

# E-Commerce Website Testing Guide

## 1. Functional Testing

Ensures that the website features work correctly.

### Homepage

- Banner sliders, featured products, promotions, and categories load properly.
- Search bar functionality (search suggestions, results, and filters).
- Navigation menus and links work correctly.
- Login/Register functionality (email, social logins, OTP verification).

### Product Pages

- Correct product details (title, description, price, stock status, SKU).
- Image gallery functionality (zoom, multiple images, videos).
- Variants (size, color, material) update correctly.
- Reviews and ratings are displayed properly.
- "Add to Wishlist" and "Compare" features work as expected.

### Shopping Cart & Checkout

- Adding/removing/updating items in the cart.
- Cart price calculation (subtotal, taxes, discounts).
- Coupon code application.
- Shipping and billing address form validation.
- Payment options (credit card, PayPal, COD, etc.) process correctly.
- Order confirmation page and email notification work properly.

### User Account & Profile

- User profile updates (name, email, password, address, payment methods).
- Order history and order tracking.
- Wishlist and saved items function correctly.

### Admin Panel (If applicable)

- Product and order management.
- Discounts, coupons, and promotions management.
- User role management (admin, vendor, customer).

## 2. Performance Testing

Ensures the website loads quickly and handles traffic efficiently.

- Page load time (should be under 3 seconds).
  - Stress testing (handling multiple users at checkout).
  - Load testing (handling multiple products in the cart).
  - Response time of API calls.
  - Image and media file optimization.
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## 3. Security Testing

Ensures the protection of user data and transactions.

### Login Security

- Brute-force attack protection.
- Secure password policies.
- Multi-factor authentication (if enabled).

### Payment Security

- Secure payment gateways (SSL/TLS encryption).
- Protection against fraudulent transactions.

### Data Protection

- Secure user data storage (hashed passwords, encrypted sensitive data).
- Compliance with GDPR, PCI-DSS, etc.

### Vulnerability Testing

- SQL injection, XSS, CSRF attack prevention.
- Proper session expiration and logout handling.

## 4. Usability Testing

Ensures a smooth and intuitive user experience.

- Mobile responsiveness and UI consistency.
  - Readability and accessibility (contrast, font sizes, ARIA labels).
  - Simple and clear checkout process.
  - Navigation ease (breadcrumbs, categories, filters).
  - Clear error messages and validation prompts.
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## 5. Compatibility Testing

Ensures the website works across different devices and browsers.

- **Browsers:** Chrome, Firefox, Edge, Safari.
  - **Devices:** Mobile, tablet, desktop.
  - **Operating Systems:** Windows, macOS, iOS, Android.
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## 6. Payment & Checkout Testing

Ensures all payment methods work correctly.

- Successful payments through different methods.
  - Failed payment handling (error messages, retry options).
  - Refund and cancellation processes.
  - Currency conversion (if applicable).
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## 7. Order & Shipping Testing

Ensures accurate order fulfillment.

- Different shipping options (standard, express, pickup).
- Address validation and shipping cost calculations.
- Order tracking updates.
- Email notifications (order confirmation, dispatch, delivery).

## **8. SEO Testing**

Ensures the website is search-engine optimized.

- Meta tags, descriptions, and titles.
  - URL structure and readability.
  - Canonical tags and no duplicate content.
  - Sitemap.xml and robots.txt validation.
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## **9. Localization & Internationalization Testing**

For multi-region e-commerce sites:

- Correct currency conversion and display.
  - Language translations work properly.
  - Region-specific products and promotions appear correctly.
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## **10. Database Testing**

Ensures data integrity and efficiency.

- Proper storage of user, product, and order data.
- Efficient query execution (no slow-loading pages).
- Proper indexing and caching for performance.

## API Testing

API testing ensures that the backend services and integrations function correctly.

### 1. Authentication & Authorization APIs

#### User Authentication (Login/Signup API)

- Correct response for valid and invalid credentials.
- Token-based authentication (JWT, OAuth).
- Session expiration and renewal.
- Social login integration (Google, Facebook, etc.).

#### User Roles & Permissions

- Admin vs. customer access control.
  - Secure handling of API keys and tokens.
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### 2. Product APIs

- **Product Listing API:** Returns correct product details, supports pagination, sorting, and filtering.
  - **Single Product Details API:** Validates correct responses for product IDs and handles errors properly.
  - **Category API:** Fetches products by category and validates subcategory structure.
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### 3. Cart & Wishlist APIs

- **Cart API:** Add, update, remove items; validate quantity limits; real-time price and tax calculation.
  - **Wishlist API:** Add/remove items, retrieve saved wishlist for logged-in users.
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### 4. Checkout & Payment APIs

- **Shipping & Billing Address API:** Validate fields, fetch saved addresses.
- **Order Placement API:** Ensure successful order creation, price calculation, order confirmation emails.
- **Payment Gateway API Integration:** Handle transactions, refunds, security compliance.

## 5. Order & Shipping APIs

- **Order History API:** Retrieve past orders, support pagination.
  - **Order Tracking API:** Fetch real-time order status.
  - **Shipping API:** Integrate with third-party shipping providers, validate addresses.
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## 6. User Management APIs

- **User Profile API:** Fetch and update user details, profile picture upload.
  - **Password Management API:** Forgot password functionality, secure password update.
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## 7. Admin Panel APIs

- **Product Management API:** Create, update, delete products (admin-only access).
  - **Order Management API:** Process cancellations, refunds, status updates.
  - **User Management API:** Fetch, update, delete users, assign roles.
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## 8. Third-Party API Integrations

- **Email Notification API:** Order confirmations, promotional emails, delivery tracking.
  - **SMS & Push Notification API:** OTP validation, real-time delivery updates.
  - **Tax & Currency Conversion API:** Validate tax calculations, currency conversions.
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## 9. API Performance Testing

- **Response Time:** Ensure APIs return responses within acceptable limits (<1 sec ideally).
  - **Load Testing:** Handle multiple concurrent requests efficiently.
  - **Rate Limiting:** Protect against excessive API calls from a single source.
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## 10. API Security Testing

- **Data Protection:** Ensure sensitive data (passwords, payment details) are encrypted.
- **SQL Injection & XSS Protection:** Prevent injection attacks via API endpoints.
- **Access Control:** Restrict unauthorized API access (e.g., normal users shouldn't access admin APIs).