B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2025

Sixth Semester

Artificial Intelligence and Data Science

(Common to Computer Science Engineering (AIML) & Computer Science Engineering (IoT))

20AIEL901 - TESTING FUNDAMENTALS

Regulations - 2020

Duration: 3 Hours   Max. Marks: 100

PART - A (MCQ) (10 × 1 = 10 Marks)
Answer ALL Questions

		Marks	K-Level	CO
1.	Which of the following is not a level of software testing?	1	K1	CO1
	(a) Unit Testing (b) Integration Testing (c) Security Testing (d) System Testing			
2.	Which level of testing is usually performed by the end users or clients?	1	K1	CO1
	(a) Unit Testing (b) Integration Testing (c) Acceptance Testing (d) Regression Testing			
3.	Which of the following is NOT a part of a standard test plan document?	1	K1	CO2
	(a) Features to be tested (b) Test environment (c) Project budget (d) Test deliverables			
4.	Which testing type checks how the system performs under load?	1	K1	CO2
	(a) Usability Testing (b) Regression Testing (c) Load Testing (d) Unit Testing			
5.	Which section of a test plan defines hardware/software requirements?	1	K1	CO3
	(a) Exit Criteria (b) Test Environment (c) Test Data (d) Risks and Mitigation			
6.	Equivalence Class Partitioning is most useful in:	1	K1	CO3
	(a) Performance Testing (b) Boundary Testing			
	(c) Functional Testing (d) Security Testing			
7.	Which metric shows the percentage of code statements executed during testing?	1	K1	CO4
	(a) Statement Coverage (b) Branch Coverage (c) Path Coverage (d) Loop Coverage			
8.	Which element is NOT typically included in a state transition diagram?	1	K1	CO4
	(a) States (b) Inputs (c) Expected Result (d) Transitions			
9.	What does a low defect detection percentage indicate?	1	K1	CO5
	(a) Good test coverage (b) Weak testing			
	(c) High quality product (d) Strong automation			
10.	What does a test management tool NOT usually support?	1	K1	CO6
	(a) Creating source code (b) Managing test cases			
	(c) Reporting test progress (d) Tracking defects			

PART - B (12 × 2 = 24 Marks)
Answer ALL Questions

		Marks	K-Level	CO
11.	Name two key advantages of the Agile methodology.	2	K1	CO1
12.	What is the purpose of test closure in the testing lifecycle?	2	K1	CO1
13.	Differentiate between white-box and black-box testing.	2	K2	CO2
14.	What are the major phases of the Software Testing Life Cycle?	2	K1	CO2
15.	Compare STLC and SDLC.	2	K2	CO3
16.	Explain how scalability testing performed.	2	K2	CO3
17.	Differentiate boundary value analysis and equivalence partitioning.	2	K2	CO4
18.	Show how defect triaging is conducted.	2	K1	CO4
19.	Explain the importance of Requirement Traceability Matrix (RTM) in metrics.	2	K2	CO5
20.	How does an automation tool enhance regression testing?	2	K1	CO5

K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create   **13658**

21. Name two test levels and who is typically responsible for each.	2	K1 CO6
22. How does a test strategy differ from a test plan?	2	K2 CO6

PART - C (6 × 11 = 66 Marks)
Answer ALL Questions

23. a) Compare and contrast the Waterfall, Agile, and V-Model methodologies in terms of flexibility, testing integration, customer involvement, and risk handling. Provide suitable use cases for each.   *11 K2 CO1*

OR

    b) Explain the stages of the Product Testing Life Cycle. For each stage, list the activities performed, deliverables generated, and the stakeholders involved.   *11 K2 CO1*

24. a) Describe the phases of the Software Testing Life Cycle (STLC) and mention one key activity in each.   *11 K2 CO2*

OR

    b) Define test strategy and distinguish it from a test plan. What are the components of a good test strategy document, and why is each component important?   *11 K2 CO2*

25. a) Apply Boundary Value Analysis to test a numeric input that allows values between 500 and 1000. Write test cases using this technique.   *11 K3 CO3*

OR

    b) Define Boundary Value Analysis (BVA) and explain its significance in functional testing. Illustrate your answer with a practical example.   *11 K2 CO3*

26. a) For a login system that allows 3 failed login attempts before locking the account, draw a state transition diagram and create test cases based on state transitions.   *11 K2 CO4*

OR

    b) Describe the steps involved in the test execution process. What preconditions must be met before test execution begins?   *11 K2 CO4*

27. a) Explain the purpose of the Requirements Traceability Matrix (RTM). How does it help in ensuring complete test coverage and managing changes?   *11 K2 CO5*

OR

    b) Describe the different roles in a test organization (e.g., Test Manager, Test Lead, Test Analyst). What are their responsibilities?   *11 K2 CO5*

28. a) Explain different types of risks in software testing. How are test progress and quality monitored and reported?   *11 K2 CO6*

OR

    b) You are asked to recommend tools for the following needs: test case management, defect tracking, and test automation. Select appropriate tools (open-source or commercial) and justify your choices.   *11 K3 CO6*