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Daffodil International University

Faculty of Science & Information Technology
Department of Computer Science and Engineering
Midterm Examination, Fall-2026
Course Code: CSE442, Course Title: Software Quality Assurance
Level: 4 Term: 2 Batch: 65

Time: 1 Hour and 30 Minutes **Marks: 25**

Answer ALL Questions

[The figures in the right margin indicate the full marks and corresponding course outcomes. All portions of each question must be answered sequentially.]

1	a)	A hospital pharmacy system calculates a medicine dose as 5 mg for every kg of body weight. A developer mistakenly wrote 50 mg per kg inside the calculation used for child patients. During testing, the team used only adult patient records, and every dose was calculated correctly. After release, a child patient's prescription showed a dose ten times higher than the safe limit. A nurse podcription showed a dose ten times higher than the safe limit. A nurse noticed the wrong value on the screen and corrected it before the medicine was given. Apply the Fault, Error, and Failure model to identify and demonstrate the fault, error, and failure present in this scenario.	3	CO1
	b)	Explain two reasons why assuring the quality of software is harder than assuring the quality of a physical product such as a car.	2	
2	a)	An online food-delivery company follows the V-Model to build its new mobile app. Three checks are planned: i. A developer checks the calculateDeliveryFee() method alone, using different distances and order amounts. ii. The team checks that the Order module and the Payment module pass data to each other correctly. iii. The restaurant owners and the company's operations team check whether the finished app meets the requirements they originally gave. Apply the V-Model framework to identify and use the correct testing level and development phase for each check.	3	
	b)	Compare test criterion with test requirement with an example.	2	
3	a)	The QA team of an online learning platform reports three observations after a long testing cycle: i. The team ran 800 test cases for the quiz module and all of them passed, so the team lead declared that the module is completely free of defects.	3	

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		ii. About 80% of the defects found so far were in the grade calculation and certificate generation modules, which together make up a small part of the code. iii. The same regression suite has been run unchanged for the last six releases. It has stopped finding new defects, yet users keep reporting new bugs. Apply core testing principles to identify and show which principle each observation represents.		
	b)	Compare functional testing with non-functional testing, and illustrate each with one practical example.	2	
4	A fintech company in Dhaka is about to release the Send Money risk-check service of its mobile wallet app. The specification says: • Transfers below 100 BDT or above 25,000 BDT (whole numbers only) are rejected. • Transfers of 10,001 to 25,000 BDT are high-value and are allowed only for Verified accounts. The tester models the input domain with four characteristics: • Amount (A): A1 (<100), A2 (100 to 10,000), A3 (10,001 to 25,000), A4 (>25,000) • Account level (B): B1 (Basic), B2 (Verified) • Device (C): C1 (Registered), C2 (New) • Time of request (D): D1 (Day), D2 (Night) The product owner sets the Base Choice as: (A2, B2, C1, D1). The product owner sets the Base Choice as: (A2, B2, C1, D1).			CO2
	a)	Apply Boundary Value Analysis (BVA) rule to valid block A2 and A4. And determine all the boundary values.		2
	b)	Solve for the total number of test cases required for All Combinations Coverage (ACoC) and Each Choice Coverage (ECC), demonstrating the formula for each.		3
	c)	The CI/CD pipeline limit is 40 minutes (each test takes 4 minutes). Demonstrate whether ACoC and Base Choice Coverage (BCC) fit within the 40-minute pipeline window by showing your calculations.		2
	d)	Construct the complete Base Choice Coverage (BCC) test suite in (A, B, C, D) format. Then, demonstrate whether this BCC suite guarantees detecting a defect caused by (A3, B1).		3