Test Strategy

**1. Introduction**

* **Purpose**: Define the objectives and approach for testing the eCommerce Web Application to ensure high-quality delivery.
* **Scope**: Testing includes functional, non-functional, regression, and performance aspects of the web application.
* **References**: Requirements Document (REQ-ECOM-001), Design Specification (DS-ECOM-002).

**2. Test Objectives**

* Validate core functionalities such as user authentication, product catalog, cart management, checkout, and payment processing.
* Ensure system reliability, usability, and performance under peak loads.
* Identify and resolve critical defects before release.

**3. Test Scope**

* **In-Scope**: User login, product search, shopping cart, order placement, payment gateway integration, order history, and email notifications.
* **Out-of-Scope**: Integration with third-party logistics, mobile application testing (covered in a separate strategy).

**4. Test Approach**

* **Functional Testing**: Black-box testing to validate business requirements.
* **Automation Testing**: Playwright scripts for regression and smoke testing.
* **API Testing**: Postman collections for backend validation.
* **Performance Testing**: JMeter tests to simulate user load and analyze response times.
* **Security Testing**: Basic vulnerability assessment and penetration testing.

**5. Test Environment**

* OS: Windows 11, macOS Ventura.
* Browsers: Chrome v120, Edge v115, Safari v17.
* Database: MySQL 8.0.
* Cloud-hosted testing environment.

**6. Test Deliverables**

* Test cases and test scripts.
* Defect reports and logs (JIRA tracking).
* Test execution reports.
* Final test summary report.

**7. Test Tools**

* **Test Management**: TestRail.
* **Automation**: Playwright.
* **API Testing**: Postman.
* **Performance Testing**: JMeter.
* **Defect Tracking**: JIRA.

**8. Defect Management**

* Defects logged in JIRA with priority levels (Critical, High, Medium, Low).
* Fix turnaround times: Critical (24h), High (48h), Medium (72h), Low (5 days).
* Weekly defect review meetings with development and QA teams.

**9. Risks and Mitigation Plan**

* **Risk**: Delayed test environment setup → **Mitigation**: Use cloud-based environments.
* **Risk**: High defect count in checkout flow → **Mitigation**: Prioritize testing of critical user journeys.
* **Risk**: Performance degradation under high load → **Mitigation**: Optimize queries and server configurations.

**10. Approval**

* **Reviewed by**: QA Lead, Project Manager.
* **Approved by**: Product Owner, Development Team Lead.