**HUMAN COMPUTER INTERACTION – 20CSD423**

**Question Bank**

1 Mark Questions

UNIT 1

1. Define HCI and its significance in system design.
2. Describe the concept of user experience (UX) in HCI.
3. Define a user interface importance in HCI
4. What is the graphical user interface, and why is it popular?
5. What is the primary purpose of reducing the learning curve in interface design?
6. How can designers use visual hierarchy to improve the usability of a user interface?
7. What is the purpose of reducing the gap between a user's mental model and a system's interpretation in Human-Computer Interaction (HCI)?
8. How can the use of icons in a graphical user interface (GUI) improve interaction for novice users?
9. What is the primary benefit of using object-oriented design in GUI systems?
10. How can the use of clear, consistent visual elements in a GUI reduce cognitive load for users?

UNIT 2

1. Explain the importance of understanding business functions in interface design.
2. List the characteristics of human sensory systems relevant to HCI.
3. List three human characteristics important in interface design
4. Define direct manipulation in graphical systems.
5. How might the lack of alignment between a user’s mental model and a system’s design impact their interaction with the system?
6. In what ways can a graphical user interface (GUI) improve productivity for expert users compared to novice users?
7. Compare the impact of a steep learning curve in interface design for novice versus expert users. What potential issues might arise for each group?
8. Evaluate how providing customization options in a user interface can benefit users with different disabilities.
9. How can a poorly designed interface impact employee morale in customer service roles?
10. How does aligning a user interface with a user’s mental model improve usability? Provide an example.

UNIT 3

1. What are system menus in HCI? Provide examples.
2. List the types of windows commonly used in HCI.
3. Analyze how cognitive models can be applied to enhance user performance in interface design
4. What is a system menu in HCI, and how does it function?
5. What is the main difference between the 'sequence of use' and 'importance' screen organization strategies?
6. How would you apply the 'importance' strategy in designing the home screen of a mobile banking app?
7. What is the purpose of using a visual hierarchy in mobile application design?
8. How would you apply the principle of "consistency" in the design of a multi-functional desktop application with multiple windows?
9. How would you incorporate text entry controls in a mobile application designed for quick note-taking?
10. In designing a multi-functional desktop application, how would you use window resizing to support various screen sizes and user preferences?

UNIT 4

1. What are selection controls? Provide examples.
2. **What is** the importance of a well-structured menu in user interface design
3. Describe the types of device-based controls
4. Explain read-only controls and their uses in interfaces.
5. How does window management improve user productivity in a multi-tasking desktop environment?
6. What role do device-based controls, like touchscreens or physical buttons, play in enhancing user interaction in mobile versus desktop environments?
7. How can using a combination of text entry and read-only controls improve the user experience in a mobile app for filling out forms?
8. Why is it important to consider the user's task when choosing the appropriate widget control for a web application?
9. What role do selection controls (e.g., checkboxes, radio buttons) play in ensuring a clear and easy decision-making process for users?
10. How would you implement a selection control (e.g., dropdown menu) for a web application that requires users to choose their country from a long list of options?

UNIT 5

1. Define testing scope in usability testing.
2. What is color theory’s role in design?
3. Analyze the role of usability testing in HCI.
4. Define multimedia and its impact on user experience.
5. Why is it important to use contrasting colors in the design of a health and wellness mobile app?
6. How would you implement usability testing for a new feature in a health and wellness app, such as a step tracker?
7. How does the principle of color contrast help in designing an accessible financial services website?
8. What is the first step you would take when developing a test plan for a new financial software application, and why?
9. Why are icons used in mobile app interfaces, and how do they enhance user experience?
10. In the context of usability testing, how would you evaluate the effectiveness of an icon-based navigation system in an e-learning mobile app?

10 Marks Questions

UNIT 1

1. How does direct manipulation in a GUI engage users more effectively? Discuss any potential difficulties users might encounter when transitioning from a text-based interface to a GUI.
2. What are the principles of user interface design and their application in HCI?
3. (I) Explain the concept of user-centered design in HCI, and discuss its importance for effective user interfaces

(II) Describe the significance of screen layout and composition in HCI.

1. Discuss the evolution and importance of graphical user interfaces (GUIs) in HCI.
2. Describe how direct manipulation in a GUI fosters better user engagement and control. What hurdles might users face during the shift from text-based interface to a graphical one?
3. Examine how object-oriented design and visualization techniques in GUI systems enhance the overall user experience. Evaluate how these design features help minimize cognitive load and boost user productivity.
4. Explore how user interface design impacts an organization’s customer engagement strategies. Analyze how poorly designed interfaces might affect both employee morale and productivity, using specific example.
5. Discuss how object-oriented design and visualization in GUI systems improve the user experience. Analyze how these design elements reduce cognitive load and increase productivity for users.
6. Describe how HCI aims to bridge the gap between a user’s mental model and a system's design. How does well-thought-out interface design elevate user satisfaction and efficiency?
7. Compare the pros and cons of graphical user interfaces (GUIs) for novice versus expert users. How does user experience vary between these two groups?

UNIT 2

1. How can understanding human cognition be used to improve interaction speeds in HCI?
2. Discuss the goals and principles of effective screen design. How does screen flow affect user experience?
3. How do factors like age, gender, and disabilities influence HCI design? Suggest strategies for making systems more inclusive and accessible
4. What are the key factors to consider when organizing screen components for better user interaction?.
5. Identify how differences in user characteristics, such as computer literacy or prior system experience, can shape the design of an interface. Discuss strategies that designers can use to address these differences and ensure the system is accessible to a broad range of users.
6. Evaluate the effectiveness of direct and indirect methods in business requirement analysis for system design. Compare the advantages and limitations of each approach, and examine how they contribute to creating user-friendly interfaces.
7. Analyze the importance of learning and skill development in interface design. Evaluate how designing systems that minimize the learning curve can help users acquire proficiency over time, and consider the long-term impact on user experience.
8. Assess the role of mental models in interface design. Explain how a user's mental model can either support or hinder their interaction with the system, and suggest ways designers can align the interface with users' mental models to enhance usability.
9. Investigate how physical characteristics, such as age, gender, and disabilities, can affect human-computer interface design. Propose strategies designers can use to accommodate these factors and create more inclusive systems
10. **A**nalyze the significance of skill development in interface design. How does reducing the learning curve affect user proficiency and overall satisfaction?

UNIT 3

1. **A**pply principles of cognitive psychology to design an educational website interface. How would you reduce cognitive overload in your design?
2. Outline the structure and components of menus in HCI. How do different menu types impact user efficiency?
3. Explain the structure and function of menus in HCI. How do different types of menus impact usability?
4. Discuss the characteristics and types of windows in HCI. Provide examples of their applications in user interfaces
5. You are tasked with designing the user interface for a mobile application. In order to ensure the interface is visually pleasing and enhances the user experience, describe how you would incorporate the following principles.
6. You are tasked with designing a multi-functional desktop application that involves multiple windows. Using your knowledge of window characteristics and components, evaluate the following aspects of the window design.
7. Analyze and compare the effectiveness of two different screen organization strategies—'sequence of use' and 'importance'—in terms of user task performance. Justify which method would be more suitable for a mobile banking app, supporting your answer with specific examples of how screen data should be ordered.
8. Design a window management system for a multi-tasking desktop environment.
9. Design a user interface for a mobile application that involves multiple steps for users to input data. Your design should incorporate the principles of screen navigation and flow, ensuring ease of use and minimizing cognitive load.
10. Evaluate the effectiveness of different window presentation styles in enhancing user experience across various software applications.

UNIT 4

1. Compare selection controls with command-based interfaces in terms of user interaction & experience
2. How do operable controls and selection controls differ? Provide examples illustrating their applications in HC
3. Explain the characteristics of selection controls and their impact on user
4. Analyze the impact of device-based controls on user interaction in different HCI environments. How do these controls enhance or hinder the overall user experience?
5. You are designing the user interface for a web application that includes various types of screen-based controls (widgets). For each of the following control types, explain how you would choose and implement them based on the task at hand and the user's needs.
6. Design a user interface for a mobile application that integrates Text Entry/Read-only controls and Selection controls.
7. You are tasked with improving the navigation system for a multi-level web application. Based on the following design principles, explain how you would enhance the user experience
8. Analyze the characteristics of device-based controls and their impact on user interaction in different technological environments.
9. You are designing an interactive system that will be used by a diverse group of users, each with different preferences and abilities. The system requires various device-based controls for input. Based on the following input devices, analyze which would be the most appropriate for different types of tasks or user needs. Justify your choices
10. Evaluate the process of selecting the proper device-based control for a specific application.

UNIT 5

1. Discuss how multimedia and graphics are tested for usability in HCI
2. **Explain** the importance of using specific performance metrics in usability testing, and **apply** these metrics to evaluate the interface of an e-commerce website
3. Explain the purpose and types of usability testing in HCI. Discuss the testing process for graphical elements
4. Design a method using usability metrics to assess the efficiency and user satisfaction of a website's search functionality
5. Develop a comprehensive strategy for choosing colors for a financial services website, considering the principles of color and human vision.
6. Explain the different kinds of tests used in the software development process and describe the steps involved in developing and conducting a test
7. Design a comprehensive user interface that incorporates both icons and multimedia elements to enhance user experience in a mobile app for an e-learning platform
8. Explain the purpose and importance of usability testing in the development of digital products.
9. Design a color scheme for a health and wellness mobile app that uses color strategically to enhance user experience and support key app functions.
10. Describe the scope of testing for prototypes in the product development process

**MID II**

**1. Explain the different types of menu structures commonly used in user Interfaces (e.g., hierarchical, fiat, and linear). How do these structures impact user task performance?**

**2. Apply cognitive load theory to improve the design of an interface for mobile learning app.**

**3. Explain the different types of user interface paradigms (eg, graphical , voice-based) and analyze how each paradigm impacts user interaction in different contexts.**

**4. Analyze the advantages and disadvantages of formative versus summative usability evaluations.**

**5. Apply performance metrics to evaluate a given interface's usability, Explan how these metrics can you improve both task performance and user satifaction.**

**6. Apply cognitive principles to the design of an educational websites interface. Discuss design choices that minimize cognitive overload for users.**

**7. Describe the computing principles to design a mobile app that adapts to different user locations and situations.**

**8. Analyze how they differ from command-based interfaces in terms of user experience.**

**9. Explain the Importance of using specific performance metrics in usability testing, and apply these metrics to evaluate the interface of an e-commerce website.**

**11.Apply the concept of usability metrics to evaluate the effectiveness of a websites search function**

**1. What is the importance of a well-structured menu in user interface design**

**2. Apply the concept of cognitive load to improve the design of navigation menus in a website**

**3. Discuss the benefits of using voice-based user interfaces in certain applications.**

**4. What is the principles to improve the usability of a weather app.**

**5. Differentiate between heuristic evaluation and usability testing.**

**6. Propose one improvement for an e-commerce website interface based on usability**

**7. Explain the role of cognitive models in designing user interfaces.**

**8. Apply the principles of cognitive load theory to improve task performance in interface design.**

**9. Explain the concept of context-aware computing and its impact on user experience.**

**10. Apply the principles of adaptive user interfaces in the design of a mobile application.**

**11. Define the effectiveness of a website's interface.**

**12. Explain the purpose of usability testing in interface design.**