Q.6 Attempt any two:

i. Describe the Unit test plan, Integration test plan and system test plan in detail using standard template. **5**

ii. What are some of the challenges in automating the testing of GUI portions of an application? How do these compare with the automation of back-end testing? **5**

iii. What is the need of automating the testing activities? What are the guidelines for selecting a testing tool. Is a single testing tool sufficient for all testing activities? **5**

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Total No. of Questions: 6 *Total No. of Printed Pages:4*

Enrollment No.....

Faculty of Engineering

End Sem (Even) Examination May-2019

OE00046 Software Testing

Programme: MCA Branch/Specialisation: Computer Application

Duration: 3 Hrs. **Maximum Marks: 60**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d.

Q.1 i. Cyclomatic complexity is equal to **1**
(a) Number of independent paths
(b) Number of paths
(c) Number of edges
(d) Number of nodes

ii. Data flow testing is related to **1**
(a) Data flow diagram (b) E-R diagram
(c) Data dictionaries (d) None of these

iii. Alpha and Beta testing techniques are related to **1**
(a) System testing (b) Unit testing
(c) Acceptance testing (d) Integration testing

iv. Test suit is **1**
(a) Set of inputs (b) Set of outputs
(c) Set of test cases (d) None of these

v. Verification plan includes **1**
(a) Unit test Plan (b) Integration test plan
(c) Function design plan (d) None of these

vi. Test manager **1**
(a) Interacts with customer regarding quality issues
(b) Acquires all the testing resources including tool
(c) Designs test cases
(d) Both (a) and (b)

vii. Regression testing is helpful in **1**
(a) Detecting bugs
(b) Detecting undesirable side effects by changing the operating environment
(c) Integration testing
(d) All of these

viii. For a function of n variables robustness testing of boundary value analysis yields: **1**
(a) 4n+1 (b) 4n+3 (c) 6n+1 (d) None of these

ix. DD path graph is called as **1**
(a) Design to Design Path graph
(b) Defect to Defect Path graph
(c) Destination to Destination Path graph
(d) Decision to decision Path graph

x. Mutation testing is related to **1**
(a) Fault seeding (b) Functional testing
(c) Fault checking (d) None of these

Q.2 i. Discuss the limitation of software testing. Will exhaustive testing (even if possible for every small programs) guarantee that the program is 100% correct? **2**

ii. Explain the difference between validation and verification. Differentiate error, bug, fault, failure giving examples of each. **3**

iii. What is Dynamic testing? Define and explain the difference between white box testing and black box testing. Also name the various types of white box and black box testing. **5**

OR iv. What is meant by test case design? Discuss its objectives and Indicate the steps involved in test case design. What is the psychology behind testing by an independent team. **5**

Q.3 i. Describe the equivalence class testing method. Compare this with boundary value analysis techniques. **2**

ii. Consider the program for the determination of next date in a calendar. Its input is a triple of day, month and year with the following range **8**

1 _ month _ 12
1 _ day _ 31
1900 1 _ year _ 2025

The possible outputs would be Next date or invalid date. Design boundary value and robust test cases for this program.

OR iii. Explain black box testing technique in detail. **8**

Q.4 i. Describe the Software Testing Life Cycle in detail with a neat diagram. Illustrate in detail the test case design steps and why a post execution test review is indispensable in software testing. **3**

ii. Explain the following testing types using real life examples: **7**
(a) Load testing (b) Stress testing
(c) Smoke testing (d) Volume testing
(e) Installation testing (f) Sanity testing
(g) Compatibility testing

OR iii. When is a system said to regress? How does regression testing help in producing a quality software? What is the difference between fault – revealing test cases, modification – revealing test cases and modification – traversing test cases. **7**

Q.5 i. Explain the phases of defect life cycle. What factors would an organisation take into account for maintaining test cases based on their effectiveness of detecting defects. **4**

ii. What are key points of test plan template? Consider an example where a company makes multiple products in the systems and applications arena. A product has nine-month release cycle, followed by a ten – month maintenance period. Suggest a test plan for the example. **6**

OR iii. A group was initially established to provide testing services to internal “customers” (application developers) in a bank. Soon the group developed competence and spun off as an independent company providing testing services to other banks and financial institutions. Write and explain an exhaustive test plan for the system. **6**

Marking Scheme
OE00046 Software Testing

Q.1	i.	Cyclomatic complexity is equal to (a) Number of independent paths		**1**
	ii.	Data flow testing is related to (d) None of these		**1**
	iii.	Alpha and Beta testing techniques are related to (c) Acceptance testing		**1**
	iv.	Test suit is (c) Set of test cases		**1**
	v.	Verification plan includes (c) Function design plan		**1**
	vi.	Test manager (d) Both (a) and (b)		**1**
	vii.	Regression testing is helpful in (d) All of these		**1**
	viii.	For a function of n variables robustness testing of boundary value analysis yields: (c) 6n+1		**1**
	ix.	DD path graph is called as (d) Decision to decision Path graph		**1**
	x.	Mutation testing is related to (a) Fault seeding		**1**
Q.2	i.	Limitation of software testing. Any four points of 0.5 mark	(0.5 mark * 4)	**2**
	ii.	STLC stages Error, bug, fault, failure differences 0.5 mark for each (0.5 mark * 4)	1 mark 2 marks	**3**
	iii.	Definition of Dynamic testing Definition and difference b/w black box and white box testing Any three 1 mark for each (1 mark * 3) Types of white box and black box testing.	1 mark 3 marks 1 mark	**5**
OR	iv.	Concept of test case design Its objectives Psychology of tester	1 mark 3 marks 1 mark.	**5**
Q.3	i.	Description of equivalence class testing method Comparison with boundary value analysis techniques Robust testing C Code Boundary Value testing Robust testing	1.5 marks 0.5 marks 1.5 marks 2 marks 3 marks 3 marks	**8**
OR	iii.	Black box testing technique C Code DFG and DD graph Independent paths	2 marks 4 marks 2 marks	**8**
Q.4	i.	Description of Software Testing Life Cycle Test case diagram Test review	1 mark 1 mark 1 mark	**3**
	ii.	Explain the following testing types using real life examples: 1 mark for each	(1 mark * 7)	**7**
OR	iii.	Regression testing Regression testing task Types of regression testing 1 mark for each (1 mark * 3)	2 marks 2 marks 3 marks	**7**
Q.5	i.	Phases of defect life cycle Factors of detecting defects Any three 1 mark for each (1 mark * 3)	1 mark 3 marks	**4**
	ii.	Test plan template Test plan for example Any five points 1 mark for each point	1 mark 5 marks	**6**
OR	iii.	Writing and explaining the test plan Six points, 1 mark for each point	 (1 mark * 6)	**6**
Q.6		Attempt any two:		
	i.	Description of test plan 1.5 mark each (1.5 mark * 3) Standard template	 4.5 marks 0.5 mark	**5**
	ii.	Challenges Any three points 1 mark for each (1 mark * 3) Comparisons Any two points 1 mark for each (1 mark * 2)	 3 marks 2 marks	**5**
	iii.	Automation requirement Guidelines any three points, 1 mark for each (1 mark * 3) Sufficiency statement	1 mark 3 marks 1 mark	**5**

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