VIT
Vellore Institute of Technology
CHENNAI

Reg. Number:	

Continuous Assessment Test (CAT) – II – MARCH 2025

Programme	:	B.TECH (BCE / BPS)	Semester	WINTER 2024-25
Course Code & Course Title	:	BCSE415L – Human Computer Interaction	Class Number	CH2024250502026 CH2024250502034
Faculty	:	Dr. PRAVEEN JOE I R Dr.M.VIDHYALAKSHMI	Slot	C1+TC1
Duration	:	90 mins	Max. Mark	50

General Instructions:
Write only your registration number on the question paper in the box provided and do not write other information.
Use scale and pencil, draw diagrams and give illustrations whenever necessary

Answer all questions

Q. No	Sub Sec.	Description	Marks
1		You are tasked with creating a storyboard for a mobile fitness app that helps users track their workouts, set fitness goals, and receive personalized feedback. a) Create a storyboard, depict the process of users setting and customizing their fitness goals (e.g., weight loss, muscle gain, endurance), tracking their workout progress in real-time (e.g., sets, reps, calories burned), receiving motivational feedback to stay engaged, and monitoring their progress through a dashboard that displays achievements, workout consistency, and goal progression. Include detailed descriptions of the storyboard frames, focusing on key interactive elements like buttons, notifications, and user flow for each step. (5) b) How will you make sure to consider usability, user engagement, and the overall experience throughout the app.(5)	10
2		In an emergency medical services (EMS) real-time system, paramedics need to respond efficiently with real-time updates. The system must integrate GPS tracking for ambulances, real-time communication between paramedics and hospital staff, and live data from medical equipment inside the ambulance. Upon receiving a distress call, the system will dispatch the nearest available ambulance, track its location in real time, and provide paramedics with updates on the patient's condition based on vital signs and medical history. Hospital staff can track the ambulance's progress and prepare for the patient's arrival. Additionally, the system should handle multiple simultaneous emergencies in busy urban areas, minimizing delays in care.	15

		a) In this scenario, how can the KLM (Keyboard Level Model) be applied to analyze user interactions? What are the operators involved, such as pressing keys, clicking on the GPS location, typing vital signs, or using voice commands for communication? (5) b) How do paramedics use encoding methods to recognize and process critical data like patient information, location, and medical equipment status in real-time? (5) c) Finally, how can heuristics for the placement of mental operators (M operators) help reduce cognitive load by ensuring that the most critical information, such as patient vitals and GPS location, is easily accessible and efficiently processed during high-pressure situations? (5)	
3		You are designing a mobile app intended to assist individuals with visual impairments in navigating public spaces. The app provides audio-based directions, real-time alerts about nearby obstacles, and text-to-speech functionality for reading signs or maps. The interface includes large buttons for easy interaction, voice commands, and haptic feedback to notify users of nearby features like exits, restrooms, or elevators. The goal is to create an intuitive, accessible, and user-friendly interface that allows people with visual impairments to navigate independently and safely. a) Using Human-Computer Interaction (HCI) principles, describe how you would design the app's interface to ensure it is accessible and effective for users with visual impairments. (5) b) How would you incorporate universal design principles, sensory feedback (e.g., audio, haptic), and user customization features to meet the diverse needs of users? Additionally, consider the cognitive load of the app's interface and how you would reduce it, ensuring that the user experience is both efficient and comfortable. (5) c) What HCI guidelines would you follow to ensure the app is intuitive, easy to use, and promotes independence for people with disabilities? (5)	15

4		An e-commerce website aimed at elderly users should prioritize accessibility, simplicity, and clarity in its design. To optimize the user experience apply Jakob Nielsen's Usability Heuristics, considering how to ensure visibility of system status, keeping users informed about loading times or order submission. The website should match the system to the real world by using familiar language and visual cues. Offering user control and freedom would allow users to easily undo or redo actions, such as editing their shopping cart. Consistency and standards should be maintained across all pages to reduce confusion, while error prevention techniques can be applied to minimize mistakes, particularly during checkout. The design should emphasize recognition over recall, making it easier for users to navigate without having to remember information. With a focus on aesthetic and minimalist design, the site should avoid overwhelming users with too much information. Additionally, error messages and recovery options should be clear and simple to understand, helping users recognize, diagnose, and recover from errors. Finally, help and documentation must be easily accessible, offering support via FAQs, live chat, or phone assistance to guide users through the process. Summarize your views on how heuristics can be applied to ensure that the website is intuitive, efficient, and accessible for elderly users.	10