INSTITUTE OF AERONAUTICAL ENGINEERING
(Autonomous)
Dundigal-500043, Hyderabad

B.Tech VI SEMESTER END EXAMINATIONS (REGULAR) - JULY 2023
Regulation: UG-20
SOFTWARE QUALITY ASSURANCE AND TESTING

Time: 3 Hours   (COMMON TO CSE | CSIT)   Max Marks: 70

Answer ALL questions in Module I and II
Answer ONE out of two questions in Modules III, IV and V
All Questions Carry Equal Marks
All parts of the question must be answered in one place only

MODULE – I

1. (a) Differentiate between failure, error, and fault. Summarize about white box testing and black box testing   [BL: Understand| CO: 1|Marks: 7]

    (b) Which box testing is well suitable for following scenario in a program . Justify.

    i) Statement coverage (This measure helps you identify faulty programming logic within your programs)

    ii) The branch coverage check looks for all possible branches in your code that lead to different states in your program.

    iii) Path coverage checks for all possible paths in your code that lead to a particular state in your program   [BL: Apply| CO: 1|Marks: 7]

MODULE – II

2. (a) Why should integration testing be performed? What types of errors can this phase of testing reveal? List the advantages and disadvantages of top-down approaches to integration testing.

         [BL: Understand| CO: 2|Marks: 7]

    (b) Assume that the hardware group needs to release a new revision of a hardware or has to recommend a new revision of an original equipment manufacturer (OEM) hardware to the operation/manufacturing group. What are steps of the ECO process to incorporate the new hardware in the product ?   [BL: Apply| CO: 2|Marks: 7]

MODULE – III

3. (a) Examine state-oriented model and finite-state machine. Illustrate the methodology of testing with state verification for online ticket booking.   [BL: Understand| CO: 3|Marks: 7]

    (b) Discuss the importance of regression testing when developing a new software release. Contrast a FSM model of a dual-boot laptop computer   [BL: Apply| CO: 3|Marks: 7]

4. (a) Demonstrate the objective of security testing. Summarize the test cases available in modeling a test design process   [BL: Understand| CO: 4|Marks: 7]

    (b) Contrast state-oriented model for banking application with following process

    i) Define the states

    ii) Identify the transitions

    iii) Define and execute the test cases

         [BL: Apply| CO: 4|Marks: 7]

MODULE – IV

5. (a) Enlist the five different views of software quality. Outline an intuitive approach to improving a test process. [BL: Understand| CO: 5|Marks: 7]

   (b) Company Y is a financial technology firm that offers an online payment platform. They have been experiencing issues with their software releases, including frequent bugs and technology delays. How to address these challenges using test process improvement? [BL: Apply| CO: 5|Marks: 7]

6. (a) Briefly explain the ISO 9126 quality characteristics. Compare McCall's quality model with the ISO 9126 quality model [BL: Understand| CO: 5|Marks: 7]

   (b) Company X is a software development company that specializes in building web applications for various clients. Implement a testing maturity model that enhance the testing practices achieve higher levels of quality assurance [BL: Apply| CO: 5|Marks: 7]

MODULE – V

7. (a) List the four basic elements of FSMs and map them to web-based applications. Mention the parameters that are used in indirect quality measurements. [BL: Understand| CO: 6|Marks: 7]

   (b) Considering the collision scenario, construct fault-tree analysis (FTA) for an automobile accident. [BL: Apply| CO: 6|Marks: 7]

8. (a) Compare quality assurance techniques and activities. How do education and training methodologies to prevent defection in quality assurance.

   [BL: Understand| CO: 6|Marks: 7]

   (b) What is web failure? Construct following failures in web application.
   i) Host or network failures
   ii) Browser failures
   iii) Source or content failures [BL: Understand| CO: 6|Marks: 7]

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