

Final Assessment Test(FAT) - Nov/Dec 2024

Programme	B.Tech.	Semester	Fall Semester 2024-25
Course Code	BCSE415L	Faculty Name	Prof. Arthi M
Course Title	Human Computer Interaction	Slot	E1+TE1
		Class Nbr	CH2024250101760
Time	3 hours	Max. Marks	100

General Instructions

- Write only Register Number in the Question Paper where space is provided (right-side at the top) & do not write any other details.

Course Outcomes

1. To design and develop processes and life cycle of Human Computer Interaction
2. To analyze product usability evaluations and testing methods
3. To apply the interface design standards/guidelines for cross cultural and disabled users
4. To categorize, design and develop human computer interaction in proper architectural structures

Section - I**Answer all Questions (4 × 10 Marks)*****M - Marks**

Q.No	Question	*M	CO	BL
01.	Imagine you are part of a team developing a real-time collaborative document editor, where multiple users can simultaneously contribute to a project report. The editor includes features such as real-time editing, version control and user activity tracking. a) Describe the GOMS rules involved in adding comments to the project report within the real-time collaborative document editor. Explain the approach to quantify the time taken and the cognitive load experienced by users during this process. [5 Marks] b) Propose design improvements for the collaborative document editor to better support elderly users, particularly in features like user activity tracking and commenting. Identify GOMS analysis techniques that can be applied to determine elderly users' specific goals, operators, methods, and selection rules. Discuss the impact of these insights on modifications that can reduce cognitive load and enhance usability for this user group. [5 Marks]	10	3	3
02.	InnovateX company is creating a personal financial management mobile app to help users track expenses, set budgets, and understand their spending habits. Key features include expense categorization, budget alerts, and personalized financial recommendations. a) Describe the process of conducting user acceptance testing to verify that the app meets user expectations and requirements. Include the key steps and considerations to ensure alignment with user needs. [5 Marks] b) Outline the steps involved in conducting a heuristic evaluation for the app, highlighting how each step helps identify usability issues and enhance user experience. [5 Marks]	10	2	2

03.	ABC Company is creating a multi-touch screen kiosk to showcase Tamil Nadu's cultural heritage at popular tourist locations, including temples and art galleries. The kiosk will provide multimedia information on local landmarks, restaurant recommendations with traditional Tamil dishes, and an event calendar featuring festivals and cultural performances. It will also offer an interactive map for navigation and walking routes, and include a cultural quiz and games, where users can earn rewards like discount vouchers for local shops and attractions. a) Design a user interface (UI) that is intuitive and user-friendly, ensuring ease of use and minimizing user confusion. Describe and justify your selection of components and layout elements in the design. [5 Marks] b) Create a storyboard illustrating the user journey as they interact with each feature of the cultural kiosk, covering the multimedia information, map navigation, event calendar and cultural quiz. [5 Marks]	10	1	2
04.	GameCraft is developing a cross-platform mobile game designed to provide a seamless user experience on both iOS and Android. The game includes features like in-app purchases, social media integration, and augmented reality (AR) elements, which must function consistently across platforms. a) Design a user interface for the game that ensures intuitive navigation, immersive AR interaction, and a realistic simulation experience. Describe how your design addresses the challenges of AR to enhance user engagement. [5 Marks] b) Discuss how platform-specific features (such as app store guidelines, payment systems, and hardware capabilities) influence the user experience and impact the game's monetization strategy. [5 Marks]	10	4	4

Section - II

Answer all Questions (4 × 15 Marks)

*M - Marks

Q.No	Question	*M	CO	BL
05.	Assume that you are designing a new mobile application for a healthcare system that caters to elderly users and individuals with disabilities. The app must assist users in managing their daily medication schedules, tracking symptoms and scheduling doctor appointments. The app will also include emergency contact features and accessibility options tailored for users with visual, auditory and motor impairments. The application must work across a variety of devices with different aspect ratios and screen sizes. Keeping in mind the principles of dynamic design, aspect ratio adaptation and screen element considerations for mobile devices, explain how you would ensure the following: a) Design a responsive mobile interface that adapts to various screen sizes and aspect ratios while maintaining a user-friendly experience. Discuss considerations for dynamic content layout, navigation, readability, and accessibility for users with visual impairments. [7 Marks] b) Describe how you would optimize touch targets for users with motor impairments, including the importance of screen element spacing for ease of use. [3 Marks] c) Identify specific HCI design features or interactive elements that accommodate users with visual, auditory, and motor impairments. [5 Marks]	15	3	3

06.	<p>You are designing the user interface (UI) for a mobile food delivery application. The app's primary tasks include browsing menus, selecting food items, customizing orders and completing payments. To ensure that the design is user-friendly and encourages quick interactions, you must consider optimizing target sizes and placement, especially for frequently used actions like 'Add to Cart' and 'Checkout.' Additionally, the app must evoke positive emotional responses from users, making them feel engaged and satisfied throughout their interaction.</p> <p>a) Apply Fitts' Law to optimize the UI for quick and accurate interaction. Discuss how you would position critical elements like 'Add to Cart' and 'Checkout' buttons using the concepts of Prime Pixel and Magic Pixel for easy accessibility. [7 Marks]</p> <p>b) Explain the impact of target size, spacing, and button placement on user efficiency, particularly for frequent actions. Describe how your design would minimize user effort for these actions. [3 Marks]</p> <p>c) Integrate emotional design principles into your interface to enhance the user's emotional experience. Explain how colour schemes, animations and micro-interactions can be used to evoke positive emotions and foster engagement. [5 Marks]</p>	15	4	4
07.	<p>A corporate company is developing a grocery shopping mobile app for three user types:</p> <ol style="list-style-type: none"> 1. Riya (21 years old) – A tech-savvy student who values speed and efficiency. 2. Mr. Kumar (70 years old) – An elderly user who needs simple, easy-to-understand navigation. 3. Sara (35 years old) – A visually impaired user who relies on screen readers and voice navigation. <p>a) As a UI designer, apply the Model Human Processor (MHP) framework to adapt the app's design to the cognitive, perceptual, and motor abilities of each user type. Discuss design elements such as product search, button size, menu layout, and information density, explaining how they would be tailored differently for each user group. [9 Marks]</p> <p>b) Design a user interface based on MHP principles that caters to the cognitive needs of each user group. Focus on elements like simplified navigation, information presentation, and user engagement to effectively support each group's unique interaction style. [6 Marks]</p>	15	3	3
08.	<p>Imagine you are responsible for setting up a system to monitor and manage the maintenance of bus stops in a city. This system, called "BusSafe," aims to streamline the process of ensuring that bus stops are well-maintained, clean, and safe for public use. BusSafe will allow city maintenance teams to track the condition of each bus stop, schedule regular maintenance, and respond quickly to issues reported by commuters, such as broken benches, damaged shelters, or inadequate lighting. It will also enable commuters to report problems in real time through a mobile app.</p> <p>a) Identify and justify the selection of input and output devices that would be most suitable for user interaction with the BusSafe system at the bus stop. [5 Marks]</p> <p>b) Design the interface with appropriate interaction style based on human problem-solving approaches for any two features of the BusSafe application. [6 Marks]</p> <p>c) Provide four questions in a questionnaire to evaluate the effectiveness of the BusSafe system from a user experience perspective. [4 Marks]</p>	15	2	4

BL-Bloom's Taxonomy Levels - (1.Remembering, 2.Understanding, 3.Applying, 4.Analysing, 5.Evaluating, 6.Creating)

