



Course Plan
for
Software Testing Methodologies

IV B. Tech(CSE)


I SEMESTER

ACADEMIC YEAR

2015-16

Santisudha Panigrahi

Assistant Professor

	<p>COURSE PLAN</p>	2015-16
		Regulation: R12

FACULTY DETAILS:

Name of the Faculty:: Santisudha Panigrahi
 Designation: Asst.Profrssor
 Department:: CSE

1. TARGET

- a) Percentage Pass::100%
- b) Percentage I class:90%

2. COURSE PLAN

(Please write how you intend to cover the contents: i.e., coverage of Units by lectures, guest lectures, design exercises, solving numerical problems, demonstration of models, model preparation, or by assignments, etc.)

3. METHOD OF EVALUATION

- 3.1. Continuous Assessment Examinations (CAE 1, CAE 2)
- 3.2. Assignments / Seminars
- 3.3. Mini Projects
- 3.4. Quiz
- 3.5. Term End Examination
- 3.6. Others

4. List out any new topic(s) or any innovation you would like to introduce in teaching the subject in this Semester.

- Making the students to think beyond subject and making them understand that testing is a paradigm that help to access the quality of the software.

Signature of HOD
 Date:

Signature of Faculty
 Date:



GUIDELINES TO STUDY THE SUBJECT

2015-16

Regulation: R12

FACULTY DETAILS:

Name of the Faculty:: Santisudha Panigrahi

Designation: Asst.Profrssor

Department:: CSE

Guidelines for Preparing the Course:

Course Description:

This course will examine fundamental software testing and program analysis techniques. In particular, the important phases of testing will be reviewed, emphasizing the significance of each phase when testing different types of software. Students will learn the state of the art in testing technology for object-oriented, component-based, concurrent, distributed, graphical-user interface, and web software. In addition, closely related concepts such as mutation testing and program analysis (e.g., program-flow and data-flow analysis) will also be studied. Emerging concepts such as test-case prioritization and their impact on testing will be examined. Students will gain hands-on testing/analysis experience via a multi-phase course project. By the end of this course, students should be familiar with the state-of-the-art in software testing. Students should also be aware of the major open research problems in testing.

Course Objectives:

This course contributes to the development of the following capabilities:

- **Critical Analysis:** identifying appropriate strategies for testing an application, ensuring quality while minimizing cost, time and risk;
- **Analytical and Problem Solving:** designing test cases and plans that are thorough and reproducible; dealing with issues that arise during the quality assurance process;
- **Communication:** Identifying and presenting an appropriate strategy for testing an application, ensuring quality while minimizing cost, time and risk;
- **Teamwork:** working effectively in teams of QA engineers whose members may comprise of diverse cultural backgrounds and career experiences.

Learning Outcomes:

On completion of this course students will have a good understanding of the basic principles of software testing and experience practical applications of these, and in particular:

- manifest an understanding of theoretical and practical issues in software testing; and
- design thorough and appropriate test cases for different levels of testing; and
- know how software quality assurance activities fit into overall product development; and
- assume responsibility in an industry job as a software test analyst with confidence.



COURSE OBJECTIVES

2015-16

Regulation: R12

FACULTY DETAILS:

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On completion of this Subject / Course the student shall be able to:

S.No.	Objectives	Outcomes
1.	To ensure that the solution meets the business and user requirement	
2.	To catch errors that can be bugs or defects	
3.	To determining user acceptability	
4.	To ensuring that a system is ready for use	
5.	To gaining confidence that it works	
6.	Evaluating the capabilities of a system to show that a system performs as intended	
7.	Verifying documentation	
8.	evaluate and map the final software against business and user requirements	
9.	Design test cases with higher probability of finding errors	
10.	Ensure that user accepts the final software released for him to operate with no complaint	

Signature of Faculty

Date:

Note: For each of the OBJECTIVE indicate the appropriate OUTCOMES to be achieved.
Kindly refer Page 16, to know the illustrative verbs that can be used to state the objectives.



COURSE OUTCOMES

2015-16

Regulation: R12

FACULTY DETAILS:

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The expected outcomes of the Course / Subject are:

S.No.	General Categories of Outcomes	Specific Outcomes of the Course
A.	An ability to apply knowledge of mathematics, science, and engineering	Fundamental knowledge in software testing techniques
B.	An ability to design and conduct experiments, as well as to analyze and interpret data	Basic knowledge and understanding of the analysis, and design of test cases
C.	An ability to design a system, component, or process to meet desired needs within realistic Constraints such as economic, environmental, social, political, ethical, health and safety, Manufacturability and sustainability	Software testing principles and techniques
D.	An ability to function on multi-disciplinary teams	To test, maintain and evaluate large-scale software systems
E.	An ability to identify, formulate, and solve engineering problems	To produce efficient, reliable, robust and cost-effective software testing solutions
F.	An understanding of professional and ethical responsibility	To meet ethical standards and legal responsibilities
G.	An ability to communicate effectively	To communicate and coordinate competently
H.	The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context	Apply the principles, tools and practices of IT project management
I.	A recognition of the need for, and an ability to engage in life-long learning	To manage time, processes and resources effectively by prioritising competing demands
J.	A knowledge of contemporary issues	To work as an effective member or leader of software testing
K.	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.	To rapidly learn and apply emerging technologies

Objectives – Outcome Relationship Matrix (Indicate the relationships by ☒ mark).

Objectives \ Outcomes	A	B	C	D	E	F	G	H	I	J	K
1.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



COURSE SCHEDULE

2015-16

Regulation: R12

FACULTY DETAILS:

Name of the Faculty:: Santisudha Panigrahi

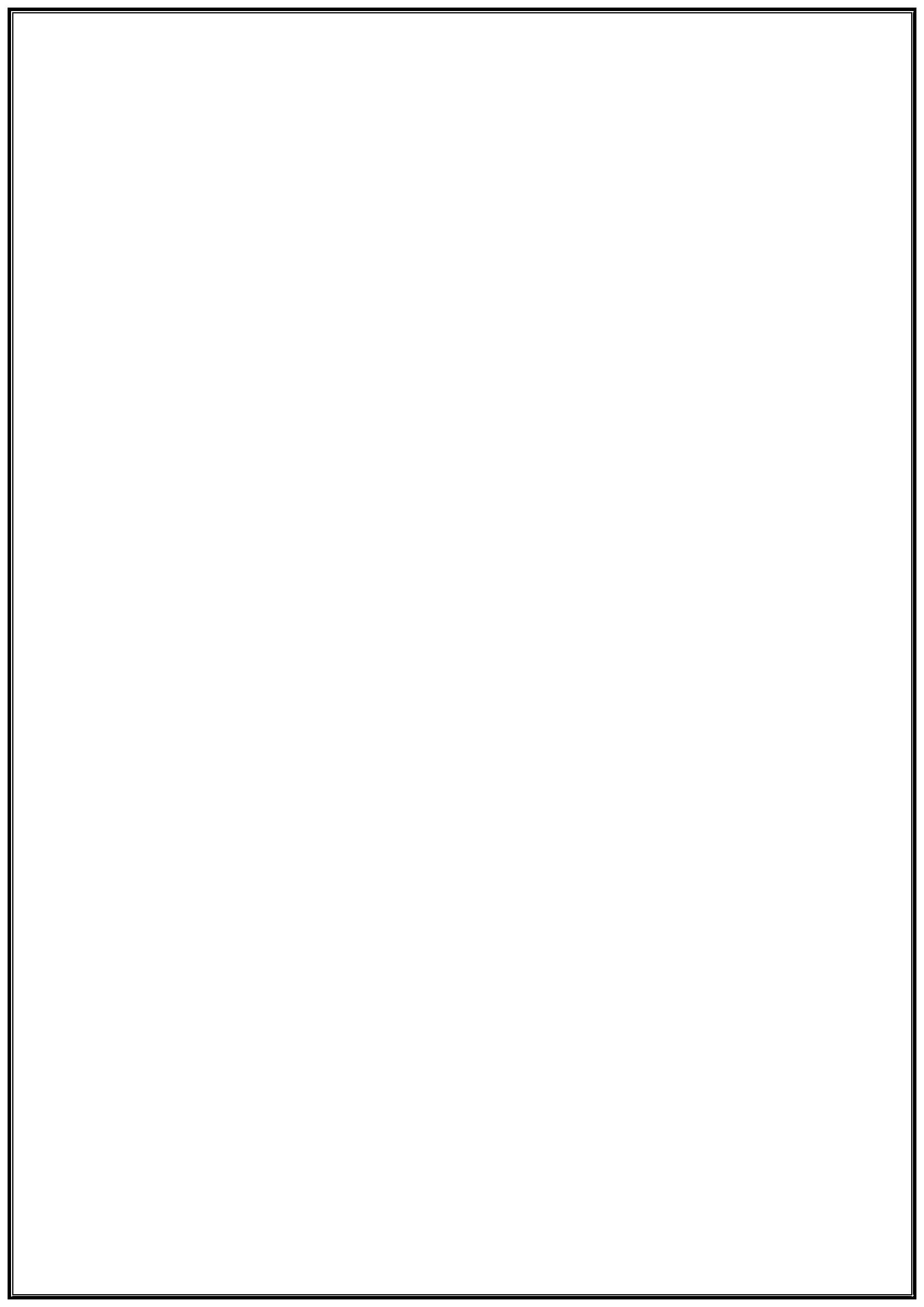
Designation: Asst.Profrssor


Department: CSE

The Schedule for the whole Course / Subject is:: 65

S. No.	Description	Duration (Date)		Total No. of Periods
		From	To	
1.	Introduction to Software Testing Methodologies	29-06-2015	11-07-2015	9
2.	Flow Graphs and Path Testing	13-07-2015	25-07-2015	10
3.	Transaction Flow Testing and Dataflow Testing	27-07-2015	08-08-2015	8
4.	Domain Testing	10-08-15	22-08-15	7
5.	Path, Path Products and Regular Expressions	31-08-15	15-09-15	10
6.	Logic Based Testing	16-09-15	26-09-15	8
7.	State, State Graphs and Transition Testing	28-09-15	9-10-15	6
8.	Graph Matrices and Application	10-10-15	20-10-15	7

Total No. of Instructional periods available for the course: 54Hours / 65 Periods



	SCHEDULE OF INSTRUCTIONS	2015-16
	UNIT - I	Regulation: R12

FACULTY DETAILS:


Name of the Faculty:: Santisudha Panigrahi
 Designation: Asst.Profssor
 Department:: CSE

The Schedule for the whole Course / Subject is:: 65

Sl. No.	Date	No. of Periods	Topics / Sub - Topics	Objectives & Outcome Nos.	References (Text Book, Journal...) Page No__ to __
1	29-06-15	1	Introduction to Software, Purpose of Testing	1	Software Testing Techniques – Boris Beizer(1)
2	01-07-15	2	Productivity and Quality in Software	1	2
3	02-07-15	3	Test Design, Dichotomies	1	7-14
4	03-07-15	4	Model for Testing, Optimistic notions about Bugs	1	15-22
5	04-07-15	5	Consequences of Bugs, Taxonomy of Bugs	1	27-33
6	06-07-15	6	Requirements, Features and Functionality Bugs	1,2	33-56
7	08-07-15	7	Features and Functionality Bugs	1,2	34
8	09-07-15	8	System level - Control and Sequence Bugs	2	35
9	10-07-15	9	Revision, important question discussed		

Signature of Faculty
Date

- Note: 1. ENSURE THAT ALL TOPICS SPECIFIED IN THE COURSE ARE MENTIONED.
 2. ADDITIONAL TOPICS COVERED, IF ANY, MAY ALSO BE SPECIFIED **BOLDLY**.
 3. MENTION THE CORRESPONDING COURSE OBJECTIVE AND OUT COME NUMBERS AGAINST EACH TOPIC.

	SCHEDULE OF INSTRUCTIONS UNIT - II	2015-16
		Regulation: R12

FACULTY DETAILS:

Name of the Faculty:: Santisudha Panigrahi

Designation: Asst.Profrssor


Department:: CSE

The Schedule for the whole Course / Subject is:: 65

Sl. No.	No. of Periods	Topics / Sub - Topics	Objectives & Outcome Nos.	References (Text Book, Journal...) Page No ___ to ___	
1	13-07-15	1	Basics concepts of Path Testing	2	Software Testing Techniques – Boris Beizer(59)
2	15-07-15	2	Control Flow Graphs, Predicates	2,3	60,93
3	16-07-15	3	Path Predicates and Achievable Paths	3	92-101
4	17-07-15	4	Path Sensitizing	3	101-104
5	18-07-15	5	Linked List Representation of Flow Graphs	2,3	109
6	20-07-15	6	Path Instrumentation	3	114
7	22-07-15	7	Path Instrumentation	3	114
8	23-07-15	8	Tracing table for Path Selection	3	114
9	24-07-15	9	Application of Path Testing	3	115
10	25-07-15	10	Revision , important questions discussed		

Signature of Faculty
Date

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MENTION THE CORRESPONDING COURSE OBJECTIVE AND OUT COME NUMBERS AGAINST EACH TOPIC.

	SCHEDULE OF INSTRUCTIONS	2015-16
	UNIT - III	Regulation: R12

FACULTY DETAILS:

Name of the Faculty:: Santisudha Panigrahi

Designation: Asst.Profssor

Department:: CSE

The Schedule for the whole Course / Subject is:: 65


Sl. No.		No. of Periods	Topics / Sub - Topics	Objectives & Outcome Nos.	References (Text Book, Journal...) Page No__ to __
1	27-07-15	1	Transaction Flows	3	Software Testing Techniques – Boris Beizer(59)(121)
2	29-07-15	2	Transaction Flow Graphs	3,4	141
3	30-07-15	3	Transaction Flow Testing Techniques	4	143
4	01-08-15	4	Inspections, Reviews, Walkthroughs	4	144
5	03-08-15	5	Path Selection and Basics of Dataflow Testing	5	145,145
6	05-08-15	6	Strategies in Dataflow Testing, Data object state and Usage	4,5	161
7	06-08-15	7	Data Flow Anomaly	5	167
8	07-08-15	8	Components of the model,Application of DFT	5	168

Signature of Faculty
Date

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MENTION THE CORRESPONDING COURSE OBJECTIVE AND OUT COME NUMBERS AGAINST EACH TOPIC.

	SCHEDULE OF INSTRUCTIONS UNIT - IV	2015-16
		Regulation: R12

FACULTY DETAILS:

Name of the Faculty:: Santisudha Panigrahi

Designation: Asst.Profssor

Department:: CSE

The Schedule for the whole Course / Subject is:: 65

Sl. No.	No.	No. of Periods	Topics / Sub - Topics	Objectives & Outcome Nos.	References (Text Book, Journal...) Page No ___ to ___
1	12-08-15	1	Domains and Paths	5	Software Testing Techniques – Boris Beizer(59)(173)
2	13-08-15	2	Bug Assumption	6	177
3	14-08-15	3	Nice and Ugly Domains	5	182
4	17-08-15	4	Ambiguities and Contradictions	6	189
5	19-08-15	5	Domain Testing	5	178
6	20-08-15	6	Generic Domain Bugs, Domains and Interfaces Testing,	5	179
7	21-08-15	7	Domains and Testability , Procedure for Testing	5	185


Signature of Faculty

Date

Note: 1. ENSURE THAT ALL TOPICS SPECIFIED IN THE COURSE ARE MENTIONED.

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MENTION THE CORRESPONDING COURSE OBJECTIVE AND OUT COME NUMBERS AGAINST EACH TOPIC.

	SCHEDULE OF INSTRUCTIONS UNIT - V	2015-16
		Regulation: R12

FACULTY DETAILS:

Name of the Faculty:: Santisudha Panigrahi

Designation: Asst.Profssor

Department:: CSE

The Schedule for the whole Course / Subject is:: 65

Sl. No.	No. of Periods	Topics / Sub - Topics	Objectives & Outcome Nos.	References (Text Book, Journal...) Page No__ to __	
1	31-08-15	1	Path Products and Path Expression	7	Software Testing Techniques – Boris Beizer(59)244
2	02-09-15	2	Path Products and Path Expression	7	244
3	03-09-15	3	Reduction Procedure	7	251
4	04-09-15	4	Reduction Procedure ,Absorption Rule	7,8	251,248
5	05-09-15	5	Structured Flow Graph	7,8	250
6	07-09-15	6	Structured Flow Graph	7,8	250
7	09-09-15	7	Applications, Regular Expressions	8	Link
8	10-09-15	8	Regular Expressions	8	Link
9	11-09-15	9	Flow Anomaly Detection	8	278
10	14-09-15	10	low Anomaly Detection	8	279


Signature of Faculty

Date

Note: 1. ENSURE THAT ALL TOPICS SPECIFIED IN THE COURSE ARE MENTIONED.

2. ADDITIONAL TOPICS COVERED, IF ANY, MAY ALSO BE SPECIFIED **BOLDLY**.

MENTION THE CORRESPONDING COURSE OBJECTIVE AND OUT COME NUMBERS AGAINST EACH TOPIC.

	SCHEDULE OF INSTRUCTIONS UNIT - VI	2015-16
		Regulation: R12

FACULTY DETAILS:

Name of the Faculty:: Santisudha Panigrahi

Designation: Asst.Profssor

Department:: CSE

The Schedule for the whole Course / Subject is:: 65

Sl. No.	No. of Periods	Topics / Sub - Topics	Objectives & Outcome Nos.	References (Text Book, Journal...) Page No ___ to ___
1	16-09-15 1	Overview, Specification Systems and Languages	9	Software Testing Techniques – Boris Beizer(59)321
2	17-09-15 2	Specification Systems and Languages	9	321
3	19-09-15 3	Decision Tables as a Basis for Test Case Design	9	322
4	21-09-15 4	Decision Tables as a Basis for Test Case Design	9	322
5	23-09-15 5	Test Case Design	9	328
6	24-09-15 6	Boolean Algebra	9	334
7	26-09-15 7	Path Expressions	9	335
8	28-09-15 8	KV Charts, Specifications	9	342,352


Signature of Faculty

Date

Note: 1. ENSURE THAT ALL TOPICS SPECIFIED IN THE COURSE ARE MENTIONED.

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MENTION THE CORRESPONDING COURSE OBJECTIVE AND OUT COME NUMBERS AGAINST EACH TOPIC.

	SCHEDULE OF INSTRUCTIONS UNIT - VII	2015-16
		Regulation: R12

FACULTY DETAILS:

Name of the Faculty:: Santisudha Panigrahi

Designation: Asst.Profssor

Department:: CSE

The Schedule for the whole Course / Subject is:: 65

Sl. No.		No. of Periods	Topics / Sub - Topics	Objectives & Outcome Nos.	References (Text Book, Journal...) Page No ___ to ___
1	30-09-15	1	State Graphs, Inputs and Transitions	9	Software Testing Techniques – Boris Beizer(59)364,365
2	01-09-15	2	Good and Bad State Graphs,	9	373
3	03-10-15	3	Improper State Graphs	9	374
4	05-10-15	4	State Testing	10	375
5	07-10-15	5	Limitations and Extensions	10	388
6	08-10-15	6	Limitations and Extensions, Testability Tips	10	388,391


Signature of Faculty

Date

Note: 1. ENSURE THAT ALL TOPICS SPECIFIED IN THE COURSE ARE MENTIONED.

2. ADDITIONAL TOPICS COVERED, IF ANY, MAY ALSO BE SPECIFIED **BOLDLY**.

MENTION THE CORRESPONDING COURSE OBJECTIVE AND OUT COME NUMBERS AGAINST EACH TOPIC.

	SCHEDULE OF INSTRUCTIONS UNIT - VIII	2015-16
		Regulation: R12

FACULTY DETAILS:

Name of the Faculty:: Santisudha Panigrahi

Designation: Asst.Profssor

Department:: CSE

The Schedule for the whole Course / Subject is:: 65

Sl. No.	No. of Periods	Topics / Sub - Topics	Objectives & Outcome Nos.	References (Text Book, Journal...) Page No ___ to ___
1	09-10-15 1	Motivational Overview, Tool Building	10	397,398
2	12-10-15 2	Matrix of Graph	10	399
3	14-10-15 3	Matrix of Graph	10	399
4	15-10-15 4	Transitive Relations, Reflexive Relations	10	401
5	16-10-15 5	Symmetric Relations, Anti-symmetric Relations	10	402
6	17-10-15 6	Equivalence Relations, Partial Ordering Relations	10	405
7	19-10-15 7	Power of a Matrix, Node Reduction Algorithm, Building Tools(JMeter or Winrunner)	10	405,415,421

Signature of Faculty

Date

Note: 1. ENSURE THAT ALL TOPICS SPECIFIED IN THE COURSE ARE MENTIONED.

2. ADDITIONAL TOPICS COVERED, IF ANY, MAY ALSO BE SPECIFIED **BOLDLY**.

MENTION THE CORRESPONDING COURSE OBJECTIVE AND OUT COME NUMBERS AGAINST EACH TOPIC.

	COURSE COMPLETION STATUS	2015-16
		Regulation: R12

FACULTY DETAILS:

Name of the Faculty:: Santisudha Panigrahi

Designation: Asst.Profrssor

Department:: CSE

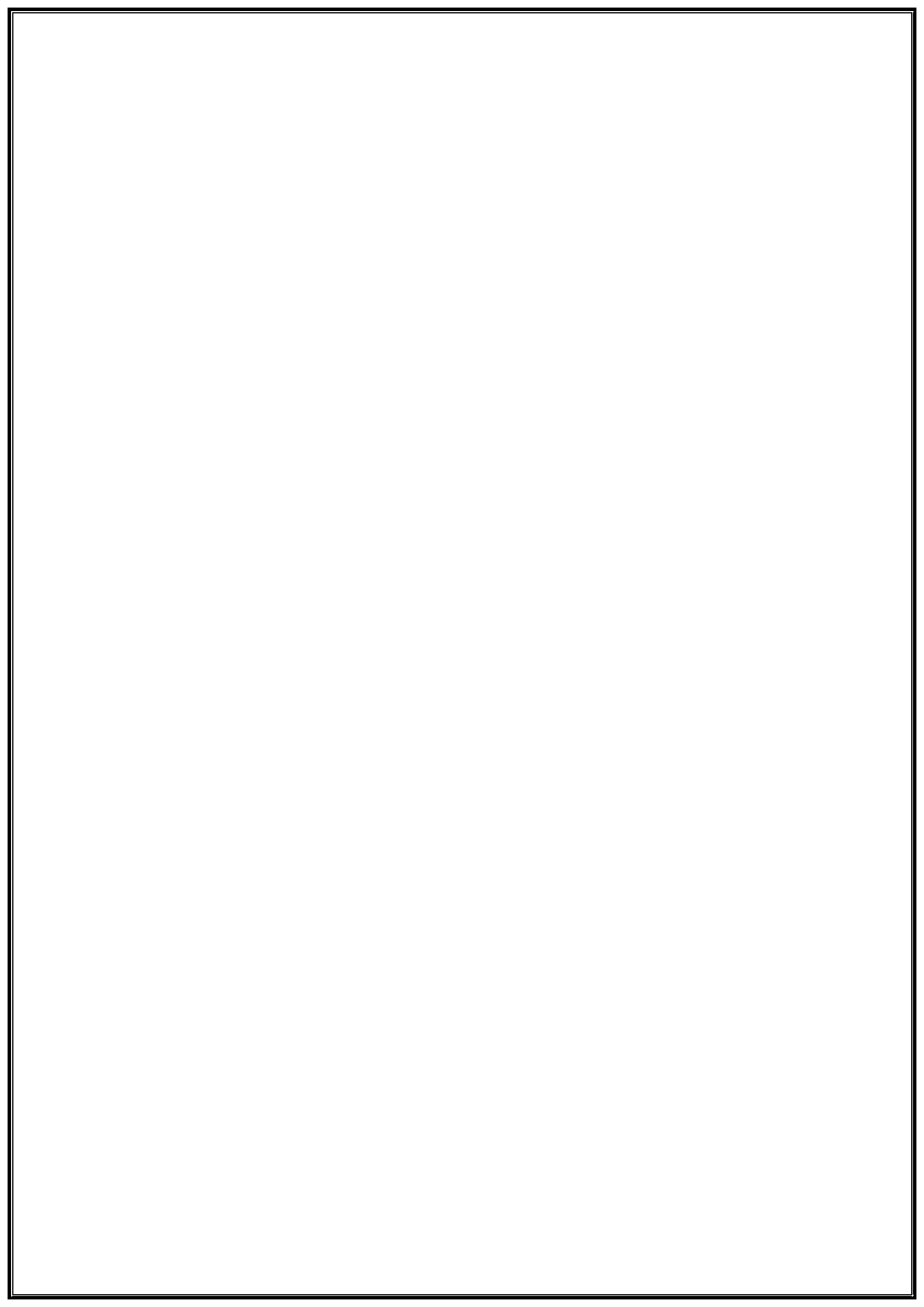
Actual Date of Completion & Remarks, if any

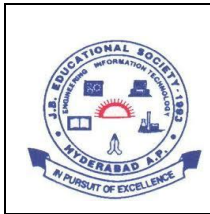
Units	Remarks	Nos. of Objectives Achieved
Unit 1	Achieved knowledge in software testing basics	1,2
Unit 2	Able to design Flow Graphs and perform Path Testing	2,3
Unit 3	Able to perform Transaction Flow Testing and Dataflow Testing	3,4,5
Unit 4	Got good knowledge in Domain testing	5,6
Unit 5	Good knowledge on Path, Path Products and Regular Expressions	7,8
Unit 6	Able to perform Logic Based Testing	9
Unit 7	Able to perform State, State Graphs and Transition Testing	9,10
Unit 8	Obtained knowlwdge on Graph Matrices and Application	10

Signature of Dean of School
Date:

Signature of Faculty
Date:

NOTE: AFTER THE COMPLETION OF EACH UNIT MENTION THE NUMBER OF OBJECTIVES ACHIEVED.





TUTORIAL SHEETS - I

2015-16

Regulation: R12

FACULTY DETAILS:

Name of the Faculty:: Santisudha Panigrahi
Designation: Asst.Profrssor
Department:: CSE

The Schedule for the whole Course / Subject is:: 65

Date:

This Tutorial corresponds to Unit Nos.1,2,3

Time:

Q1. What is the purpose of Testing? Explain about Model for testing?

Q2. Explain about requirements, features and functionality bugs?

Q3. What is Path Testing? Explain about Predicates?

Q4. Explain about Transaction Flow Testing Techniques?

Q5. Explain about Strategies and Applications of Data Flow Testing?

Please write the Questions / Problems / Exercises which you would like to give to the students and also mention the objectives to which these questions / Problems are related.

Signature of Dean of School
Date:

Signature of Faculty
Date:



TUTORIAL SHEETS - II

2015-16

Regulation: R12

FACULTY DETAILS:

Name of the Faculty:: Santisudha Panigrahi

Designation: Asst.Profrssor

Department:: CSE

The Schedule for the whole Course / Subject is:: 65

Date:

This Tutorial corresponds to Unit Nos.4,5,6

Time:

Q1. What is meant by Domains and Paths?

Q2. What is meant by Path Product and Path Expression?

Q3. What is Flow Anomaly Detection?

Q4. Explain about Decision Tables and Path Expressions?

Q5. Explain about KV Charts?

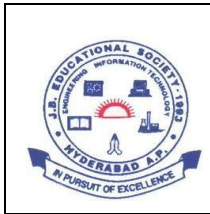
Please write the Questions / Problems / Exercises which you would like to give to the students and also mention the objectives to which these questions / Problems are related.

Signature of Dean of School

Date:

Signature of Faculty

Date:



TUTORIAL SHEETS - III

2015-16

Regulation: R12

FACULTY DETAILS:

Name of the Faculty:: Santisudha Panigrahi
Designation: Asst.Profrssor
Department:: CSE

Date:

This Tutorial corresponds to Unit Nos.7,8

Time:

Q1. What is meant by State Graphs? Explain about Good and Bad state graphs?

Q2. Explain about State testing?

Q3. Explain about good state and bad state graphs

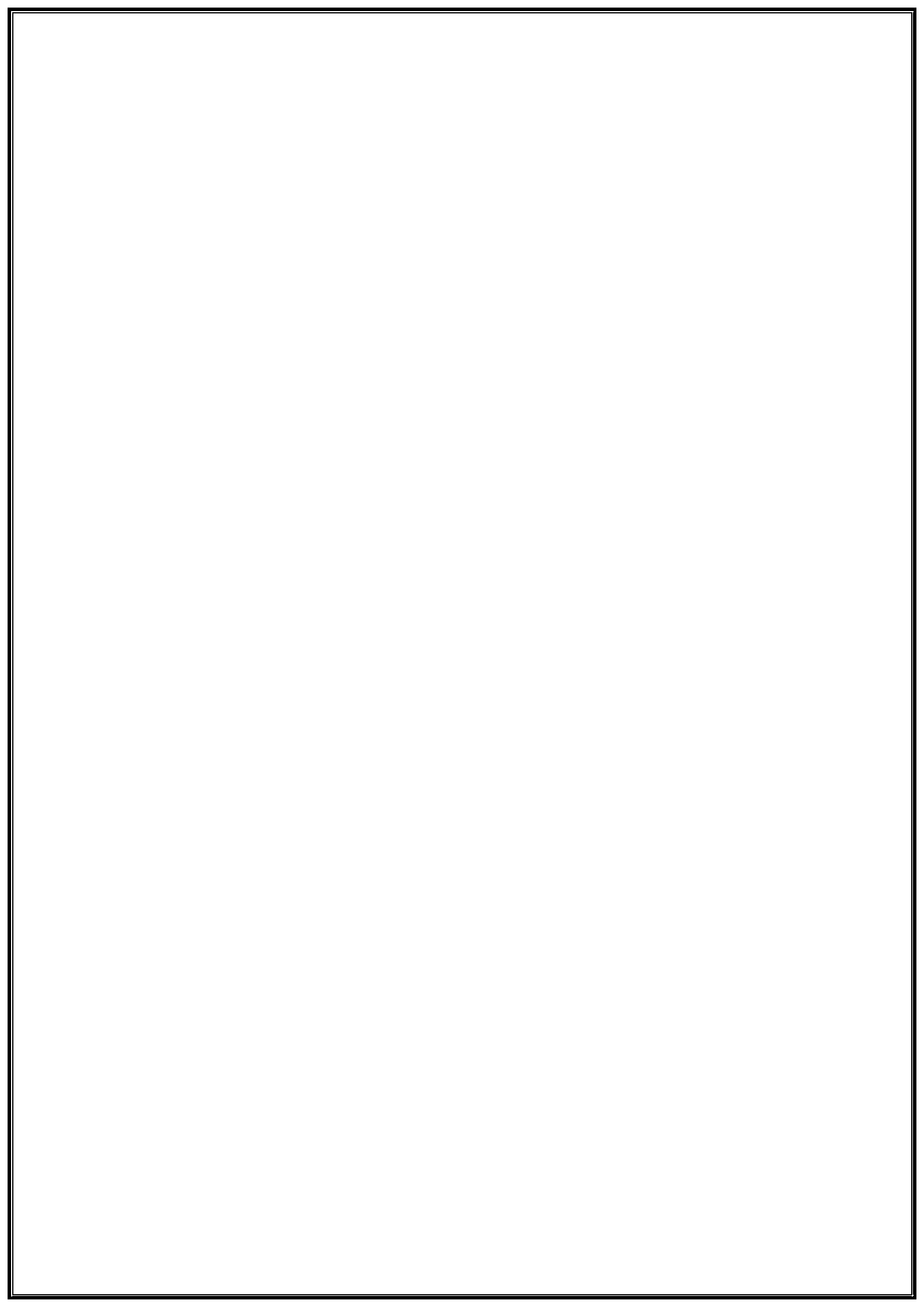
Q4. Explain about Matrix of graph and Relations?

Q5. What is Power of Matrix?

Please write the Questions / Problems / Exercises which you would like to give to the students and also mention the objectives to which these questions / Problems are related.

Signature of Dean of School
Date:

Signature of Faculty
Date:





**ILLUSTRATIVE VERBS
FOR STATING
INSTRUCTIONAL OBJECTIVES**

2015-16

Regulation: R12

These verbs can also be used while framing questions for Continuous Assessment Examinations as well as for End – Semester (final) Examinations.

ILLUSTRATIVE VERBS FOR STATING GENERAL OBJECTIVES

Know Comprehend	Understand Apply	Analyze Design	Generate Evaluate
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ILLUSTRATIVE VERBS FOR STATING SPECIFIC OBJECTIVES:

A. Cognitive Domain


1	2	3	4	5	6
Knowledge	Comprehension Understanding	Application of knowledge & comprehension	Analysis of whole w.r.t. its constituents	Synthesis combination of ideas/constituents	Evaluation judgement

Define	Convert	Change	Breakdown	Categorize	Appraise
Identify	Defend	Compute	Differentiate	Combine	Compare
Label	Describe (a procedure)	Demonstrate	Discriminate	Compile	Conclude
List	Distinguish	Deduce	Distinguish	Compose	Contrast
Match	Distinguish	Manipulate	Separate	Create	Criticize
Reproduce	Estimate	Modify	Subdivide	Devise	Justify
Select	Explain why/how	Predict		Design	Interpret
State	Extend	Prepare		Generate	Support
	Generalize	Relate		Organize	
	Give examples	Show		Plan	
	Illustrate	Solve		Rearrange	
	Infer			Reconstruct	
	Summarize			Reorganize	
				Revise	

B. Affective Domain

C. Psychomotor Domain (skill development)

Adhere	Resolve	Bend	Dissect	Insert	Perform	Straighten
Assist	Select	Calibrate	Draw	Keep	Prepare	Strengthen
Attend	Serve	Compress	Extend	Elongate	Remove	Time
Change	Share	Conduct	Feed	Limit	Replace	Transfer
Develop		Connect	File	Manipulate	Report	Type
Help		Convert	Grow	Move precisely	Reset	Weigh
Influence		Decrease	Handle	Operate	Run	
Initiate		Demonstrate	Increase	Paint	Set	

	LESSON PLAN Unit-1	2015-16
		Regulation: R12

Name of the Faculty: Santisudha Panigrahi

Subject STM

Subject Code

Unit 1

INSTRUCTIONAL OBJECTIVES:

Session No	Topics to be covered	Time	Ref	Teaching Method
1	Introduction to STM	50 Min	TB1	Black Board
2	Purpose of Testing	50 Min	TB1	Black Board
3	Dichotomies	50 Min	TB1	Black Board
4	Model for Testing	50 Min	TB1	Black Board
5	Consequences of Bugs	50 Min	TB1	Black Board
6	Taxonomy of Bugs	50 Min	TB1	Black Board
7	Requirements, Features and Functionality Bugs	50 Min	TB1	Black Board
8	Features and Functionality Bugs	50 Min	TB1	Black Board
9	System level - Control and Sequence Bugs	50 Min	TB1	Black Board

On completion of this lesson the student shall be able to(Outcomes)

1. Understand the basic SW Testing methods and practices, and their appropriate application.
2. Understand different types of bugs and their impact.



**ASSIGNMENT
Unit-I**

2015-16


Regulation: R12

Assignment / Question

1. Why is it impossible for a tester to find all the bugs in a system? Why might it not be necessary for a Program to be completely free of defects before it is delivered to its customers?
2. To what extent can testing be used to validate that the program is fit for its purpose. Discuss?
3. What is meant by integration testing? Goals of Integration Testing?
4. Explain white-box testing and behavioural testing?
5. State and explain various dichotomies in software testing

Signature of Faculty

Note: Mention for each question the relevant objectives and outcomes.

	LESSON PLAN Unit-II	2015-16
		Regulation: R12

Name of the Faculty: Santisudha Panigrahi

Subject STM

Subject Code


Unit 2

INSTRUCTIONAL OBJECTIVES:

Session No	Topics to be covered	Time	Ref	Teaching Method
1	Basic Concepts of Path Testing	50 Min	TB1	Black Board
2	Control Flow Graphs, Predicates	50 Min	TB1	Black Board,PPT
3	Path Predicates and Achievable Paths	50 Min	TB1	Black Board,PPT
4	Path Sensitizing	50 Min	TB1	Black Board, PPT
5	Linked List Representation of Flow Graphs	50 Min	TB1	Black Board, PPT
6	Path Instrumentation	50 Min	TB1	Black Board,PPT
7	Path Instrumentation	50 Min	TB1	Black Board,PPT
8	Applications of Path Testing	50 Min	TB1	Black Board,PPT
9	Tracing table for Path Selection	50 Min	TB1	Black Board,PPT
10	Applications of Path Testing	50 Min	TB1	Black Board

On completion of this lesson the student shall be able to

1. Understanding of path testing , cfg and predicates.
2. Understanding of path sensitization and path instrumentation.


	ASSIGNMENT Unit-II	2014-15
		Regulation: R11

Assignment / Questions

1. State and explain various kinds of predicate blindness with examples?
2. What are link counters? Discuss their use in path testing?
3. What is meant by Co - incidental Correctness with example?
4. What is meant by statement testing and branch testing with an example?
5. State and explain various path selection rules.
6. What is meant by program's control flow? How is it useful for path testing?

Signature of Faculty

Note: Mention for each question the relevant objectives and outcomes.

	LESSON PLAN Unit-III	2015-16
		Regulation: R12

Name of the Faculty: Santisudha Panigrahi

Subject STM

Unit 3


INSTRUCTIONAL OBJECTIVES:

Session No	Topics to be covered	Time	Ref	Teaching Method
1	Introduction to Transaction Flows	50 Min	TB1	Black Board, PPT
2	Transaction Flow Testing Technique	50 Min	TB1	Black Board, PPT
3	Introduction to Data Flow Testing	50 Min	TB1	Black Board, PPT
4	Basics of Data Flow Testing	50 Min	TB1	Black Board, PPT
5	Strategies in Data Flow Testing	50 Min	TB1	Black Board, PPT
6	Application of Data Flow Testing	50 Min	TB1	Black Board, PPT
7	Data Flow Anomalies	50 Min	TB1	Black Board, PPT
8	Components of the model	50 Min	TB1	Black Board, PPT

On completion of this lesson the student shall be able to(Outcomes)

1.Understand transaction flow testing and techniques.

2. Understand Data flow testing and techniques.


	ASSIGNMENT Unit-III	2015-16
		Regulation: R12

Assignment / Questions

1. What is meant by transaction flow testing. Discuss its significance.
2. Discuss in detail data - flow testing strategies.
3. What are data - flow anomalies? How data flow testing can explore them?
4. What are data-flow anomalies? How data flow testing can explore them?
5. Explain the terms Dicing, Data-flow and Debugging.
6. What is meant by data flow model? Discuss various components of it?

Signature of Faculty

Note: Mention for each question the relevant objectives and outcomes.

	LESSON PLAN Unit-IV	2015-16
		Regulation: R12

Name of the Faculty: Santisudha Panigrahi

Subject STM

Subject Code


Unit 4

INSTRUCTIONAL OBJECTIVES:

Session No	Topics to be covered	Time	Ref	Teaching Method
1	Introduction to Domains and Paths	50 Min	TB1	Black Board, PPT
2	Nice and Ugly Domains	50 Min	TB1	Black Board, PPT
3	Domain Testing	50 Min	TB1	Black Board, PPT
4	Domains and Interfaces Testing	50 Min	TB1	Black Board, PPT
5	Domains and Testability	50 Min	TB1	Black Board, PPT
6	Generic Domain Bugs,	50 Min	TB1	Black Board, PPT
7	Domains and Interfaces Testing	50 Min	TB1	Black Board, PPT
8	Domains and Testability	50 Min	TB1	Black Board, PPT

On completion of this lesson the student shall be able to (Outcomes)

1. Understand the different Domains.
2. Understand the Domain testing techniques.


	ASSIGNMENT Unit-IV	2015-16
		Regulation: R12

Assignment / Questions

1. Discuss with example the equal - span range/Doman compatibility bugs.
2. Discuss in detail about testability of Domains.
3. What is meant by Domain Dimensionality?
4. What is meant by nice - domain? Give an example for nice
5. Explain how one dimensional domain are tested.

Signature of Faculty

Note: Mention for each question the relevant objectives and outcomes.

	LESSON PLAN Unit-V	2015-16
		Regulation: R12

Name of the Faculty: Santisudha Panigrahi

Subject STM

Subject Code


Unit 5

INSTRUCTIONAL OBJECTIVES:

Session No	Topics to be covered	Time	Ref	Teaching Method
1	Introduction to Path Product and Path Expression	50 Min	TB1	Black Board, PPT
2	Reduction Procedure	50 Min	TB1	Black Board, PPT
3	Applications	50 Min	TB1	Black Board, PPT
4	Regular Expressions	50 Min	TB1	Black Board, PPT
5	Flow Anomaly Detection	50 Min	TB1	Black Board, PPT
6	Applications,	50 Min	TB1	Black Board, PPT
7	Regular Expressions	50 Min	TB1	Black Board, PPT
8	Flow Anomaly Detection	50 Min	TB1	Black Board, PPT

On completion of this lesson the student shall be able to (Outcomes)

1. Understand the Path Product and Path Expression and Reduction Procedure
2. Understand the Regular expressions and applications


	ASSIGNMENT Unit-V	2015-16
		Regulation: R12

Assignment / Questions

1. Explain Regular Expressions and Flow Anomaly detection.
2. Example Huang's theorem with examples?
3. Write Short Notes on:
 - i. Distributive Laws
 - ii. Absorption Rule
 - iii. Loops
 - iv. Identity elements
4. Discuss Path Sums and Path Product.
5. Discuss in brief applications of paths.
6. Whether the predicates are restricted to binary truth-values or not. Explain.

Signature of Faculty

Note: Mention for each question the relevant objectives and outcomes.

	LESSON PLAN Unit-VI	2015-16
		Regulation: R12

Name of the Faculty: Santisudha Panigrahi

Subject STM

Subject Code


Unit 6

INSTRUCTIONAL OBJECTIVES:

Session No	Topics to be covered	Time	Ref	Teaching Method
1	Introduction to Logic Based Testing and Overview	50 Min	TB1	Black Board, PPT
2	Decision Tables	50 Min	TB1	Black Board, PPT
3	Path Expressions	50 Min	TB1	Black Board, PPT
4	KV Charts	50 Min	TB1	Black Board, PPT
5	Specifications	50 Min	TB1	Black Board, PPT
6	Boolean Algebra	50 Min	TB1	Black Board, PPT
7	Path Expressions	50 Min	TB1	Black Board, PPT
8	KV Charts	50 Min	TB1	Black Board, PPT
9	Specifications	50 Min	TB1	Black Board, PPT

On completion of this lesson the student shall be able to (Outcomes)

1. Understand the logic based testing
2. Understand the Decision Tables, Path Expressions ,KV Charts.


	ASSIGNMENT Unit-VI	2015-16
		Regulation: R12

Assignment / Questions

1. How can we determine paths in domains in Logic based testing?
2. Explain about Decision Tables and Path Expressions?
3. Explain about KV Charts?

Signature of Faculty

Note: Mention for each question the relevant objectives and outcomes.

	LESSON PLAN Unit-VII	2015-16
		Regulation: R12

Name of the Faculty: Santisudha Panigrahi

Subject STM

Subject Code


Unit 7

INSTRUCTIONAL OBJECTIVES:

Session No	Topics to be covered	Time	Ref	Teaching Method
1	Introduction to State Graphs	50 Min	TB1	Black Board, PPT
2	Good and Bad State Graphs	50 Min	TB1	Black Board, PPT
3	State Testing	50 Min	TB1	Black Board, PPT
4	Transition Bugs- Unspecified and Contradictory Transitions	50 Min	TB1	Black Board, PPT
5	Improper State Graphs	50 Min	TB1	Black Board, PPT
6	Limitations and Extensions	50 Min	TB1	Black Board, PPT
7	Testability Tips	50 Min	TB1	Black Board, PPT

On completion of this lesson the student shall be able to

1. Understand the state graphs.
2. Understand the testing Technique and limitation.


	ASSIGNMENT Unit-VII	2015-16
		Regulation: R12

Assignment / Questions

1. What is meant by State Graphs? Explain about Good and Bad state graphs?
2. Explain about State testing?
3. Explain about good state and bad state graphs?
4. What are the principles of state testing? Discuss advantages and disadvantages.
5. Write the design guidelines for building finite state machine into code. (8 M)
6. What are the software implementation issues in state testing? (8 M)
7. Write short notes on:
Transition Bugs ii. Dead States iii. State Bugs iv. Encoding Bugs

Signature of Faculty

Note: Mention for each question the relevant objectives and outcomes.

	LESSON PLAN Unit-VIII	2015-16
		Regulation: R12

Name of the Faculty: Santisudha Panigrahi

Subject STM

Subject Code


Unit VIII

INSTRUCTIONAL OBJECTIVES:

Session No	Topics to be covered	Time	Ref	Teaching Method
1	Motivational Overview	50 Min	TB1	Black Board, PPT
2	Tool Building	50 Min	TB1	Black Board, PPT
3	Matrix of Graph	50 Min	TB1	Black Board, PPT
4	Transitive Relations	50 Min	TB1	Black Board, PPT
5	Reflexive Relations	50 Min	TB1	Black Board, PPT
6	Symmetric Relations	50 Min	TB1	Black Board, PPT
7	Anti-symmetric Relations	50 Min	TB1	Black Board, PPT
8	Equivalence Relations	50 Min	TB1	Black Board, PPT
9	Power of a Matrix	50 Min	TB1	Black Board, PPT

On completion of this lesson the student shall be able to

1. Understand the different types of relations and tool building

	ASSIGNMENT Unit-VIII	2015-16
		Regulation: R12

Assignment / Questions

1. What are the matrix operations in tool building?
2. How can a relation matrix be represented and what are the properties of relations?
3. Explain cross-term reduction and node term reduction optimization.
4. Write about equivalence relation and partial ordering relation.
5. What are graph matrices and their applications?

Signature of Faculty

Note: Mention for each question the relevant objectives and outcomes.