Software Testing VTU CBCS Question Paper Set 2018

USN | | | | | | | | | | |

10IS65

Sixth Semester B.E. Degree Examination, June/July 2014
Software Testing

Time: 3 hrs. Max. Marks:100

Note: ***Answer FIVE full questions, selecting atleast TWO questions from each part.***

PART – A

1 a. Define the following :
   i) Error
   ii) fault
   iii) failure
   iv) incident
   v) test
   vi) test case. **(06 Marks)**

   b. Differentiate between functional testing and structural testing. **(06 Marks)**

   c. With a neat diagram, explain the SATM(Simple Auto Mated Teller Machine) system. **(08 Marks)**

2 a. What are the limitations of boundary value analysis? **(04 Marks)**

   b. Differentiate between weak robust equivalence class testing and strong robust equivalence class testing with an example. **(08 Marks)**

   c. Explain about decision tables. Construct decision table of the triangle problem, it accepts three integers a, b and c as 3 sides inputs : equilateral, scalene, isosceles or not a triangle and satisfy the following conditions $a < b + c$, $b < a + c$ and $c < a + b$. **(08 Marks)**

3 a. Explain the different structural test coverage metrics. **(08 Marks)**

   b. Write a program of the commission problem, the statement of the problem : A rifle salesperson in the former Arizona Territory sold rifle locks, stocks and barrels made by a gunsmith in Missouri. Locks cost \$45, stocks cost \$30 and barrels cost \$25. The salesperson had to sell atleast one complete rifle per month and production limits were such that at the most the sales person could sell in a month was 70 locks, 80 stocks and 90 barrels. At the end of a month, the salesperson sent a very short telegram showing – 1 locks sold. The gunsmith then knew the sales for the month were complete and computed the salesperson's commission as follows : 10% on sales up to \$1000, 15% on the next \$800 and 20% on any sales in excess of \$1800. The commission program produced a monthly sales report that gave the total number of locks, stocks and barrels sold, the salesperson's total dollar sales, and finally, the commission. Construct the program graph and define /use nodes for variables in the above problem. **(12 Marks)**

4 a. With a neat diagram, explain the traditional view of testing levels of waterfall-life cycle and rapid prototyping life cycles. **(10 Marks)**

   b. With an example, explain the top-down integration and Bottom–up integration. **(06 Marks)**

   c. Explain the decomposition based integration with an example. **(04 Marks)**

PART – B

5 a. Explain the basis concepts for requirements specifications. **(08 Marks)**
b. With a neat diagram, explain the transition probabilities for the SATM system. **(08 Marks)**
c. Write a note on client/server testing. **(04 Marks)**

6 a. With a neat diagram, explain the validation and verification activities check work product against actual user requirements. **(10 Marks)**
b. Explain the following:
i) Redundancy
ii) Partition. **(04 Marks)**
c. Explain the dependability properties. **(06 Marks)**

7 a. Explain the fault–based adequacy criteria. **(08 Marks)**
b. Describe the test oracles with a neat diagram. **(08 Marks)**
c. What is scaffolding? Explain. **(04 Marks)**

8 Write short notes on :
a. Quality process
b. Risk management
c. Organizing documents
d. Test and analysis reports. **(20 Marks)**

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Sixth Semester B.E. Degree Examination, June/July 2015
Software Testing

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PART – A

1 a. Define Error, Fault, Failure, Incident, Test and Test case. Explain testing life cycle, with neat diagram. **(10 Marks)**
b. Define all the faults classified by severity. **(05 Marks)**
c. Explain database diagram for a structural triangle program. **(05 Marks)**

2 a. Explain the limitations of boundary value analysis and develop a formula for the number of robust worst case test cases for a function of two variables. **(08 Marks)**
b. Describe weak and strong normal equivalence class testing, with a neat diagram. **(06 Marks)**
c. Explain the basic decision table terms. **(06 Marks)**

3 a. Explain Millers test coverage metrics which are based on program graphs. **(10 Marks)**
b. Explain Rapps – Weyuker dataflow coverage metrics with a neat diagram. **(10 Marks)**

4 a. With a neat sketches, briefly explain different alternative life cycle models. **(14 Marks)**
b. Describe top down and bottom up integration strategies. **(06 Marks)**

PART – B

5 a. Explain basic concepts for requirement specification with E – R model and modeling relationships among basic constructs. **(10 Marks)**
b. Explain different types of interactions with example. **(10 Marks)**

6 a. Discuss : i) Verification ii) Validation. **(04 Marks)**
b. Explain basic principles that characterize various approaches and techniques for analysis and testing. **(10 Marks)**
c. Explain dependability properties. **(06 Marks)**

7 a. Briefly explain the terminologies of fault based testing and mutation analysis. **(10 Marks)**
b. Discuss : i) Scaffolding ii) Test oracle. **(10 Marks)**

8 a. Explain clean room process, with neat diagram. **(10 Marks)**
b. Give the standard structure of an analysis and test plan. **(10 Marks)**

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10IS65

Sixth Semester B.E. Degree Examination, June/July 2016
Software Testing

Time: 3 hrs. Max. Marks:100

Note: ***Answer any FIVE full questions, selecting atleast TWO questions from each part.***

PART – A

1 a. What is software testing? Why it is so important in software development life cycle? **(06 Marks)**

b. Define the following : i) Error ii) fault iii) failure iv) incident v) test vi) test case. **(06 Marks)**

c. Explain with a neat diagram the currency converter and Saturn wind shield wiper controller. **(08 Marks)**

2 a. Justify the usage of boundary value analysis with function of two variables and highlight the limitations of BVA. **(08 Marks)**

b. Briefly explain weak normal and strong robust equivalence class testing with an example. **(08 Marks)**

c. Write a short note on random testing. **(04 Marks)**

3 a. What is cyclomatic complexity? Explain how to calculate cyclomatic complexity of a given program by considering the biggest of three number logic. **(08 Marks)**

b. Explain slice –based testing guidelines and observations in detail. **(08 Marks)**

c. Write a short note on define/use testing. **(04 Marks)**

4 a. With a neat diagram explain the waterfall life cycle and clearly show partial functional decomposition of the ATM system. **(08 Marks)**

b. List and explain pros and cons of the water fall model. **(04 Marks)**

c. With supporting diagrams and examples explain top-down and bottom-up integration. **(08 Marks)**

PART – B

5 a. Explain the basis concept for requirements specification. **(12 Marks)**

b. Explain with supporting diagram the client server testing. **(08 Marks)**

6 a. Define validation. With a neat sketch explain the relation of verification and validation activities with respect to artifacts produced in a software development project. **(10 Marks)**

b. Explain sensitivity and redundancy. **(06 Marks)**

c. Define the terms reliability and availability. **(04 Marks)**

7 a. Distinguish between :
i) Competent programmer hypothesis and coupling effect hypothesis
ii) Distinguished mutant and equivalent mutant. **(04 Marks)**

b. Explain the fault–based adequacy criteria. **(08 Marks)**

c. What is scaffolding? Explain briefly generic versus specific scaffolding. **(08 Marks)**

8 Write short notes on :

a. Clean room process. **(06 Marks)**

b. Different types of risks specific to the quality process. **(06 Marks)**

c. A standard organization of an analysis and test plan. **(08 Marks)**

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Sixth Semester B.E. Degree Examination, June/July 2017
Software Testing

Time: 3 hrs. Max. Marks:100

Note: ***Answer any FIVE full questions, selecting atleast TWO questions from each part.***

PART – A

1 a. Explain the two fundamental approaches used to identify test cases. **(08 Marks)**
b. Define the terms : i) error ii) fault iii) failure iv) incident v) test case. **(05 Marks)**
c. Write pseudo-code for commission problem. **(07 Marks)**

2 a. Explain weak robust and strong robust equivalence class testing, considering example of next date problem. **(08 Marks)**
b. Explain decision table and its technique to solve triangle problem. **(08 Marks)**
c. Write short note on worst case testing. **(04 Marks)**

3 a. Explain different test case coverage metrics. **(08 Marks)**
b. Explain different define/use testing definitions. **(10 Marks)**
c. Draw diagram for data flow coverage metrics of Rapps/Weyuker. **(02 Marks)**

4 a. Explain traditional view of testing levels and rapid prototyping life cycles. **(10 Marks)**
b. With an example, explain top-down integration and bottom-up integration. **(06 Marks)**
c. Explain the terms : i) source node ii) sink node iii) module execution path iv) MM-path. **(04 Marks)**

PART – B

5 a. Explain the basic concepts of requirements specification. **(10 Marks)**
b. Explain static interactions in a single processor and static interactions in multiple processors. **(06 Marks)**
c. Write note on client/server testing. **(04 Marks)**

6 a. Explain : i) degrees of freedom ii) sensitivity iii) redundancy iv) restriction v) partition. **(10 Marks)**
b. With a neat diagram, explain the validation and verification activities check work product against actual user requirements. **(10 Marks)**

7 a. Explain in detail mutation analysis and variations on mutation testing. **(10 Marks)**
b. Write note on : i) Test oracles ii) Capture and replay. **(06 Marks)**
c. What is scaffolding? Explain. **(04 Marks)**

8 a. Write note on :
i) Risk planning
ii) Improving the process
iii) Organizing documents
iv) Monitoring the process
v) Test design specification documents. **(10 Marks)**
b. Describe dependability properties in detail. **(10 Marks)**

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10IS65

Sixth Semester B.E. Degree Examination, Dec.2013/Jan.2014
Software Testing

Time: 3 hrs. Max. Marks:100

Note: ***Answer FIVE full questions, selecting at least TWO questions from each part.***

PART – A

1 a. What is software testing? Why it is so important in SDLC? **(05 Marks)**

b. Explain the triangle problem statement along with flow chart for traditional implementation. **(07 Marks)**

c. Explain the IEEE error and fault taxonomy and IEEE standard anomaly process. **(08 Marks)**

2 a. Justify the usage of boundary value analysis with function of two variables and highlight the limitations of boundary value analysis. **(05 Marks)**

b. Explain weak normal and strong robust equivalence class testing with next date problem as an example. **(05 Marks)**

c. Discuss the usage of decision table method to device test cases with example of commission problem and triangle problem. **(10 Marks)**

3 a. Define DD-path. Draw DD-graph for triangle problem. **(04 Marks)**

b. Justify strongly connected graph is the number of linearly independent circuits in the graph using cyclomatic complexity metric. **(04 Marks)**

c. Define predicate node, du-paths and dc-paths. Give du-paths for stocks, locks, total locks, sales and commission for commission sale problem. **(12 Marks)**

4 a. Explain the simple ATM application with the help of, (i) Level 1 data flow diagram. (ii) Upper level finite state machine. **(10 Marks)**

b. Distinguish between top-down integration and bottom-up integration. **(04 Marks)**

c. Explain call graph-based integration with the help of,
(i) Pair-wise integration (ii) Neighborhood integration. **(06 Marks)**

PART – B

5 a. Define the below terms:
(i) Threads (ii) MM-path (iii) Data (iv) Actions (v) Ports **(10 Marks)**

b. Explain single-processor static interaction and single-processor dynamic interaction. **(10 Marks)**

6 a. Explain verification trade-off dimensions. **(08 Marks)**

b. Briefly discuss the dependability properties in process framework. **(08 Marks)**

c. Why organizational factors are needed in process framework. **(04 Marks)**

7 a. Define below terms with respect to fault based-testing:
i) Original program ii) Program location.
iii) Alternate expression iv) Alternate program. **(08 Marks)**

b. Explain mutation analysis software fault based testing. **(04 Marks)**

c. List the Fault-based adequacy criterias. **(03 Marks)**

d. Explain hardware fault-based testing. **(05 Marks)**

8 Write a short note on:
a. Quality and process.
b. Test planning.
c. Risk planning.
d. Organizing documents.
e. Test design specification document. **(20 Marks)**

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Sixth Semester B.E. Degree Examination, Dec.2015/Jan.2016
Software Testing

Time: 3 hrs. Max. Marks:100

Note: ***Answer any FIVE full questions, selecting atleast TWO questions from each part.***

PART – A

1 a. Why do we test software? Discuss what a typical test case information should include. **(07 Marks)**

b. Differentiate between black box testing and white box testing. **(05 Marks)**

c. Explain the levels of abstraction and testing in the waterfall model. **(08 Marks)**

2 a. What is boundary value analysis? Write the test cases using boundary value analysis testing for triangle problem. **(07 Marks)**

b. Define equivalence class testing. Write weak robust equivalence class testing for commission problem. **(06 Marks)**

c. Write the decision table for triangle problem and discuss how well decision table testing deals with multiple fault assumption. **(07 Marks)**

3 a. Explain metric based testing. **(08 Marks)**

b. Using Mc-Cabe's strongly connected graph, write the path/edge traversal. **(09 Marks)**

c. Draw the lattice on sales and communication. (Hint slices on sales and commission). **(03 Marks)**

4 a. Define regression and progression testing. **(04 Marks)**

b. Draw the context diagram of the SATM system and explain the same. **(08 Marks)**

c. Draw the PIN entry finite machine, explain with corresponding screens. **(08 Marks)**

PART – B

5 a. What is decomposition–based integration? Explain any one of them with an example. **(07 Marks)**

b. Define thread. How do we test them? **(05 Marks)**

c. Explain atomic system function testing by taking an example of next date. **(06 Marks)**

d What is interaction testing? **(02 Marks)**

6 a. Validation activities check work product against actual user requirement while verification activities check consistency of work product – justify your answer with suitable diagram and explanation. **(07 Marks)**

b. Write six principles which constitute the core of software testing. **(06 Marks)**

c. List the goals of quality process. **(04 Marks)**

d. Can a system be correct and yet unsafe? **(03 Marks)**

7 a. Write the fault based testing terminology and assumptions. **(06 Marks)**

b. What is scaffolding? What purposes it serves, explain with an example. **(06 Marks)**

c. What are test oracles? Explain comparison based oracle. **(05 Marks)**

d. Write about a paragraph on any one :
i) Self-checks on oracles ii) Capture and replay. **(03 Marks)**

8 a. Based on test and analysis strategies explain any one :
i) Clean room
ii) Software reliability engineered testing
iii) Extreme programming. **(07 Marks)**

b. Explain risk management in the quality plan. **(10 Marks)**

c. What is test and analysis report. **(03 Marks)**

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Note: ***Answer FIVE full questions, selecting at least TWO questions from each part.***

PART – A

1 a. What are Test cases? Explain approaches used to identify test cases. **(06 Marks)**

b. Explain:
i) Currency converter
ii) Saturn wind shield wiper controller. **(08 Marks)**

c. Briefly explain testing using Venn Diagram. **(06 Marks)**

2 a. Explain Decision table testing and generate test cases for triangle problem using decision table. **(08 Marks)**

b. Develops test cases for commission problem using Boundary value testing. **(06 Marks)**

c. Give the Guidelines and observations for equivalence class testing. **(06 Marks)**

3 a. Explain in detail Basis path testing with respect to triangle problem. **(10 Marks)**

b. Define def/use pair and identify def/use paths for commission problem. **(10 Marks)**

4 a. Explain why it is essential to separate integration and system testing. **(08 Marks)**

b. Define MM path graph. Draw MM paths in SATM system. **(12 Marks)**

PART – B

5 a. Briefly explain process of generating system level SATM test Threads. **(10 Marks)**

b. Explain four basic types of interactions. **(10 Marks)**

6 a. Explain validation and verification. **(06 Marks)**

b. Explain : i) Visibility ii) Feedback iii) Dependability
iv) MTBF v) Availability. **(10 Marks)**

c. Write a short note on Software quality goals. **(04 Marks)**

7 a. What is fault based testing? What are assumptions in fault base testing? **(06 Marks)**

b. Explain : i) scaffolding ii) Test oracles
iii) Capture and Replay iv) Test case specification. **(10 Marks)**

c. Write a note on mock. **(04 Marks)**

8 a. Briefly explain test and Analysis strategies. **(10 Marks)**

b. Explain root cause analysis technique for improving the process. **(10 Marks)**

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Sixth Semester B.E. Degree Examination, Dec.2017/Jan.2018
Software Testing

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Note: *Answer FIVE full questions, selecting at least TWO questions from each part.*

PART – A

1 a. Explain basic definitions in perspective on testing. **(10 Marks)**

b. Define two fundamental approaches that are used to identify the test cases. **(10 Marks)**

2 a. Define the following:
(i) Boundary value analysis.
(ii) Generalizing Boundary value analysis.
(iii) Limitations of boundary value analysis.
(iv) Robustness testing. **(10 Marks)**

b. Develop a decision table for "second try" at the NextDate function. At the end of a 31-day month, the day is always reset to 1. For all non-December month, the month is incremented; for December, the month is reset to January and the year is incremented. **(10 Marks)**

3 a. Explain metric based testing. **(10 Marks)**

b. Define Use testing. **(05 Marks)**

c. Define slice-based testing. **(05 Marks)**

4 a. Explain alternative life-cycle models. **(10 Marks)**

b. Explain decomposition-based integration. **(10 Marks)**

PART – B

5 a. Explain basic concepts for requirements specification. **(10 Marks)**

b. Explain different functional strategies for thread testing. **(10 Marks)**

6 a. With neat diagram, explain the validation and verification in software testing. **(10 Marks)**

b. Explain the following:
(i) Redundancy.
(ii) Restriction.
(iii) Partition.
(iv) Visibility. **(10 Marks)**

7 a. Explain fault based adequacy criteria. **(05 Marks)**

b. Explain self-checks as oracles? **(05 Marks)**

c. Explain the following:
(i) From test case specification to test cases.
(ii) Scaffolding. **(10 Marks)**

8 Write a short note:
a. Quality and process.
b. Test and analysis plans.
c. Risk planning.
d. Test and analysis reports. **(20 Marks)**

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Note: ***Answer FIVE full questions, selecting at least TWO questions from each part.***

PART – A

1 a. Explain error and fault taxonomies. **(05 Marks)**

b. Explain in detail various levels of software testing with embedded device like STAM (Simple Automatic Teller Machine) as an example. **(15 Marks)**

2 a. Explain : i) Boundary value testing ii) Equivalence class testing iii) Decision table based testing. **(10 Marks)**

b. Explain in detail, Worest-case testing, with an example. **(10 Marks)**

3 a. Explain test coverage metrics and Basis path testing, with an example. **(10 Marks)**

b. Explain slice-based testing guide lines and observation in detail. **(10 Marks)**

4 a. Explain traditional view of testing levels, alternative life-cycle models. **(10 Marks)**

b. Explain in detail, path-based, call graph based and path based interpretation, with an example. **(10 Marks)**

PART – B

5 a. Explain and discuss: Thread and Finding thread, Testing threads are important in software testing. **(10 Marks)**

b. Explain Taxonomy of interactions, interaction, composition and determinism. **(10 Marks)**

6 a. Explain in detail, validation and verification and their differences. **(10 Marks)**

b. Explain : i) Degrees of freedom ii) Sensitivity iii) Redundancy iv) Restriction v) Partition and explain in detail any of them. **(10 Marks)**

7 a. Explain overview of assumptions in fault-based testing. **(04 Marks)**

b. Explain in detail, Mutation analysis and variations on mutation testing. **(10 Marks)**

c. Explain the terms: oracle, scaffolding, self checks on oracles in software testing. **(06 Marks)**

8 a. Write a short note on: i) Quality ii) Process iii) Test and analysis iv) Risk planning v) Monitoring the process vi) Improving the process. **(12 Marks)**

b. Explain the features of test design specifications documents. **(03 Marks)**

c. What are processed quality and analysis strategies in a brief note? **(05 Marks)**

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