Graphic Era HILL UNIVERSITY
Established by an Act of the State Legislature of Uttarakhand (Adhiniyam Sankhya 12 of 2011)
University under section 2(f) of UGC Act, 1956

End Term (Odd) Semester Examination November 2025

Roll no. 2294038

Name of the Course and semester: B.Tech.(CSE), AI/ML and VII
Name of the Paper: Human Computer Interaction
Paper Code: TCS 756

Time: 3 hour Maximum Marks: 100

Note:

(i) All the questions are compulsory.
(ii) Answer any two sub questions from a, b and c in each main question.
(iii) Total marks for each question is 20 (twenty).
(iv) Each sub-question carries 10 marks.

Q1. (2X10=20 Marks) CO1

a. Define User Interface (UI). Explain in detail the importance of good interface design. Discuss the benefits of a well-designed user interface with suitable examples.

b. What do you understand by Direct Manipulation in HCI? Explain its features, advantages, and impact on user experience with real-world examples (e.g., file handling, drawing tools).

c. Analyze how graphical design principles such as color, contrast, typography, and layout affect interface performance metrics such as *error rate*, *response time*, and *learning speed*. Use examples to illustrate your points.

Q2. (2X10=20 Marks) CO2

a. Write a detailed note on Human Interaction Speeds. Discuss perceptual, cognitive, and motor speeds, and explain their importance in designing responsive interfaces.

b. What are business junctions in HCI? Explain how understanding business junctions helps in aligning interface design with user goals and organizational objectives. Give suitable examples.

c. A user moves a mouse pointer to select a button on the screen. The distance (D) between the start point and the button is 25 cm, and the width (W) of the button is 5 cm.

Using Fitts's Law, calculate the movement time (T) given:

$T=a+b\times\log(\text{base2})\ (1+D/W)$

where a=0.15s and b=0.10 s

Also, explain how button size and distance affect human interaction speed.

Q3. (2X10=20 Marks) CO3

a. Discuss the technological considerations in interface design. Explain how screen resolution, platform compatibility, input devices, and display technologies influence screen layout and usability.

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