**1. Introduction**

* **Purpose:** Ensure the E-Learning application is functional, reliable, and meets business and user requirements.
* **Scope:** Covers the testing of student registration, course enrollment, learning content delivery, quizzes, and payment processing.
* **Assumptions:**
  + Test environment mirrors production setup.
  + Test data simulates real-world scenarios.
* **Out of Scope:** Integration with third-party marketing tools.

**2. Objectives**

* Validate the core functionalities like user registration, content access, and quizzes.
* Test system performance under high user load.
* Ensure compatibility across devices and browsers.
* Verify security and data protection mechanisms.

**3. Test Approach**

* **Testing Levels:**
  + Unit Testing (by developers)
  + Integration Testing
  + System Testing
  + End-to-End Testing
  + Regression Testing
* **Testing Types:**
  + Functional Testing
  + Performance Testing
  + Usability Testing
  + Compatibility Testing

**4. Test Scenarios**

1. **User Registration and Login:**
   * Validate registration via email, phone, or social logins.
   * Test password recovery and account activation processes.
2. **Course Enrollment:**
   * Check course browsing and search functionality.
   * Validate successful enrollment via free or paid options.
3. **Content Access:**
   * Verify video streaming, downloadable resources, and content bookmarking.
4. **Assessments:**
   * Test quiz creation, submission, and grading.
   * Validate certifications generation.
5. **Payment Processing:**
   * Check integration with payment gateways.
   * Validate successful and failed transactions.
6. **Admin Dashboard:**
   * Test course creation, user management, and analytics functionality.

**5. Test Environment**

* **Hardware:** Devices (PCs, laptops, tablets, and smartphones).
* **Software:** Browsers (Chrome, Firefox, Safari, Edge), mobile platforms (iOS, Android).
* **Network Conditions:** Test with varying bandwidth and latency.

**6. Test Data**

* Dummy users, courses, and quizzes.
* Test cases for edge scenarios (e.g., invalid login credentials).

**7. Entry and Exit Criteria**

* **Entry Criteria:**
  + All required test environments are set up.
  + Test data is prepared.
* **Exit Criteria:**
  + All critical test cases are executed.
  + No high-severity defects remain unresolved.

**8. Risks and Mitigation**

* **Risk:** Unexpected issues with third-party integrations (e.g., payment gateways).
  + **Mitigation:** Perform early integration testing.

**9. Test Deliverables**

* Test cases
* Bug reports
* Test execution summary report