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Reg. No. : 21BCE5067

Final Assessment Test(FAT) - Nov/Dec 2024

Programme	**B.Tech.**	Semester	**Fall Semester 2024-25**
Course Code	**BCSE415L**	Faculty Name	**Prof. Premanand V**
Course Title	**Human Computer Interaction**	Slot	**E2+TE2**
		Class Nbr	**CH2024250101769**
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

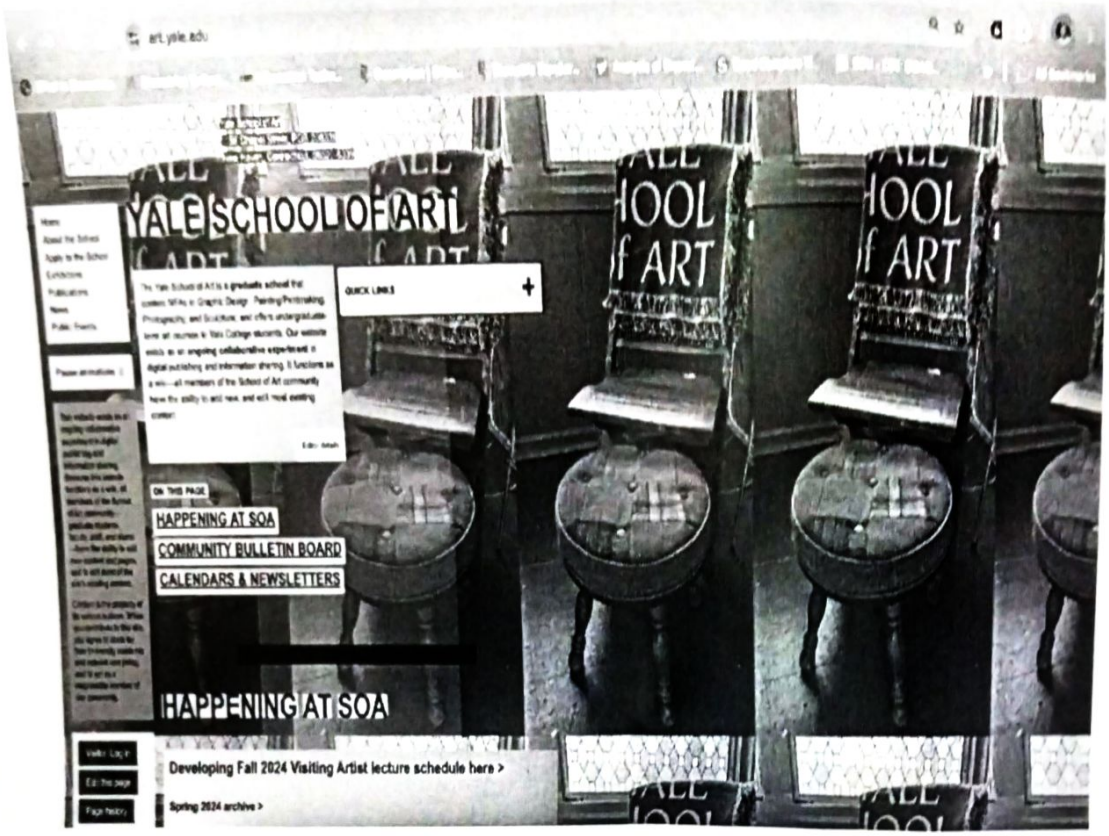
1. To design and develop processes and life cycle of Human Computer Interaction.
2. To analyze product usability evaluations and testing methods.
3. To apply the interface design standards/guidelines for cross cultural and disabled users.
4. To categorize, design and develop human computer interaction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

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

*M - Marks

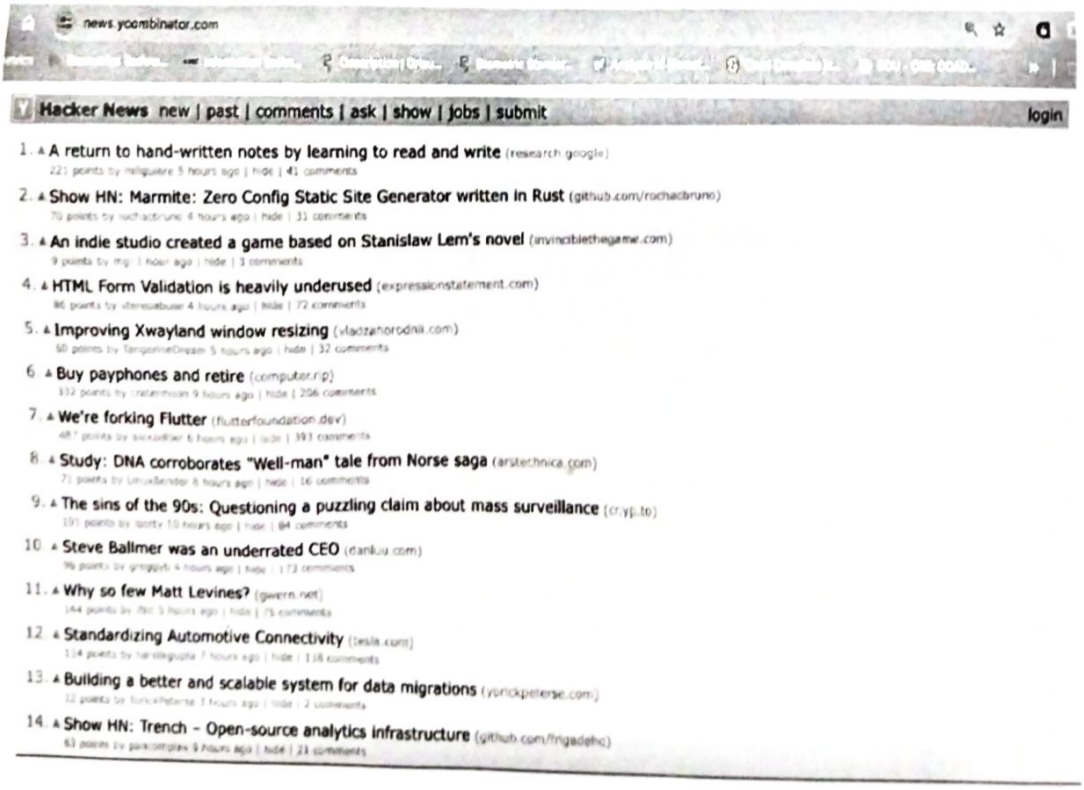
Q.No	Question	*M	CO	BL
01.	Assume that you are part of a design team developing the HomeChef App, a cooking assistance mobile application that helps users search recipes, follow step-by-step cooking instructions, manage ingredient lists and set timers. i. Conduct a Hierarchical Task Analysis for the recipe search process in the HomeChef App. [6 Marks] ii. While using the app, users have reported difficulties with the recipe search process and interacting with small buttons, especially when their hands are messy while cooking. Suggest design changes that would enhance button accessibility and interaction speed based on Fitts' Law. [4 Marks]	10	1	3
02.	Maruti is developing a Virtual Reality (VR) driving simulator to educate drivers in complex road scenarios and handling emergency situations. i. Outline the potential for Virtual Reality (VR) to transform the training experience for drivers, emphasizing its impact on driving skill development and road safety. [4 Marks] ii. Identify suitable interactive Virtual Reality (VR)/Augmented Reality (AR) devices and design an intuitive user interface (UI) for any two scenarios that can enhance driver training by simulating real-world conditions, providing instant feedback and guiding users through different driving challenges. [6 Marks]	10	3	4

03. Consider the website provided below. 10 1.2 2



i. Evaluate the given website using any five Jakob-Nielson's usability metrics. [5 Marks]
ii. Suggest specific design changes with relevant use cases and justify how they will enhance overall user experience and usability. [5 Marks]

04. Consider the website design of the Hacker News website that allows users to browse recent tech news, submit stories and comment on discussions. 10 2,3 3



i. Evaluate the current navigation design of the Hacker News website and identify specific issues that might contribute to user confusion or difficulty. [4 Marks]
ii. Design an effective menu layout that would make it easier for users to navigate the website. Explain how these changes would improve user interaction with suitable justification. [6 Marks]

Section - II

Answer all Questions (4 × 15 Marks)

*M - Marks

Q.No	Question	*M	CO	BL
05.	The Education Department is launching an interactive system for a smart education platform for children that facilitates remote learning at home. The system enables teachers to interact using a combination of touchscreen inputs, voice commands and gesture recognition to engage with digital whiteboards, access educational content and participate in collaborative activities. Students interact using voice commands, webcams, and smart displays to attend virtual classes, complete assignments and access educational resources. It also offers language customization to enable students to learn via their preferred choice of language. i. Design an interactive system for two specified scenarios (e.g., virtual class participation, collaborative projects) with neat illustrations. [6 Marks] ii. Apply the MHP framework to optimize the interaction for each scenario, considering different types of users (e.g., teachers, students, parents) with suitable examples. [5 Marks] iii. Describe the appropriate input-output channels required to facilitate an effective multimodal interaction experience tailored to each scenario. [4 Marks]	15	4	6
06.	The Ministry of Tourism is designing an urban navigation app that will be used by two distinct user groups: daily commuters using public transportation and tourists exploring the city. For daily commuters, the app provides features like route planning, real-time updates and point-of-interest recommendations. It also allows for one-tap actions like Save Route or Mark as Favourite. For tourists, it includes options for sightseeing routes, local recommendations and step-by-step navigation to unfamiliar locations. i. Create a scenario map to capture context-based user interactions with the application for daily commuters and tourists. [5 Marks] ii. Develop a detailed paper prototype that clearly illustrate the screen designs and layouts, ensuring the interface provides seamless, context-specific functionality for both user groups? [10 Marks]	15	1,4	5
07.	Assume that the United Nations Educational, Scientific and Cultural Organization (UNESCO) is planning to launch a Global Education Conference 2024 website. The design team is committed to implementing accessibility principles to ensure that the website is usable by individuals with visual, auditory, and motor impairments. i. Identify at least five essential accessibility features that the design team can incorporate into the website design to make it inclusive. Explain how each feature would improve accessibility and user experience for individuals with different disabilities. [5 Marks]. ii. Design a mobile-compatible wireframe focusing on the homepage of the website with a clear layout. The homepage should enable users to easily navigate the conference schedule, register for sessions and access live-streamed events. [6 Marks] iii. Identify the key elements and specify the guidelines used for your design. [4 Marks]	15	2,3	4
08.	Emma, a 35-year-old marketing manager, uses the Cruise Explorer App to book onboard activities for her week-long family cruise. After booking the cabin, she navigates to the Onboard Activities section. However, instead of clear categories, Emma is presented with a long, unsorted list of activities, including spa treatments, adult events, kids' clubs, and tours, all mixed together. As she scrolls through the list without any filtering options for age, interest, or activity type, Emma becomes frustrated. She attempts to find snorkelling for herself but struggles due to the disorganized layout. After finally locating and booking snorkelling, she faces a similar issue trying to find a suitable kids' workshop, leading to additional frustration.	15	2,3	6

The cumbersome navigation and lack of search refinement make Emma consider skipping further activity bookings, as the process is too time-consuming and inefficient.

i. Create a storyboard with relevant illustration that visualizes Emma's journey through the app, from launching the Onboard Activities section to her eventual frustration caused by the disorganized list. Include Emma's emotions and brief annotations for each panel. [10 Marks]

ii. Using the GOMS technique, analyze Emma's interactions during the activity booking process. Break down her actions and estimate the time taken for any two specific actions, such as launching the app, navigating to the Onboard Activities section, scrolling through the list, or booking activities. [5 Marks]

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

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