Hall Ticket No | | | | | | | | | | | Question Paper Code: ACIC02

INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)
Dundigal-500043, Hyderabad

B.Tech VI SEMESTER END EXAMINATIONS (REGULAR/SUPPLEMENTARY) - JUNE 2025

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) What are the primary objectives of software testing? Discuss how testing contributes to software reliability and customer satisfaction. [BL: Understand| CO: 1|Marks: 7]

   (b) Differentiate between verification and validation (V&V) in software testing. Evaluate the role of test automation in modern software testing. [BL: Understand| CO: 1|Marks: 7]

MODULE – II

2. (a) Explain the concept of testing a function in context. Compare incremental, top-down, bottom-up, sandwich, and big-bang integration approaches. [BL: Understand| CO: 2|Marks: 7]

   (b) Summarize how do boundary value analysis (BVA) and decision tables improve test coverage in system testing? Discuss the factors that influence software reliability. [BL: Understand| CO: 2|Marks: 7]

MODULE – III

3. (a) Mention the factors that influence system test design. How can test case design effectiveness to be measured using metrics? [BL: Understand| CO: 3|Marks: 7]

   (b) Elucidate how can finite state machine (FSM) models be used to generate test cases? Discuss the transition tour method with an example. [BL: Understand| CO: 3|Marks: 7]

4. (a) Write the process of defect causal analysis. Explain the role of regression testing in system maintenance. [BL: Understand| CO: 4|Marks: 7]

   (b) Why do we need integration testing? Explain various approaches in integration testing. [BL: Understand| CO: 4|Marks: 7]

MODULE – IV

5. (a) Describe McCall's quality factors. How do these factors relate to specific quality criteria? [BL: Understand| CO: 5|Marks: 7]

   (b) How does software quality assurance (SQA) function in agile and DevOps environments? Elucidate. [BL: Understand| CO: 5|Marks: 7]

6. (a) What are the software quality frameworks, and how do they help in standardizing quality practices? [BL: Understand| CO: 5|Marks: 7]

   (b) List the various levels in process maturity model. Write the various concepts of the software quality assurance. [BL: Understand| CO: 5|Marks: 7]

MODULE – V

7. (a) What is root cause analysis (RCA), and how is it used in defect prevention? Explain. [BL: Understand| CO: 6|Marks: 7]

   (b) Summarize the following

   i) Software fault tolerance

   ii) Safety assurance

   iii) Failure containment [BL: Understand| CO: 6|Marks: 7]

8. (a) Discuss widely used SQA standards. Compare fault-tree analysis (FTA) and event-tree analysis (ETA). [BL: Understand| CO: 6|Marks: 7]

   (b) What emerging trends are shaping the future of software quality assurance? State the reasons for performing hazard analysis. [BL: Understand| CO: 6|Marks: 7]

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