

Name: Enrolment No:			
UPES End Semester Examination, December 2023			
Course: User Interface Design Program: M.Tech (Automation and Robotics Engineering) Time : 03 hrs. Course Code: ECEG8016		Semester: III Max. Marks: 100	
Instructions: 1. All the questions are compulsory. 2. This question Paper contains 11 questions. 2. Calculators are not allowed.			
SECTION A (5Qx4M=20Marks)			
S. No.		Marks	CO
Q 1	Define tangible user interfaces (TUIs) and explain their significance in the context of human-computer interaction. Provide real-world examples of TUI applications.	4	CO1
Q 2	Discuss the key design principles in creating effective TUIs. How does the concept of "direct manipulation" relate to TUIs?	4	CO2
Q 3	Compare and contrast tangible user interfaces with traditional graphical user interfaces (GUIs), highlighting the advantages and limitations of each approach.	4	CO3
Q 4	Explain the role of physical affordances in TUI design. Provide examples of how designers can enhance user interactions by leveraging affordances.	4	CO4
Q 5	Describe the use of sensors in tangible user interfaces. How do these sensors enable TUIs to sense and respond to user actions? Provide specific sensor examples.	4	CO5
SECTION B (4Qx10M= 40 Marks)			
Q 6	How can haptic feedback enhance the user experience in TUIs? Give examples of TUI applications where haptic feedback is particularly beneficial.	10	CO3
Q 7	Explore the concept of "embodiment" in TUIs and discuss its relevance in the design of virtual and physical interactions	10	CO2
Q 8	What are the potential privacy and security challenges associated with tangible user interfaces, and how can these challenges be addressed in TUI design and implementation?	10	CO1

Q 9	<p>Discuss the role of augmented reality (AR) and virtual reality (VR) in extending the capabilities of tangible user interfaces. Provide examples of TUI-AR/VR integrations.</p> <p style="text-align: center;">OR</p> <p>What are the key design considerations for creating a tangible user interface that effectively integrates physical and digital interactions?</p>	10	CO4
<p>SECTION-C (2Qx20M=40 Marks)</p>			
Q 10	<p>Explore emerging trends in Tangible User Interface design, such as shape-changing interfaces, biofeedback integration, and brain-computer interfaces. Analyze the potential impact of these trends on the future of human-computer interaction and user experience design. How might these innovations address current limitations and open new possibilities for TUI applications?</p>	20	CO3
Q 11	<p>Explore the technological underpinnings of Tangible User Interfaces, including the role of sensors, actuators, and tangible objects. Analyze how these components work together to create responsive and context-aware interfaces. Provide examples of real-world applications in various domains, such as education, healthcare, or entertainment, highlighting the technological advancements that enable these applications.</p> <p style="text-align: center;">OR</p> <p>Explore the technological underpinnings of Tangible User Interfaces, including the role of sensors, actuators, and tangible objects. Analyze how these components work together to create responsive and context-aware interfaces. Provide examples of real-world applications in various domains, such as education, healthcare, or entertainment, highlighting the technological advancements that enable these applications.</p>	20	CO5