CBCS SCHEME

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16/17MCA43

Fourth Semester MCA Degree Examination, Jan./Feb. 2021
Software Testing & Practices

Time: 3 hrs. Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. What is software quality? Explain about different types of quality attributes. **(04 Marks)**

b. Write a sample test plan for the sort program and generate test-cases using the test plan. **(04 Marks)**

c. What is test metric? Mention the general core areas that assist in the design of test metrics and explain about project and product metrics. **(08 Marks)**

OR

2 a. Differentiate between software and hardware testing. **(04 Marks)**

b. Explain the different activities of defect management process. **(04 Marks)**

c. Write an algorithm to generate a minimal BOR-constraint set from an abstract syntax tree of a predicate-Pr. Generate the BOR-constraint set and construct an abstract syntax tree of predicate $P_r = a < b \wedge c > d$. **(08 Marks)**

Module-2

3 a. Define the term software testing. What are different types of faults and explain them with examples. **(04 Marks)**

b. Explain the principles of sensitivity and restriction in testing and analysis process and explain them with an example. **(04 Marks)**

c. Explain the two fundamental approaches to identify test cases with an example. **(08 Marks)**

OR

4 a. Discuss about the problem of 'Nextdate' function and write the pseudocode to implement the same. **(08 Marks)**

b. What is static testing? What are different elements of static testing? Explain about inspection of code. **(08 Marks)**

Module-3

5 a. Explain the procedure involved in Boundary value analysis, mention its limitations and develop boundary value analysis test for triangle problem. Range for 3 sides of triangle are between 1 – 200. **(08 Marks)**

b. Write test cases for triangle problem for the followings:
(i) Weak-normal equivalence class testing.
(ii) Weak-robust equivalence class testing.
(iii) Strong-robust equivalence class testing. **(04 Marks)**

c. Write few guidelines and observations for equivalence class testing. **(04 Marks)**

OR

6 a. Explain the decision table based testing. List out the decision table test cases for triangle problem. **(08 Marks)**
b. Prove with an example that the decision table based testing helps in finding inconsistencies and non-deterministic. **(04 Marks)**
c. Explain in brief about special value testing and random testing. **(04 Marks)**

Module-4

7 a. What are DD-paths? Draw the program graph for triangle problem and list out DD paths. [Note: Write the pseudocode necessary to draw program graph] **(08 Marks)**
b. Explain Rapps-Weyuker's DU-Path test coverage metrics. **(08 Marks)**

OR

8 a. Explain the levels of testing using traditional model of software development. **(08 Marks)**
b. Explain any one of the specification based life cycle models. **(04 Marks)**
c. Explain different water-fall spin-offs. **(04 Marks)**

Module-5

9 a. Describe Mutation testing. List out variations on mutation analysis and briefly explain them. **(08 Marks)**
b. Explain fault based adequacy criteria with example. **(08 Marks)**

OR

10 Write a short note on :
a. Scaffolding.
b. Quality and process.
c. Risk planning.
d. Monitoring the process. **(16 Marks)**

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