INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)
Dundigal, Hyderabad - 500 043

COMPUTER SCIENCE AND ENGINEERING

DEFINITIONS AND TERMINOLOGY QUESTION BANK

Course Name	:	**SOFTWARE TESTING METHODOLOGY**
Course Code	:	**AIT008**
Program	:	**B.Tech**
Semester	:	**VII**
Branch	:	**Computer Science and Engineering**
Section	:	**A,B,C&D**
Course Faculty	:	**Ms. M GeethaYadav, Assistant Professor** **Ms. B GeetaVani, Assistant Professor** **Ms. B Anupama, Assistant Professor** **Ms. K Mayuri, 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.

DEFINITIONS AND TERMINOLOGYQUESTION BANK

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
UNIT-I						
1	What is Software?	Software is a set of programs instructing a computer to do specific tasks. Software is a generic term used to describe computer programs.	Understand	CO 1	CLO1	AIT008.01
2	What is Software Testing?	Software testing is defined as an activity to check whether the actual results match the expected results and to ensure that the software system is defect free.	Remember	CO 1	CLO1	AIT008.01
3	What is Software Testing Methodology ?	It is a framework that is used to structure, plan, and control the process of developing an information system.	Remember	CO 1	CLO1	AIT008.01
4	Define Dichotomy?	Dichotomy is defined as a sharp division of things or ideas into two contradictory parts.	Remember	CO 1	CLO2	AIT008.02
5	Difference between Testing and	Testing is a process of finding bugs or errors in a software	Remember	CO 1	CLO 1	AIT008.01

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	Debugging?	product that is done manually by tester or can be automated. Debugging is a process of fixing the bugs found in testing phase. Programmer or developer is responsible for debugging and it can't be automated.				
6	Difference between Designer versus Tester?	Test designer is the person who designs the tests where as the tester is the one actually tests the code. During functional testing, the designer and tester are probably different persons. During unit testing, the tester and the programmer merge into one person. Tests designed and executed by the software designers are by nature biased towards structural consideration and therefore suffer the limitations of structural testing.	Remember	CO 1	CLO2	AIT008.02
7	Difference between Modularity and Efficiency?	A module is a discrete, well-defined, small component of a system. Smaller the modules, difficult to integrate; larger the modules, difficult to understand. Both tests and systems can be modular. Testing can and should likewise be organised into modular components. Small, independent test cases can be designed to test independent modules.	Remember	CO 1	CLO2	AIT008.02
8	Difference between Function Versus Structure testing?	In functional testing, the program or system is treated as a blackbox. It is subjected to inputs, and its outputs are verified. Functional testing takes the user point of view-bother about functionality and features and not the program's implementation. Structural testing does look at the implementation details. Things such as programming style, control method, source language, database design, and coding details dominate structural testing.	Remember	CO 1	CLO2	AIT008.02
9	Difference between Builder and Buyer?	Most software is written and used by the same organization. Unfortunately, this situation is dishonest because it clouds accountability. If there is no separation between builder	Remember	CO 1	CLO2	AIT008.02

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		and buyer, there can be no accountability				
10	Define Bug?	A bug is an error in a software program. It may cause a program to unexpectedly quit or behave in an unintended manner.	Remember	CO 1	CLO1	AIT008.01
11	Define Unit testing?	Unit Testing is a level of software testing where individual units/ components of software are tested. The purpose is to validate that each unit of the software performs as designed. A unit is the smallest testable part of any software.	Remember	CO 1	CLO3	AIT008.03
12	Define Integration testing?	Integration Testing is a level of software testing where individual units are combined and tested as a group. The purpose of this level of testing is to expose faults in the interaction between integrated units. Test drivers and test stubs are used to assist in Integration Testing.	Remember	CO 1	CLO3	AIT008.03
13	Define flow graph?	Flow Graph is defined as a function in a program that can be represented as a control flow graph and the nodes in the flow graph are defined as program statements while the directed edges are the flow of control.	Understand	CO 1	CLO 3	AIT008.03
14	Define path testing?	Path testing is an approach to testing where you ensure that every path through a program has been executed at least once. You normally use a dynamic analyzer tool or test coverage analyzer to check that all of the code in a program has been executed.	Remember	CO 1	CLO5	AIT008.05
15	Define predicate?	PREDICATE: The logical function evaluated at a decision is called Predicate. The direction taken at a decision depends on the value of decision variable. Some examples are: A>0, x+y>=90	Remember	CO 1	CLO5	AIT008.05
16	Name the kinds of loops?	Nested loops Concatenated loops Horrible loops	Remember	CO1	CLO3	AIT008.03
17	Define Path Predicate?	PATH PREDICATE: A predicate associated with a path is called a Path Predicate. For example, "x is greater than zero", "x+y>=90", "w is either negative or equal to 10 is true" is a sequence of predicates	Remember	CO1	CLO5	AIT008.05

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
		whose truth values will cause the routine to take a specific path.				
18	What Is Testing Blindness?	TestingBlindness is a pathologicalsituation in which the desired path is achieved for the wrong reason	Remember	CO1	CLO6	AIT008.06
19	Define control flow graph?	The control flow graph is a graphical representation of a program's control structure. It uses the elements named process blocks, decisions, and junctions.	Understand	CO1	CLO5	AIT008.05
20	Define junction?	A junction is a point in the program where the control flow can merge	Remember	CO1	CLO6	AIT008.06
UNIT-II						
1	Define transaction?	A transaction is a unit of work seen from a system user's point of view. A transaction consists of a sequence of operations, some of which are performed by a system, persons or devices that are outside of the system.	Understand	CO2	CLO7	AIT008.07
2	What is transaction flow graph?	The transaction flow graph is to create a behavioral model of the program that leads to functional testing.	Remember	CO2	CLO7	AIT008.07
3	Name the different possible interpretations of the decision symbol?	There are three different possible interpretations of the decision symbol. they are 1.Decision 2.Biosis 3.Mitosis	Understand	CO2	CLO7	AIT008.07
4	Define decision?	A transaction is the one which will take one alternative or the other alternative but not both	Remember	CO2	CLO7	AIT008.07
5	Define biosis?	Biosis is the one which will have one incoming transaction gives birth to a new transaction, and both transactions continue on their separate paths, and the parent retains it identity.	Understand	CO2	CLO7	AIT008.07
6	Define mitosis?	Mitosis is the one which will destroy theparent transaction and two new transactions are created	Understand	CO2	CLO7	AIT008.07
7	Define Mergers?	Transaction flow junction points are potentially as troublesome as transaction flow splits.	Understand	CO2	CLO7	AIT008.07
8	Name the different types of junctions?	There are three types of junctions: (1) Ordinary Junction (2) Absorption (3) Conjugation	Remember	CO2	CLO7	AIT008.07

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9	Define Ordinary Junction?	An ordinary junction which is similar to the junction in a control flow graph. A transaction can arrive either on one link or the other.	Understand	CO2	CLO7	AIT008.07
10	Define Absorption?	In absorption case, the predator transaction absorbs prey transaction. The prey gone but the predator retains its identity	Remember	CO2	CLO7	AIT008.07
11	Define Conjugation?	In conjugation case, the two parent transactions merge to form a new daughter. In keeping with the biological flavor this case is called as conjugation	Understand	CO2	CLO7	AIT008.07
12	What is Data Flow Testing?	Data flow testing is the name given to a family of test strategies based on selecting paths through the program's control flow in order to explore sequences of events related to the status of data objects	Understand	CO2	CLO8	AIT008.08
13	Name the different data object states?	The following symbols denote these possibilities: **Defined:** d - defined, created, initialized etc **Killed or undefined:** k - killed, undefined, released etc **Usage:** u - used for something (c - used in Calculations, p - used in a predicate)	Remember	CO2	CLO8	AIT008.08
14	What is anomaly?	An anomaly is denoted by a two-character sequence of actions	Understand	CO2	CLO8	AIT008.08
15	Name the Different Data Flow Anomaly States?	Data flow anomaly model prescribes that an object can be in one of four distinct states: **K** :- undefined, previously killed, doesnot exist **D** :- defined but not yet used for anything **U** :- has been used for computation or in predicate **A** :- anomalous	Remember	CO2	CLO8	AIT008.08
UNIT-III						
1	DefineDomain Testing?	Domain Testing is a type of Functional Testing which tests the application by giving inputs and evaluating its appropriate outputs.	Remember	CO 4	CLO 9	AIT008.09
2	DefineBoundary testing**?**	Boundary value analysis (BVA) is based on testing at the boundaries between partitions.	Remember	CO 4	CLO 9	AIT008.09

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3	Explain Equivalence Class testing**?**	This technique is to divide (i.e. to partition) a set of test conditions into groups or sets that can be considered the same'equivalence partitioning.'	Remember	CO 4	CLO 10	AIT008.10
4	What is Equivalence partitioning?	Equivalence partitioning is a software testing technique that divides the input data of a software unit into partitions of equivalent data from which test cases can be derived.	Remember	CO 4	CLO 11	AIT008.11
5	Define Boundary value analysis**?**	Boundary value analysis is a software testing technique in which tests are designed to include representatives of boundary values in a range.	Remember	CO 4	CLO 9	AIT008.09
6	Explain Nice domains?	Nice domains have the following properties: linear boundaries, boundaries that extend from plus to minus infinity in all variables, have systematic inequality sets, form orthogonal sets, have consistent closures, are convex, and create domains that are all in one piece. Nice domains are easy to test because the boundaries can be tested one at a time, independently of the other boundaries.	Remember	CO 4	CLO 10	AIT008.10
7	Define ugly domains?	Domain ambiguities are holes in the input space. The holes may lie within the domains or in cracks between domains	Remember	CO 4	CLO 10	AIT008.10
8	Define interface?	An interface is actually software that consists of sets of commands, messages, and other attributes that enable communication between a device and a user.	Remember	CO 4	CLO 11	AIT008.11
9	Define interface testing?	Interface Testing is defined as a software testing type which verifies whether the communication between two different software systems is done correctly.	Remember	CO 4	CLO 11	AIT008.11
10	What are types of interface testing?	During Interface Testing various types of testing done on the interface which may include Workflow, Edge cases –unexpected values, Performance, load, and network testing, Individual systems	Remember	CO 4	CLO 12	AIT008.12
11	Define Decision Table Testing ?	A Decision Table Testing is a good way to deal with different combination of	Remember	CO 4	CLO 12	AIT008.12

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		inputs which produce different results. It is also called Cause-Effect Table. It provides a systematic way of stating complex business rules, which is useful for developers as well as for testers.				
12	What isLogic-based testing?	Logicbasedtesters design tests from logical expressions that appear in softwareartifacts such as source code, design models, and requirements specifications	Remember	CO 4	CLO 12	AIT008.12
13	What is KV chart?	KV Charts for Functions of a Single Variable. The charts show all possible truth values that the variable A can have. A "1" means the variable's value is "1" or TRUE	Remember	CO 4	CLO 13	AIT008.13
14	Define Path instrumentation?	Path instrumentation is what we have to do to confirm that the outcome was achieved by the intended path.	Remember	CO 4	CLO 11	AIT008.11
15	What is Path testing?	Path testing is an approach to testing where you ensure that every path through a program has been executed at least once	Remember	CO 4	CLO 12	AIT008.12
UNIT-IV						
1	What is path?	Path is a structural testing method based on the source code or algorithm and NOT based on the specifications.	Remember	CO4	CLO14	AIT008.14
2	Define path product	The name of a path that consists of two successive path segments is conveniently expressed by the concatenation or Path Product of the segment names.	Understand	CO4	CLO14	AIT008.14
3	Define path Expression	Any expression that consists of path names and "OR"s and which denotes a set of paths between two nodes is called a "Path Expression."	Understand	CO4	CLO14	AIT008.14
4	What is path sum?	The "+" sign was used to denote the fact that path names were part of the same set of paths. The "PATH SUM" denotes paths in parallel between nodes.	Remember	CO4	CLO14	AIT008.14
5	What is Absorption rule?	If X and Y denote the same set of paths, then the union of these sets is unchanged; consequently.	Remember	CO4	CLO14	AIT008.14
6	List out applications of path	Applications of path expression are 1.Node Reduction Algorithm	Remember	CO4	CLO14	AIT008.14

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
	expression.	2.Maximum path count Arithmetic 3.Lower path count Arithmetic				
7	Write any two patterns of Node Removal Algorithm	1. Convert the program or graph into a path expression. 2. Identify a property of interest and derive an appropriate set of "arithmetic" rules that characterizes the property.	Remember	CO4	CLO15	AIT008.15
8	What is distributive law?	The product and sum operations are distributive, and the ordinary rules of multiplication apply; that is A(B+C)=AB+ACand (B+C)D=BD+CD	Remember	CO4	CLO14	AIT008.14
9	What is flow-anomaly detection problem?	The generic flow-anomaly detection problem (note: not just data-flow anomalies, but any flow anomaly) is that of looking for a specific sequence of options considering all possible paths through a routine.	Remember	CO4	CLO17	AIT008.17
10	What is structured flow graph?	Structured code can be defined in several different ways that do not involve ad-hoc rules such as not using GOTOs.A structured flow graph is one that can be reduced to a single link by successive application of the transformations.	Remember	CO4	CLO14	AIT008.14
11	What is the necessity of using Reduction procedure Algorithm?	A reduction procedure for converting a flow graph whose links are labeled with names into a path expression that denotes the set of all entry/exit paths in that flow graph. The procedure is a node-by-node removal algorithm.	Remember	CO4	CLO15	AIT008.15
12	Write first three steps in Reduction Algorithm?	➢ Combine all serial links by multiplying their path expressions. ➢ Combine all parallel links by adding their path expressions. ➢ Remove all self-loops (from any node to itself) by replacing them with a link of the form X*, where X is the path expression of the link in that loop.	Remember	CO4	CLO15	AIT008.15
13	What is Regular Expression?	A Sequence of symbols and characters expressing a string	Remember	CO4	CLO16	AIT008.16

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
		or pattern to be searched for with in a longer piece of text.				
14	What are the ways of loop removal operations?	There are two ways of loop removal operations. 1.We remove the self-loop and then multiply all outgoing links by Z^{∞} 2. We split the node in to two equivalent nodes.	Remember	CO4	CLO15	AIT008.15
15	What is the purpose of using PUSH/POP and GET/RETURN model?	This model can be used to answer several different questions that can turn up in debugging. It can also help decide which test cases to design.	Understand	CO4	CLO17	AIT008.17
16	Define Path Testing?	Path testing is a structural testing method that involves using the source code of a program in order to find every possible executable path. It helps to determine all faults lying within a piece of code. This method is designed to execute all or selected path through a computer program.	Understand	CO4	CLO14	AIT008.14
17	What is a loop?	Loop can be understood as an infinite set of parallel paths.	Remember	CO4	CLO15	AIT008.15
18	Give an example of path product.	XY=abcdefghij YX=fghijabcde AX=aabcde Xa=abcdea XaX=abcdeaabcde	Understand	CO4	CLO14	AIT008.14
19	How can we use Huang`s theorem?	Huang's theorem can be easily generalized to cover sequences of greater length than two characters.	Understand	CO4	CLO17	AIT008.17
20	How can we consider paths in a flow graph?	Based on the Following Constraints: 1. What is the maximum number of different paths possible? 2. What is the fewest number of paths possible? 3. How many different paths are there really? 4. What is the average number of paths?	Understand	CO4	CLO14	AIT008.14
UNIT-V						
1	Define state?	A state is defined as a combination of circumstances or attributes belonging for the time being to a person or thing.	Remember	CO5	CLO18	AIT008.18
2	Define state graph?	A state graph is a graphical representation of the program in terms of states, transitions, inputs and outputs .	Remember	CO5	CLO18	AIT008.18

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
3	Define transition?	Transitions are denoted by links that join the states	Remember	CO5	CLO18	AIT008.18
4	Define finite-state machine?	A finite-state machine is an abstract device that can be represented by a state graph having a finite number of states and a finite number of transitions between states.	Remember	CO5	CLO18	AIT008.18
5	Define Equivalent States	Two states are equivalent if every sequence of inputs starting from one state produces exactly the same sequence of outputs when started from the other state	Remember	CO5	CLO18	AIT008.18
6	What is State Transition in Testing?	State Transition testing is defined as the software testing technique in which changes in input conditions cause's state changes in the Application under Test (AUT).	Remember	CO5	CLO18	AIT008.18
7	Name the components of state transition diagram?	1.States 2.Transitions 3.Events 4.Actions	Remember	CO5	CLO20	AIT008.20
8	Define state transition diagram?	In state transition diagram the states are shown in boxed texts, and the transition is represented by arrows. It is also called State Chart or Graph. It is useful in identifying valid transitions	Remember	CO5	CLO20	AIT008.20
9	Define state transition table?	In state transition table all the states are listed on the left side, and the events are described on the top. Each cell in the table represents the state of the system after the event has occurred. It is also called State Table. It is useful in identifying invalid transitions.	Remember	CO5	CLO 20	AIT008.20
10	Name the different ways to represent or design state transition?	There are two ways to represent state transition. 1.Statetransitiondiagram2.State transition table.	Remember	CO5	CLO19	AIT008.19
11	Define event?	An Event is an action launched by an external hardware device and manipulated by software code. Events allow objects to notify client objects about important activities.	Remember	CO5	CLO18	AIT008.18
12	Define dead state?	A dead state is a state that once entered cannot be left.	Understand	CO5	CLO20	AIT008.20
13	Difference between good and bad state graph?	Bad State graphs contain un reachable states. Possibility of reaching every state from every other state is zero, Also, it is not possible to reach start state form itself.	Understand	CO5	CLO19	AIT008.19

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
		In good state graphthe total number of states is equal to the product of the possibilities of the factors that make up the state For every state and input, there is exactly one transition specified to exact one, possibly the same state.				
14	Define Number of States?	The number of states in a state graph is the number of states we choose to recognize or model 1. Identify all the component factors of the state. 2. Identify all the allowable values for each factor. 3. The number of states is the product of the number of allowable values of all the factors.	Remember	CO5	CLO18	AIT008.18
15	Define Output?	An output can be associated with any link. Outputs are denoted by letters or words and are separated from inputs by a slash .	Remember	CO5	CLO18	AIT008.18

Signature of the Faculty **HOD, CSE**