No 4

a)

Usability plays a vital role in the effectiveness and satisfaction of a website. When designing a university department website, usability evaluation techniques help ensure that users such as students, staff, and visitors can easily access information, perform tasks, and navigate the site. Below are key usability evaluation techniques that can be applied during the design phase to improve user experience.

1. Heuristic Evaluation :  
This technique involves a group of usability experts reviewing the website design based on recognized usability principles such as Jakob Nielsen’s heuristics. These include:

* Consistency and standards
* Visibility of system status
* Recognition rather than recall
* Error prevention

For example, experts can review early designs or wireframes of the department website and identify whether navigation menus are consistent across pages or if error messages are clear and helpful. If buttons like “Apply Now” or “Contact Us” appear in different styles or locations across the site, this inconsistency would be flagged. This method is fast, cost-effective, and helps detect major usability issues before user testing.

2. User Testing / Usability Testing :  
This method involves observing actual users students or staff performing common tasks on the prototype website, such as:

* Searching for course schedules
* Accessing lecturer profiles
* Downloading academic forms

Users are observed for how long they take, where they get stuck, or what they click on first. For example, if many users struggle to find the “Admissions” page, the designer knows the navigation may need improvement. This method provides realistic feedback from the actual target audience and highlights issues that may not be obvious during internal reviews.

3. Think-Aloud Protocol :  
In this approach, users are asked to verbally express what they are thinking while navigating the site. This helps designers understand the user’s thought process and expectations. For example, a user might say, “I’m trying to find the timetable, so I’m clicking on ‘Academics’, but it’s not here,” which indicates poor labelling or structure. It also reveals confusion caused by unfamiliar terminology. This method is very effective in discovering why users behave in certain ways and what causes hesitation or errors.

4. Surveys and Questionnaires :  
Surveys allow designers to collect structured feedback from a wider audience after users interact with the site. Questions may focus on:

* Ease of navigation
* Visual design
* Overall satisfaction
* Suggestions for improvement

For example, students may report that the site looks cluttered or that important links are buried too deep. Using rating scales for example 1 to 5 and open-ended questions provides both quantitative and qualitative data. This information helps prioritize areas that need refinement and ensures that the final product meets user expectations.

5. Cognitive Walkthrough :  
A cognitive walkthrough involves the design team simulating the steps a new user would take to complete tasks, without prior training. For example, can a new student figure out how to register for a course or contact the head of department? The team reviews each step of the process to see if it is intuitive and whether instructions or cues are clear. This method improves the learnability of the website, which is essential for first-time or less tech-savvy users.

6. A/B Testing :  
A/B testing compares two versions of a page to determine which performs better in terms of user engagement or task success. For instance:

* Version A: Homepage with a top navigation bar and quick links.
* Version B: Homepage with a search bar and drop-down menus.

By testing both versions with users and analysing which version helps them find course information faster or reduces bounce rates, designers make informed decisions backed by data. This approach is practical for refining content layout and interface choices.

b)

Navigation design refers to how users move through websites and digital environments. It focuses on helping users find what they are looking for efficiently and intuitively. The term "way-finding" comes from architectural and spatial design and refers to the process people use to orient themselves and navigate from place to place.

In the context of the World Wide Web (WWW), way-finding means enabling users to understand where they are, where they have been, and how they can reach their desired information or destination within a website or application.

1. Central Role in the WWW

Navigation design is indeed central to the usability of any website. Without effective navigation, users can get lost, frustrated, and leave the site. Since the early days of the internet, web designers have worked to develop structures like:

* Menus
* Breadcrumbs
* Hyperlinks
* Search bars  
  These tools guide users through content and serve as a "map" of the website.

A poorly designed navigation system can result in user disorientation, high bounce rates, and low engagement, making navigation a core part of web design and user experience (UX).

2. Importance of Suitable Way-Finding Systems

Choosing the right system of way-finding is essential because different users have different preferences and cognitive abilities. For example:

* Hierarchical navigation for example dropdown menus works well for content-rich sites like e-commerce platforms.
* Search-based navigation is best for large databases like libraries or research websites.
* Breadcrumb trails help users track their path and backtrack easily.
* Interactive elements like hover effects or mega menus enhance user understanding of site structure.

The goal is to minimize cognitive load and make the site predictable and learnable.

3. Examples of Navigation Systems

Some practical navigation methods include:

* Top navigation bars: Commonly placed at the top of pages for easy access to main sections.
* Sidebars: Useful for sub-navigation, especially in blogs or documentation sites.
* Sticky/fixed navigation: Remains visible while scrolling, useful for long pages.
* Footer navigation: Provides links to less prominent pages such as privacy policies or contact info.  
  Each system must be chosen based on the audience, site purpose, and content structure.

4. Evolving Nature of Navigation Design

As web technologies evolve, so do navigation trends:

* Responsive design has introduced hamburger menus for mobile users.
* Voice navigation and AI-based search tools for example, chatbots are emerging way-finding aids.
* User behaviour analysis using tools like heatmaps helps refine navigation based on how users interact with the site.

The user-cantered design approach ensures that navigation systems are based on real user needs and behaviours, making the web more accessible and effective.

c)

1. Mobile Responsiveness

The site should automatically adapt to different screen sizes (smartphones, tablets, desktops) without horizontal scrolling or broken layouts.  
 Application:

* Use Google’s Mobile-Friendly Test tool.
* Check if buttons are touch-friendly and text is readable without zooming.
* Verify layout consistency on both Android and iOS devices.

A majority of users, including students and parents, may access the site via mobile devices.

2. Website Loading Speed

Explanation: A slow site frustrates users and can reduce engagement and search engine ranking.  
 Application:

* Use Page Speed Insights or GTmetrix to assess speed.
* Identify and reduce large image sizes.
* Minify JavaScript, CSS, and HTML files.

Faster websites improve user retention and accessibility.

3. Accessibility Compliance example WCAG 2.1 Guidelines

Ensures the site is usable by people with visual, auditory, or motor disabilities.  
Application:

* Use WAVE or AXE tools to identify missing alt text, poor colour contrast, and lack of keyboard navigation.
* Confirm use of ARIA labels and semantic HTML.

Complies with legal standards and promotes inclusivity.

4. Navigation and User Experience (UX)

Visitors should easily find information within 2–3 clicks.  
 Application:

* Test if menus, breadcrumbs, and search functions are intuitive.
* Ensure important pages (Admissions, Contact Us, Calendar) are visible on the homepage.

A smooth user journey increases engagement and trust.

5. Content Accuracy, Clarity, and Relevance

Outdated or unclear content can mislead users and damage the school’s credibility.  
Application:

* Cross-check term dates, exam schedules, staff contacts, and policy documents.
* Look for grammatical errors and inconsistent terminology.

Accurate content reflects professionalism and builds trust.

6. SEO Best Practices

Optimized websites rank better on search engines like Google.  
Application:

* Ensure use of meta tags, relevant keywords, header tags (H1–H3), and sitemap.xml.
* Check for descriptive URLs (e.g., /admissions-guidelines instead of /page?id=123).

Helps students, parents, and teachers find the site easily.

7. Security Measures (SSL Certificate, Privacy, and Protection)

A secure site protects user data and builds trust.  
Application:

* Check for HTTPS encryption and padlock symbol.
* Look for privacy policies, cookie notices, and secure login forms.

Especially important if the site collects student or parent data example admission forms.

8. Broken Links and Functional Error Pages

Non-working links and generic error messages can frustrate users and harm site credibility.  
 Application:

* Use online link checkers (like Broken Link Checker) to find 404 or redirect errors.
* Test if custom 404 pages guide users back to useful content.

Keeps users engaged and maintains site quality.

9. CMS Usability and Maintenance Workflow

The Content Management System (CMS) should support regular updates by non-technical staff.  
 Application:

* Verify the CMS platform for example WordPress, Joomla, Drupal).
* Check for update logs, backup systems, and user access control.

Ensures the school can independently maintain and update the site regularly.