper consists of Part-A and Part-B***

***Answer ALL sub questions from Part-A***

***Answer any THREE questions from Part-B***

***\*\*\*\*\****

Code No:**RT41054 R13 Set No. 2**

1 of 1

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**PART–A*(22 Marks)***

1. a) Briefly describe software testing life cycle. [4]

b) Describe how does the verification of a code is done. [4]

c) Discuss on technical reviews. [3]

d) Define unit testing. [4]

e) State prioritization techniques. [3]

f) Explain in brief about object oriented software testing. [4]

**PART–B*(3x16 = 48 Marks)***

2. a) List the goals of software testing [8]

b) Explain in detail about the model of software testing. [8]

3. Explore in detail about black box testing techniques with examples and neat

sketch.

[16]

4. a) Differentiate between dynamic testing and static testing. [8]

b) List the features of Technical reviews. [8]

5. a) Define regression. Device the template for regression testability. [8]

b) Explain about functional testing in detail. [8]

6. a) Explain in detail about software quality metrics. [8]

b) How is debugging different from testing. Illustrate with an example**.** [8]

7. a) Discuss on cost issues incurred in selection of testing tools. [8]

b) Explain about testing of web based systems. [8]

**IV B.Tech I Semester Regular Examinations, November - 2016**

**SOFTWARE TESTING METHODOLOGIES**

**(Computer Science and Engineering)**

**Time: 3 hours Max. Marks: 70**

***Question paper consists of Part-A and Part-B***

***Answer ALL sub questions from Part-A***

***Answer any THREE questions from Part-B***

***\*\*\*\*\****

Code No: **RT41054 Set No. 3 R13**

1 of 1

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**PART–A*(22 Marks)***

1. a) Differentiate effective and exhaustive software testing. [4]

b) Device the layout for boundary value analysis. [3]

c) Define mutation testing. [3]

d) State any two regression testing types. [4]

e) State any three Software Quality metrics. [4]

f) List any two guidelines for automated testing. [4]

**PART–B*(3x16 = 48 Marks)***

2. a) Explain in detail the relationship between software test life cycle and software

development life cycle.

[8]

b) Describe the features of software testing methodology. [8]

3. a) Differentiate between verification and validation. [8]

b) Explore on State Table based testing and Error guessing. [8]

4. a) Discuss on Loop testing and data flow testing techniques in detail. [8]

b) Explain about basis path testing with an example. [8]

5. a) Explain about unit testing with an example. [8]

b) Discuss on Objectives of regression testing. [8]

6. Explain various types of bugs. Many different bugs might result in domain

errors. Justify.

[16]

7. a) Describe the testing process in object oriented structures. [8]

b) List various types of testing tools with examples. [8]

1 of 1

**IV B.Tech I Semester Regular Examinations, November - 2016**

**SOFTWARE TESTING METHODOLOGIES**

**(Computer Science and Engineering)**

**Time: 3 hours Max. Marks: 70**

***Question paper consists of Part-A and Part-B***

***Answer ALL sub questions from Part-A***

***Answer any THREE questions from Part-B***

***\*\*\*\*\****

Code No: **RT41054 Set No. 4**

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**14.POWERPOINT PRESENTATIONS-ADDED**

**15.WEBSITES URL’S E-RESOURCES-ADDED**