

KATHMANDU UNIVERSITY
End Semester Examination
February, 2025

Marks Scored:

Level : B.Sc.

Year : III

Exam Roll No. :

Registration No.:

23 FEB 2025

Time: 30 mins.

Course : COMP 341

Semester : II

F. M. : 10

Date :

SECTION "A"

[20 Q. × 0.5 = 10 marks]

Choose and Mark [X] in the most appropriate option from each set of choices

1. What is the primary goal of Human-Computer Interaction (HCI)?
 To make computers smarter
 To improve communication between humans and machines
 To enhance hardware performance
 To increase the processing power of systems
2. Which of the following is a key characteristic of a user-centered design?
 Focuses on the functionality of the system only
 Involves users throughout the design process
 Prioritizes technical specifications over user needs
 Prioritizes aesthetics over usability
3. Which principle is most important when designing interfaces for accessibility?
 Aesthetic design
 Use of advanced features
 Consistency and predictability
 Ensuring compatibility with the latest hardware
4. Which of the following is an example of an affordance in HCI?
 A button that appears to be clickable because it looks raised
 A color scheme that looks pleasing to the eye
 A system that responds slowly to inputs
 A menu that appears as soon as the user clicks anywhere
5. What is the main purpose of a wireframe in the design process?
 To test the final version of a website or application
 To represent the basic structure of an interface without detailed design
 To analyze the usability of a system
 To generate code for the system
6. Which of the following is an example of a direct manipulation interface?
 Typing text in a word processor
 Using a touchscreen to move objects around on the screen
 Using keyboard shortcuts to navigate a document
 Clicking a link to open a webpage
7. Which usability testing method involves observing users while they perform tasks with a system?
 Surveys
 Think-aloud protocol
 Heuristic evaluation
 Controlled experiment

8. Which of the following is a common issue that can negatively affect the usability of an interface?
- High contrast colors
 - Consistent layout
 - Poor navigation structure
 - Clear labeling of buttons
9. What is the primary benefit of using personas in HCI design?
- To create detailed prototypes
 - To represent the needs and behaviors of typical users
 - To test the usability of the final product
 - To evaluate the technical aspects of the system
10. Which of the following is the primary focus of the "cognitive walkthrough" usability method?
- Observing users interacting with the system
 - Evaluating user satisfaction
 - Analyzing the cognitive tasks users must perform during interaction
 - Measuring system performance during user interaction
11. Which of the following is a characteristic of good feedback in a user interface?
- It is quick and brief
 - It interrupts the user's task flow
 - It provides clear, actionable information
 - It uses a large amount of text
12. What is the primary purpose of prototyping in HCI design?
- To finalize the system's code
 - To allow users to test the system before it's built
 - To generate a large number of system features
 - To analyze technical aspects of the interface
13. What is "learnability" in the context of HCI?
- How easy it is to recover from errors
 - How quickly users can accomplish tasks the first time they use the system
 - The level of detail provided by the system's instructions
 - The degree of customization the system allows
14. Which of the following is NOT a part of the "four pillars" of usability?
- Efficiency
 - Learnability
 - Aesthetics
 - Satisfaction
15. Which of the following describes the concept of "mental models" in HCI?
- The system's internal structure
 - Users' perceptions of how a system works
 - The physical design of a device
 - The underlying code behind a system's interface
16. Which of the following is true regarding adaptive interfaces in HCI?
- They remain static and do not change based on user behavior
 - They adjust based on users' preferences or tasks
 - They require the user to input commands for every action
 - They are only used in virtual reality systems

17. Which of the following is the most appropriate for increasing system usability for older adults?
- Reducing contrast in visual elements
 - Offering speech recognition as an input option
 - Using only text for communication
 - Limiting screen size and resolution
18. Which of the following best describes "task analysis" in HCI design?
- A method for debugging a system's code
 - An analysis of the steps users take to accomplish their goals
 - A test for assessing users' emotional responses to the interface
 - A process for determining the aesthetic appeal of an interface
19. Which of the following is the most important when designing an interface for mobile devices?
- Minimize interaction complexity
 - Use large amounts of text to explain features
 - Focus on color over readability
 - Ensure a slow response time for better user experience
20. What is the key difference between "usability" and "user experience" (UX)?
- Usability focuses on task performance, while UX encompasses the overall experience, including emotions and satisfaction
 - Usability only applies to websites, while UX applies to all systems
 - Usability is subjective, while UX is objective
 - UX refers to technical performance, while usability refers to interface design

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SECTION "B"

[6 Q. × 4 = 24 marks]

Attempt ANY SIX questions.

1. Describe the differences between "direct manipulation" and "command-based" interaction styles. Provide examples of systems that use each style.
2. What is the role of *cognitive load* in HCI design? How can designers reduce cognitive load for users interacting with a complex system?
3. What is the concept of "affordance" in HCI? Discuss how *visual affordances* help users understand interface functionality, with examples.
4. What are "personas" in HCI design? How do they contribute to user-centered design, and what are the potential limitations of using personas?
5. Explain the concept of "user testing" in HCI. What are the key steps involved in conducting an effective usability test, and how do the results influence design decisions?
6. Compare and contrast the "waterfall" and "iterative" models in HCI development. What are the advantages and disadvantages of each?
7. Discuss the importance of *feedback* in user interface design. What are the different types of feedback and how do they impact user experience?

SECTION "C"

[2 Q. × 8 = 16 marks]

Attempt ANY TWO questions.

8. Case Study: E-commerce Website Accessibility
Scenario: *An online shopping website caters to a diverse group of users, including people with disabilities. However, a significant number of users with visual impairments have complained about difficulties navigating the site. The website is not compatible with screen readers, and text contrast is low, making it hard to read for users with poor vision. Additionally, users with motor impairments find the interactive elements, such as buttons and sliders, difficult to click on due to their small size.*
Question:
 - a. Analyze the HCI problems related to accessibility in this e-commerce website.
 - b. Suggest how the website can be redesigned to be more inclusive for users with disabilities, focusing on accessibility features.

P.T.O.

9. Case Study: Smart Home System Interaction

Scenario: *A new smart home system allows users to control lights, temperature, security cameras, and other devices using a mobile app or voice commands. However, some users have reported confusion when trying to set up routines and schedules, and others say the system often misunderstands voice commands, especially in noisy environments. Furthermore, the app's interface is cluttered with too many options on a single screen, overwhelming new users.*

Question:

- a. Discuss the HCI challenges faced by users when interacting with this smart home system.
- b. Recommend design changes that could improve user experience, focusing on both the mobile app interface and voice command interaction.

10. Case Study: Healthcare System User Experience

Scenario: *A hospital management system is used by doctors, nurses, and administrative staff to manage patient records, appointments, and medical histories. However, many healthcare professionals have expressed frustration with the system's interface. Doctors often have trouble finding the information they need quickly, and nurses report delays when entering patient data. The system is criticized for its non-intuitive navigation, excessive clicks, and lack of clear feedback after actions are taken (e.g., saving or updating records).*

Question:

- a. Identify the main HCI issues causing frustration among users of this healthcare system.
- b. Suggest improvements to the system's user interface and interaction design to address these problems.