INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)
Dundigal, Hyderabad-500043

COMPUTER SCIENCE AND ENGINEERING

TUTORIAL QUESTION BANK

Course Title	**SOFTWARE TESTING METHODOLOGY**				
Course Code	AIT008				
Programme	B.Tech				
Semester	VII	CSE | IT			
Course Type	Core				
Regulation	**IARE - R16**				
Course Structure	**Theory**			**Practical**	
	Lectures	**Tutorials**	**Credits**	**Laboratory**	**Credits**
	3	1	4	-	-
Chief Coordinator	Ms. M GeethaYadav, Assistant Professor				
Course Faculty	Ms.B.Geeta Vani, Assistant Professor Ms.K Mayuri, Assistant Professor Ms.B.Anupama, Assistant Professor				

COURSE OBJECTIVES:

The course should enable the students to:	
I	Understand the concept of software testing objectives, process criteria, strategies and methods.
II	Demonstrate various software testing issues and solutions in software like unit test, integration, regression and system testing.
III	Demonstrate the techniques and skills on how to use modern software testing tools to support software testing projects.
IV	Understand important concepts of complexity metrics and object oriented metrics.

COURSE OUTCOMES (COs):

CO 1	Understand the basic concepts of testing, path testing and sensitization.
CO 2	An Ability to learn about the transaction flow testing.
CO 3	Understand the concepts of domain based testing and logic based testing.
CO 4	To describe about the path product and data flow anomaly detection.
CO5	Understand the concepts of transition testing.

COURSE LEARNING OUTCOMES (CLOs):

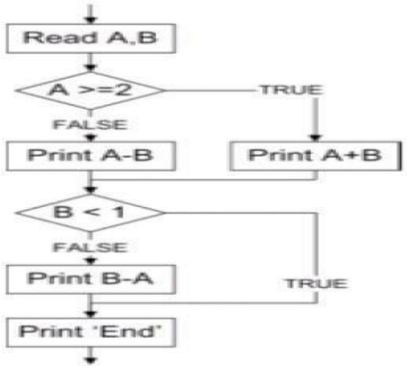
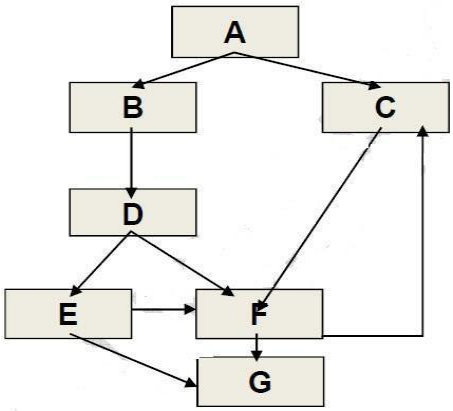
AIT008.01	Explain the importance of testing and purpose of testing.
AIT008.02	Illustrate different dichotomies of testing.
AIT008.03	Demonstrate the model for testing, different testing levels and role of models.
AIT008.04	Describe the consequences and taxonomy of bugs and different bugs in project environment.
AIT008.05	Illustrate the concepts of path testing, predicate loops and path sensitization.
AIT008.06	Explain Path instrumentation and theirapplications
AIT008.07	List out the Transaction flows techniques, structures and their test databases.
AIT008.08	State the basics of data flow testing, Strategies in data flow testing and applications of dataflow testing.
AIT008.09	Describe Domains, paths and explain about bugs and their tools.
AIT008.10	Demonstrate Domains and Interfaces testing.
AIT008.11	Explain about the line arising transformation and coordinate transformation
AIT008.12	Describe Logic based testing ,Decision tables and compare hardware and software testing.
AIT008.13	Illustrate Path expression, KV Charts and their specifications.
AIT008.14	State Path products and path expression, different laws used in path testing.
AIT008.15	Demonstrate the Reduction procedure
AIT008.16	Explain about the Regular expressions.
AIT008.17	Explain about Flow anomaly detection.
AIT008.18	Explain State Graphs and state testing and their Testability Tips.
AIT008.19	Explain about good and bad state graphs.
AIT008.20	Explain finite state behavior in state graphs.

TUTORIAL QUESTION BANK

	UNIT-I			
INTRODUCTION TO TESTING				
Part - A (Short Answer Questions)				
S No	**QUESTIONS**	**Blooms Taxonomy Level**	**Course Outcomes**	**Course Learning Outcomes (CLOs)**
1	Define statement coverage (C1) and branch coverage (C2)?	Remember	CO 1	AIT008.03
2	Define the following concepts a. Predicate Expression b. Predicate Coverage	Understand	CO 1	AIT008.03
3	Discuss about assignment blindness, and equality blindness of predicates?	Remember	CO 1	AIT008.03
4	Define integration testing and discuss the goals of integration testing?	Remember	CO 1	AIT008.03
5	Differentiate between flowchart and control flow graph?	Remember	CO 1	AIT008.04
6	List out various dichotomies?	Remember	CO 1	AIT008.04
7	State and explain various path selection rules for path testing?	Understand	CO 1	AIT008.04
8	Discuss statement testing and branch testing?	Understand	CO 1	AIT008.04
9	Discuss various flow graph elements with their notations?	Understand	CO 1	AIT008.04
10	Define software bug in software testing?	Remember	CO 1	AIT008.05
11	Define path Instrumentation?	Understand	CO1	AIT008.01
12	Difference between Software Testing and Debugging?	Understand	CO1	AIT008.01
13	Difference between a Bug and a Defect?	Remember	CO1	AIT008.01
14	Difference between Verification and Validation?	Understand	CO1	AIT008.01
15	Difference between a Test Plan and a Use Case?	Understand	CO1	AIT008.01
16	Define static testing?	Remember	CO1	AIT008.03
17	Explain about program's control flow?	Understand	CO1	AIT008.03
18	Define dynamic testing?	Understand	CO1	AIT008.04
19	Mention the different types of bugs?	Remember	CO1	AIT008.03
20	State pesticide paradox and complexity barrier in purpose of testing?	Remember	CO1	AIT008.04
Part - B (Long Answer Questions)				
1	Discuss that software testing will ensure the quality of a developedsoftware?	Remember	CO1	AIT008.03
2	Describe is it possible 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 deliveredtoitscustomers andDiscusstowhatextentcantesting be used to validate that the program is fit for its purpose?	Understand	CO1	AIT008.03
3	Demonstrate the phases in a tester's mental life and Define testing and explain the purpose of testing?	Remember	CO1	AIT008.03
5	State differences between functional and structural testing? List the factors on which the importance of the bugs depends and give the metricsfor them?	Understand	CO1	AIT008.04
6	Explain the procedure used in quantifying the nightmare list to stop Testing?	Understand	CO1	AIT008.04
7	Discuss clearly about requirements, features, andfunctionalityof bugs?	Remember	CO1	AIT008.05
8	Summarize white box testing and black box testing and give the differences between them?	Understand	CO1	AIT008.01
9	Discuss interface, integration and system bugs with an example andExplain about resource management problem in software testing?	Understand	CO1	AIT008.01
10	Demonstrate structural bugs and coding bugsand discuss methods to catch these bugs?	Remember	CO1	AIT008.01
11	Discuss about "Traversal marker" form of path instrumentation?	Understand	CO1	AIT008.04
12	Explain about program's control flow? Is it useful for path testing? Discussvarious flow graph elements with their notations?	Remember	CO1	AIT008.04
13	Explain aboutmulti entry and multi exit routines and fundamental path selection criteria?	Remember	CO1	AIT008.03

14	Define path sensitization and write heuristic the procedure used in path sensitization?	Understand	CO1	AIT008.02
15	Explain how concatenated loops can be tested? Discuss the three cases for single loop testing?	Remember	CO 1	AIT008.03
16	Illustrate hardware architecture and software architecture?	Understand	CO 1	AIT008.05
17	Explain Coincidental correctness? Give an example?	Remember	CO 1	AIT008.03
18	Discuss about control and sequence bugs and the methods to be caught?	Understand	CO 1	AIT008.04
19	Explain about data bugs and system bugs and discuss methods to catch these bugs?	Remember	CO 1	AIT008.04
20	Demonstrate the trade - off between quality assurance costsand manufacturingcosts	Understand	CO 1	AIT008.03
Part - C (Problem Solving and Critical Thinking Questions)				
1	Discuss in practice, that life cycle model may have more, fewer or different levels of development and testing, depending on the project and the software product?	Understand	CO1	AIT008.04
2	Demonstrate when the build comes to the QA team, the parameters to be taken for consideration to reject the build upfront without committing for testing?	Remember	CO1	AIT008.05
3	Discuss that test cannot be automated? Acceptance test plan is preparedfrom? Explain the test case design methodology? Does test plan contain bug tracing procedure and reporting procedure?	Understand	CO1	AIT008.01
4	Discuss the importance of a document for product? How will you testRequirement and design document?	Understand	CO1	AIT008.01
5	Identify yourself as a developer of flight control system? Describe any three test adequacy criteria you would consider applying to develop test cases for flight control system?	Remember	CO1	AIT008.01
6	List and explain types of system test? Why is testing plan important forDeveloping a repeatable and managed testing process? Give example.	Understand	CO1	AIT008.01
7	Define role do user/client play in the development of test plan for a project?Should they be present at any of the test plan reviews? Justify.	Understand	CO1	AIT008.04
8	Consider the following fragment of code. Explain how many tests are required for 100% decision coverage? if width > length hen biggest dimension = width if height > width then biggest dimension = height end_if ggest dimension = length if height > length then biggest dimension = height end_if end_if	Remember	CO1	AIT008.05
9	Describe the activities or tasks and responsibilities for developer or tester in support of multilevel testing?	Understand	CO 1	AIT008.01
10	Define role do user/client play in the development of test plan for a project? Should they be present at any of the test plan reviews? Justify.	Understand	CO 1	AIT008.04
UNIT-II				
TRANSACTION FLOW TESTING				
Part – A (Short Answer Questions)				
1	Explain all c-uses/some p-usesstrategiesand discuss all p-uses/somec-uses strategies?	Understand	CO 2	AIT008.08
2	Explain births and mergers in a transaction flow testing?	Understand	CO 2	AIT008.07
3	Demonstrate transaction flow structure and discuss transaction flow testingTechniques?	Understand	CO 2	AIT008.07
4	Demonstrate du-path and define all du-paths?	Understand	CO 2	AIT008.08
5	Define path selection and illustrate path sensitization?	Remember	CO 2	AIT008.07
6	Describe all predicate uses and all computational uses strategy?	Understand	CO 2	AIT008.08

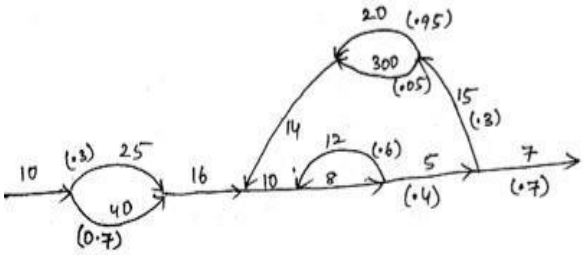
7	Explain transaction flow sensitization and discuss transaction instrumentation?	Remember	CO 2	AIT008.07
8	Demonstrate data flow anomalies and explain components of data flow model?	Understand	CO 2	AIT008.08
9	Define data flow testing and explain the application tools and effectivenessof data flow testing?	Understand	CO 2	AIT008.08
10	Explain how Transaction Flow occurs?	Understand	CO 2	AIT008.07
11	Explain applications of transaction flows?	Remember	CO 2	AIT008.07
12	Demonstrate how to implement Transaction Flows with example?	Remember	CO 2	AIT008.07
13	Describe different complications in Transaction Flows?	Understand	CO 2	AIT008.07
14	Define Data Flow Testing?	Understand	CO 2	AIT008.07
15	Define MIMD Machines?	Understand	CO 2	AIT008.07
16	Explain Data Flow Anomalies?	Remember	CO 2	AIT008.08
17	Explain Data Flow Anomaly State Graph with example?	Remember	CO 2	AIT008.08
18	Compare static versus dynamic anomaly detection?	Remember	CO 2	AIT008.07
19	Compare Transaction Flow graph and Data Flow graph?	Remember	CO 2	AIT008.08
20	Define Instrumentation?	Remember	CO 2	AIT008.07
Part - B (Long Answer Questions)				
1	Discuss various flow graph elements with their notations.	Understand	CO 2	AIT008.07
2	Define the terms i.Clear pathsegment ii.Loop free pathsegment iii.Simple path segment	Understand	CO 2	AIT008.07
3	Name and explain data flow testing strategies? Discuss the reasons whyonly the static anomaly detection is not enough?	Understand	CO 2	AIT008.07
4	Discuss the three possible interpretations of the decision symbol with two or more out links?	Understand	CO 2	AIT008.07
5	Define a transaction explain steps involved in an online transaction system.	Understand	CO 2	AIT008.07
6	Define program slice? Discuss about static and dynamic programSlicing? Explain the terms Dicing, Data-flow and Debugging?	Understand	CO 2	AIT008.07
7	Demonstrate transaction flows occurrence, illustrate with help of Examples. implementation of a transaction flow is usually implicit inThe design of the systems control structure and database explain?	Understand	CO 2	AIT008.07
8	Explain the transaction flow testing with an example Distinguish between control flow and transaction flow?	Understand	CO 2	AIT008.07
9	Define transaction flow structure? Discuss the reasons that the Transactionflows are often structured?	Understand	CO 2	AIT008.08
10	Discuss various flow graph elements with their notations.	Understand	CO 2	AIT008.07
11	Demonstratetransaction flow, explain it for online information retrieval system with the help of anexample?	Understand	CO 2	AIT008.07
12	Explain data-flow model? Discuss various components ofit?	Understand	CO 2	AIT008.07
13	Discuss about sensitization and instrumentation based ontransaction flows?	Understand	CO 2	AIT008.07
14	Demonstrate an anomaly can be detected. Explain different typesof data flow anomalies and data flow anomaly stategraphs?	Understand	CO 2	AIT008.07
15	List nine possible two-letter combinations of the object states ofdata anomalies. classify them as buggy, suspicious andok?	Understand	CO 2	AIT008.07
16	Discuss the different data object states in data-flowgraphs?	Understand	CO 2	AIT008.08
17	Discuss All-du-Paths (ADUP) is the strongest data-flowtesting strategy	Understand	CO 2	AIT008.07
18	Explain the transaction flow testing with anexample?	Understand	CO 2	AIT008.07
19	Discuss the advantages and disadvantages of path selectionin transactionflow?	Understand	CO 2	AIT008.07
20	Explain the terms inspections, reviews andwalkthroughs?	Understand	CO 2	AIT008.07
Part - C (Problem Solving and Critical Thinking Questions)				
1	Discuss during an early period of test execution, a defect is located, resolved and conformed as resolved re-testing	Understand	CO 2	AIT008.07

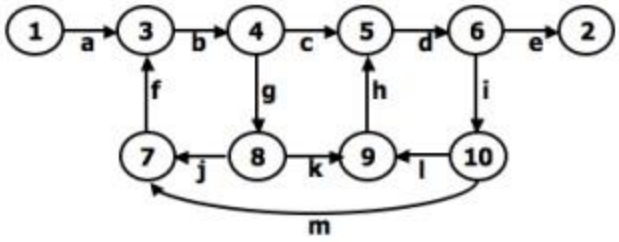
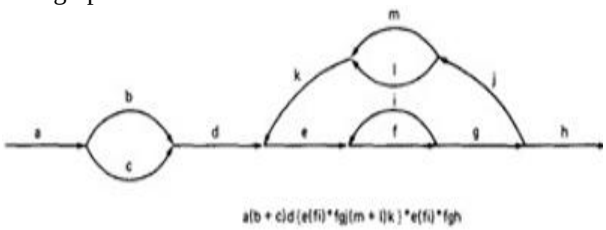
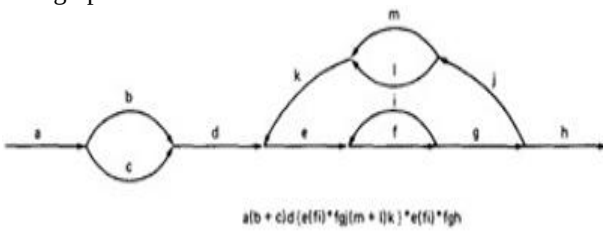
	,but is seen again later during subsequent test execution .what type of testing can be conducted for a related aspect of configuration management that is most likely to havebroken down?			
2	If a Product risk analysis is performed during the planning stage of the test process. During the execution stage of the test process, the test manager directs the testers to classify each detect report by the known product risk it relates to other. once a week test manager runs a report that shows thepercentage of defects related to each known product risk and to unknown risks. Discuss what is one possible use of such a report?	Understand	CO 2	AIT008.07
3	Demonstrate the two specification based techniques are most closelyrelated to each other? Write some key characteristics of specification basedtechniques?	Understand	CO 2	AIT008.07
4	Discuss the most important difference between the metrics based approachand the expert –based approach to test estimation?	Understand	CO 2	AIT008.07
5	Consider the following flow chart diagram:  Demonstrate the minimum number of test cases required for 100% statement coverage and 100%decision coverage, respectively?	Understand	CO 2	AIT008.07
6	Discuss one of the test goals for the project is to have 100% decision coverage. The following three tests have been executed for the control flow graph shown below? Test A covers path: A, B, D, E, G. Test B covers path: A, B, D, E, F, G. Test C covers path: A, C, F, C, F, C, F, G. 	Understand	CO 2	AIT008.07
7	The marks obtained in mathematics by 1000 students are normally distributed with mean 78% and standard deviation 11%. Determine	Understand	CO 2	AIT008.07

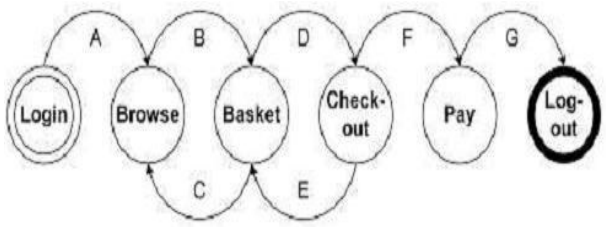
	i.How many students got marks above 90%marks ii.What was the highest mark obtained by the lowest 10% of the students iii.Within what limits did the middle of 90% of the studentlie.			
8	If the system requires 100% decision coverage at component testing for all modules. The following module has been tested with a single test case. Thetest case follows the path A, B, D, E, F, and G. Demonstrate What level of decision coverage has been achieved?	Understand	CO 2	AIT008.07
9	Discuss during an early period of test execution, a defect is located, resolved and conformed as resolved re-testing ,but is seen again later during subsequent test execution .what type of testing can be conducted for a related aspect of configuration management that is most likely to have broken down	Understand	CO 2	AIT008.07
10	Discuss the most important difference between the metric based approach and the expert –based approach to test estimation?	Understand	CO 2	AIT008.07
	UNIT-III			
	LEVELS OF TESTING			
	Part - A (Short Answer Questions)			
1	Define about domain closure and	Remember	CO3	AIT008.09
2	Discuss liberalizing transformation and co-ordinate transformation?	Remember	CO3	AIT008.10
3	Explain about i.BoundaryPoint ii.Extreme Point iii.on-point iv.off-point	Understand	CO 3	AIT008.10
4	Describe co-incidental correctness and discuss representative outcome?	Remember	CO 3	AIT008.12
5	Demonstrate complete and systematic boundaries and describe non-linearBoundaries?	Remember	CO 3	AIT008.13
6	Define simple domain boundaries	Understand	CO 3	AIT008.12
7	State functional homogeneity of bugs and define random testing?	Understand	CO 3	AIT008.13
8	Demonstrate linear vector space and illustrate one dimensional domainbugs closed boundaries?	Remember	CO 3	AIT008.12
9	Explain loop free software ?	Understand	CO 3	AIT008.12
10	Explain bug assumptions for Domain Testing?	Understand	CO 3	AIT008.13
11	Compare simple domain boundaries and compound predicates?	Understand	CO 3	AIT008.12
12	Explain linear vector space?	Remember	CO 3	AIT008.13
13	Define Nice domains?	Remember	CO 3	AIT008.12
14	Explain different properties under nice domains?	Understand	CO 3	AIT008.13
15	Define ugly domains?	Remember	CO 3	AIT008.12
16	Compare specified domains and implemented domains.	Remember	CO 3	AIT008.13
17	Define tilted boundary and shifted boundary.	Remember	CO 3	AIT008.13
18	Define compound predicates	Understand	CO 3	AIT008.12
19	Define domain dimensionality	Remember	CO 3	AIT008.13
20	Explain interfacerange/domaincompatibilitytesting?	Remember	CO 3	AIT008.12
	Part – B (Long Answer Questions)			
1	Demonstrate meaning of domain testing? Discuss variousapplications of domain Testing?	Understand	CO 3	AIT008.12
2	Discuss about equality and inequality predicates. Also explain how they are treated in domain testing?	Understand	CO 3	AIT008.13
3	Explain the domain boundary bugs for two dimensional domains andDiscuss about systematic boundaries?	Remember	CO 3	AIT008.12
4	Classify what can go wrong with boundaries, and then define a testStrategy for each case in domain testing?	Understand	CO 3	AIT008.13
5	Discuss about Linear, Non orthogonal, Tilted domain	Understand	CO 3	AIT008.12

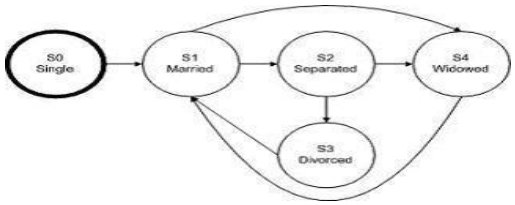
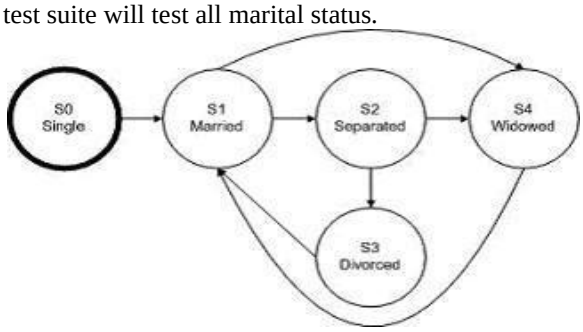
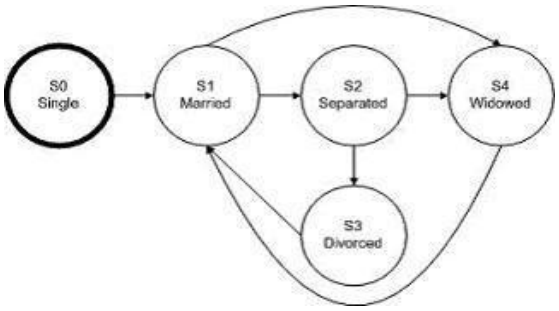
	boundaries withsuitable examples and Discuss about ugly domains with suitable examples?			
6	Explain that domain testing can be used in both functional and Structural testing?	Remember	CO 3	AIT008.12
7	Describe short notes on i.Ambiguities and contradictions ii.Simplifying thetopology iii.Rectifying boundaryclosures	Understand	CO 3	AIT008.12
8	Explain the terms i.Domains and range ii.Closure compatibility iii.Domain compatibilitytesting	Understand	CO 3	AIT008.13
9	Define hardware logic testing and explain KV-charts?	Remember	CO 3	AIT008.13
10	Define decision table and explain about don't care and impossible terms?	Understand	CO 3	AIT008.13
11	Discuss that programmers and testers treat ugly domains and Explain the restrictions that are made on the domains?	Understand	CO 3	AIT008.12
12	Explain the following terms i.Domain Testing ii.Linear zing Transformation iii.Non-Linear zing Transformation iv.Canonical program form	Understand	CO 3	AIT008.13
13	Discuss in detail the nice domains and ugly domains with suitable Examples and Discuss about random testing?	Understand	CO3	AIT008.12
14	Discuss about variations, tools and effectiveness of domain testing?	Understand	CO 3	AIT008.13
15	Define domain and explain domain model in detail and Discuss the simplifications of ugly domains.	Remember	CO 3	AIT008.12
16	Explain the testing strategy for two-dimensional domains and Discuss the purpose of domain testing?	Understand	CO 3	AIT008.13
17	List the restrictions of domain testing and explain and Explain about coordinate transformation?	Understand	CO 3	AIT008.12
18	Define the bug assumptions for domain testing. And Explain about simple domain boundaries and compound predicates?	Understand	CO 3	AIT008.13
19	Explain test case design and sketch KV-charts of 3 variable and 4 variables?	Remember	CO 3	AIT008.13
20	Demonstrate to minimize the function using karnaughmap method: F(A,B,C,D)= P(1,2,3,8,9,10,11,14)+ Pd(7,15)	Understand	CO 3	AIT008.13
Part – C (Problem Solving and Critical Thinking)				
1	Discuss that would like to know whether black box testing techniques likeboundary value analysis and equivalence partitioning during which phases of Testing are they used, if possible with examples?	Understand	CO 3	AIT008.12
2	Describe why is it necessary to develop test cases for both valid and invalid input condition?	Understand	CO 3	AIT008.13
3	Describ**e** why it is necessary to develop test cases for both valid and invalid input condition. How important is document for product? how will you test requirement and design Document?	Understand	CO 3	AIT008.12
4	Consider programmer A and programmer B are working on a group of interfacing modules. Programmer A tends to be a poor communicator and does not get along well with Programmer B. Due to this situation, Discuss what types of defects are likely to surface in these interfacing modules?	Understand	CO 3	AIT008.12
5	Discuss In a system designed to work out the tax to be paid: An employee has $4000 of salary tax free. The next $1500 is taxed at 10% The next $28000 is taxed at 22%. Any further amount is taxed at 40% To the nearest $ which of these is a valid boundary value analysis test case?	Understand	CO 3	AIT008.13

6	Use a Karnaugh map tominimize F=B'C'D'+A'B'C'D'+ABC'D+A'BCD+ABD+B'CD'+A'BC'D	Understand	CO 3	AIT008.12
7	Demonstrate reduction the following function using karnaugh map method F(A,B,C,D)=π (4,5,6,7,8,12,13)+d(1,15)	Understand	CO 3	AIT008.13
8	Consider Arrive and Go airline wants to clarify its baggage handling policy, whilst maximizing revenues, and will introduce the following tariffs for all baggage per individual customer (weights are rounded up to the nearest 0.1Kg): The first 2Kg will be carried free of charge. The next 10 Kg will be carried for a flat charge of $10. An additional 15Kg will be charged a total charge of $17. Luggage over this amount will be charged at $5 per Kg, up to a maximum of 150Kg per person. No passenger may take more that 150Kg with them. Define Which of the following would constitute boundary values for baggage weights in the price calculation?	Understand	CO 3	AIT008.12
9	For a system designed to work out the tax to be paid. An employee has $4000 of salary tax free. The next $1500 is taxed at 10%. The next $28000 is taxed at 22% .Any further amount is taxed at 40% .To the nearest $.Discuss which of these is a valid boundary value analysis test case?	Understand	CO 3	AIT008.13
10	If the order numbers on a stock control system can range between 10000 and 99999 inclusive. Describe the following inputs might be a result of designing tests for only valid equivalence classes and valid boundaries?	Understand	CO 3	AIT008.12
UNIT-IV				
PATH PRODUCTS				
Part – A (Short Answer Questions)				
1	Explain path sum and discuss approximate minimum number of paths?	Understand	CO 4	AIT008.14
2	Explain the methods of regular expressions and flow anomaly detection?	Understand	CO 4	AIT008.17
3	Demonstrate about absorption law?	Remember	CO 4	AIT008.14
4	Define loops.	Remember	CO 4	AIT008.14
5	Discuss about cross-term step and explain maximum path count arithmetic?	Understand	CO 4	AIT008.14
6	Define Identities	Understand	CO 4	AIT008.14
7	Discuss loop terms and demonstrate lower path count arithmetic?	Understand	CO 4	AIT008.14
8	Explain applications of path testing and explain push/pop and get/return?	Understand	CO 4	AIT008.14
9	Write any two patterns of Node Removal Algorithm.	Remember	CO4	AIT008.15
10	Describe flow-anomaly detection problem?	Understand	CO 4	AIT008.17
11	Explain different loop terms?	Remember	CO 4	AIT008.14
12	Specify the necessity of using Reduction procedure Algorithm?	Remember	CO 4	AIT008.15
13	Mention the purpose of PUSH/POP and GET/RETURN model?	Remember	CO 4	AIT008.14
14	Identify the examples of path product and path sum.	Remember	CO 4	AIT008.14
15	Define comments?	Understand	CO 4	AIT008.14
16	Define Cross-Termstep	Remember	CO 4	AIT008.14
17	Define parallel term?	Understand	CO 4	AIT008.16
18	Define Path testing with an example?	Remember	CO 4	AIT008.17
19	Define path expression.	Remember	CO 4	AIT008.17
20	Iist the limitations of path testing?	Remember	CO 4	AIT008.17
Part – B (Long Answer Questions)				
1	Demonstrate using reduction procedure to convert flow graph whose links are labeled into a path expression? Explain each step With flow graph?	Apply	CO 4	AIT008.15

2	Compare and contrast structured and unstructured flow graph?	Understand	CO 4	AIT008.15
3	Explain applications of paths, path products and regular expressions?	Remember	CO 4	AIT008.14
4	Write short notes on: i.Distributive laws ii.Absorption Rule iii.Loops iv.Identity Elements	Remember	CO 4	AIT008.14
5	Demonstrate how to find approximate minimum numbers of paths with an example and Explain the probability of getting path expression with an example?	Remember	CO 4	AIT008.14
6	Discuss regular expressions and flow anomaly detection? And Explain a regular expression and flow anomaly detection method With an example and limitations?	Understand	CO 4	AIT008.16
7	Explain about the mean processing time of a routine with an example? And Explain the generalizations and limitations of regular expressions?	Understand	CO 4	AIT008.16
8	Explain which method will be useful for regular expressions with an example?	Understand	CO 4	AIT008.14
9	Explain the problem occurred in the regular expressions with an Example?	Understand	CO 4	AIT008.16
10	Explain the application to find the minimum number of paths in a graph?Explain with example.	Understand	CO 4	AIT008.14
11	Write short notes on i. Path Products ii. Path Expressions. iii. Path Sums iv. Loops	Understand	CO 4	AIT008.14
12	Write an algorithm for Node Reduction	Remember	CO 4	AIT008.15
13	Illustrate the applications of Node Reduction algorithm.	Remember	CO 4	AIT008.15
14	Example Huang's theorem with examples.	Understand	CO 4	AIT008.17
15	Explain about lower and higher path count arithmetic.	Understand	CO 4	AIT008.14
16	Discuss about maximum path count arithmetic with an example.	Understand	CO 4	AIT008.14
17	Explain about the looping probability of a path expression with an example?	Understand	CO 4	AIT008.15
18	Explain the push/pop arithmetic with anexample?	Remember	CO 4	AIT008.14
19	Explain the get/return arithmetic with anexample?	Remember	CO 4	AIT008.14
20	Explain parallel terms and demonstrate how many paths in a flow graph?	Remember	CO 4	AIT008.14
Part – C (Problem Solving and Critical Thinking)				
1	Evaluate the mean processing time of a program represented by the following flow graph. Numbers in the brackets are the probabilities and the other numbers are processing times. 	Apply	CO 4	AIT008.14

2	Apply node reduction algorithm for the following flow graph 	Apply	CO 4	AIT008.15
3	Find the maximum path count arithmetic for the following flow graph 	Apply	CO 4	AIT008.14
4	Find the maximum path count arithmetic for the following flow graph 	Apply	CO 4	AIT008.14
5	Discuss about maximum path count arithmetic with an example.	Understand	CO 4	AIT008.14
6	Explain about the looping probability of a path expression with an example?	Understand	CO 4	AIT008.15
7	Explain the push/pop arithmetic with anexample?	Remember	CO 4	AIT008.14
8	Explain the get/return arithmetic with anexample?	Remember	CO 4	AIT008.14
9	Compare and contrast structured and unstructured flow graph?	Understand	CO 4	AIT008.15
10	Define the constraints to be followed to find number of paths in a flow graph?	Understand	CO 4	AIT008.15
	UNIT-V			
	TRANSITION TESTING			
	Part - A (Short Answer Questions)			
1.	Explain about state graphs?	Understand	CO 5	AIT008.18
2.	Define transition.	Remember	CO 5	AIT008.18
3.	Explain about state tables?	Understand	CO 5	AIT008.18
4.	Explain about equivalent states?	Understand	CO 5	AIT008.18
5.	Discuss about unreachable states?	Understand	CO 5	AIT008.19
6.	Discuss output encoding and output alphabet?	Understand	CO 5	AIT008.18
7.	Explain about encoding bugs?	Remember	CO 5	AIT008.18
8.	Define number of states?	Understand	CO 5	AIT008.19
9.	Define finite-state machine?	Understand	CO 5	AIT008.18
10.	ExplainState transition in testing?	Understand	CO 5	AIT008.18
11.	Define the components of state transition diagram?	Remember	CO 5	AIT008.19
12.	Define state transition table?	Understand	CO 5	AIT008.19
13.	Define impossible states?	Understand	CO 5	AIT008.20
14.	Define event?	Remember	CO 5	AIT008.18
15.	Define dead state?	Understand	CO 5	AIT008.18
16.	Difference between good and bad state graph?	Understand	CO 5	AIT008.19

17.	Define Output?	Understand	CO 5	AIT008.18
18	Define graph matrix.	Understand	CO 5	AIT008.19
19	Explain about out-degree and in-degree?	Remember	CO 5	AIT008.19
20	Define finite state machine	Remember	CO 5	AIT008.19
Part - B (Long Answer Questions)				
1	Discuss the principles of state testing? Explain its advantages and Disadvantages?	Understand	CO 5	AIT008.18
2	Compare the differences between logic based testing, state testing and path testing?	Understand	CO 5	AIT008.18
3	Demonstrate the software implementation issues in state testing?	Understand	CO 5	AIT008.18
4	Explain state testing and testability tips with an example?	Understand	CO 5	AIT008.20
5	Explainthe different ways to represent or design state transition?	Understand	CO 5	AIT008.18
6	Demonstrate design guidelines for building finite state machines into your code?	Understand	CO 5	AIT008.19
7.	Explain Impact of bugs and principles in state testing?	Understand	CO 5	AIT008.19
8.	Explain briefly essential and inessential finite-state behavior in testability tips?	Understand	CO 5	AIT008.20
9.	Explain unspecified and contradictory transitions with example?	Understand	CO 5	AIT008.19
10	Explain with an example how to convert specification into state-graph. Also discuss how contradictions can come out.	Understand	CO 5	AIT008.19
11	Describe the types of bugs that can cause stategraphs?	Understand	CO 5	AIT008.20
12	Illustrate designer's comments about stategraphs?	Understand	CO 5	AIT008.19
13	Explain switches, flags and unachievable paths and demonstrate unspecified and contradictory transitions?	Understand		AIT008.20
14	Explain input encoding and input alphabet and illustrate output errors?	Understand	CO 5	AIT008.20
15	Demonstrate state codes and state symbol products and explain limitations of state graphs?	Understand	CO 5	AIT008.18
16	Compare time and sequence and explain about state bugs?	Understand	CO 5	AIT008.18
17	Explain all the rules in the conversion of specification into astate graph?	Understand	CO 5	AIT008.18
18	**Discuss** short notes on i. Transitionbugs ii. Statebugs iii. Encodingbugs	Understand	CO 5	AIT008.18
19	Demonstrate design guidelines for building finite state machines into your code?	Understand	CO 5	AIT008.19
20	Explain Impact of bugs and principles in state testing?	Understand	CO 5	AIT008.19
Part – C (Problem Solving and Critical Thinking)				
1	Consider the following state transition diagram .Show which of the following series of state transitions contains an invalid transition which may indicate a fault in the system design? 	Understand	CO 5	AIT008.18
2	Consider there is one application, which runs on a single terminal.there are another application that works on multiple terminals. Demonstrate what are the test techniques you will use on the second application that you would not do on the first application? Which test suite will check for an invalid	Understand	CO 5	AIT008.18

	transition using the diagram below?  			
3	Consider the following state table: <table><tr><th></th><th>On</th><th>Off</th><th>Channel 1</th><th>Channel 2</th><th>Channel >2</th><th>Stby</th></tr><tr><td>Standby</td><td>Live</td><td>N</td><td>N</td><td>N</td><td>N</td><td>N</td></tr><tr><td>Live</td><td>N</td><td>Standby</td><td>Display Channel 1</td><td>Display Channel 2</td><td>N</td><td>Standby</td></tr><tr><td>Display Channel 1</td><td>N</td><td>N</td><td>N</td><td>Display Channel 2</td><td>Live</td><td>Standby</td></tr><tr><td>Display Channel 2</td><td>N</td><td>N</td><td>Display Channel 1</td><td>N</td><td>Live</td><td>Standby</td></tr></table> Demonstrate which of the following represents an invalid transition (N)?	Understand	CO 5	AIT008.18
4	Without testing all possible transitions, Demonstrate which test suite will test all marital status.  	Understand	CO 5	AIT008.19
5	Using the diagram below, Explain which test suite will check for all valid state transitions using the least effort?  	Understand	CO 5	AIT008.19
6	Explain switches, flags and unachievable paths and demonstrate unspecified and contradictory transitions?	Understand	CO 5	AIT008.20
7	Explain input encoding and input alphabet and illustrate output errors?	Understand	CO 5	AIT008.20
8	Demonstrate state codes and state symbol products and explain limitations of state graphs?	Understand	CO 5	AIT008.18
9	Compare time and sequence and explain about state bugs?	Understand	CO 5	AIT008.18

10	Explain all the rules in the conversion of specification into astate graph?	Understand	CO 5	AIT008.18

Prepared by:

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