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MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

(A constituent unit of MAHE, Manipal)

VII SEMESTER B.TECH. (INFORMATION TECHNOLOGY / COMPUTER AND COMMUNICATION ENGINEERING)

END SEMESTER EXAMINATIONS, DECEMBER 2021

SUBJECT: PROGRAM ELECTIVE VI - HUMAN COMPUTER INTERACTION [ICT 4049]

REVISED CREDIT SYSTEM

(22/12/2021)

Time: 85 Minutes

MAX. MARKS: 20

Instructions to Candidates

- ❖ Answer **ALL** the questions.
- ❖ Missing data if any may be suitably assumed.

| Q. No. | Question | M | CO | AHEP LO | BT |
|--------|---|---|----|---------|----|
| 1A. | <p>The Johnson Corporation has won a contract to develop various types of documentation to provide user support for a new device that will play digital music in a range of formats such as MP3 and WMA. The device will be sent to customers with a quick reference and task-specific help. If they want to learn how to exploit more advanced features of the device, then they will have to access a web site. The target users of the device are from college going young students to elderly people. Company planned to study the impact of various user supports on user's usage of the device. The lab experiments are conducted considering 3 various user supports to test. They divided the users into 3 groups, college going students, working adults and elderly retired people. They got 10 subjects from each age group to participate in the study. All the types of user's supports (but for different tasks) for each group are provided according to the test conditions and asked each subject to use the device for different tasks. Based on mentioned scenario, answers the following questions.</p> <p>i) Define the null and alternate hypothesis ii). What are the independent variables and dependent variables? iii) In this study, they used mixed within-group (subject) design and between-group (subject) design. Which part is within-subject design and which part is between-subject design? iv) Write the appropriate analysis.</p> | 5 | 3 | 2 | 5 |
| 1B. | <p>Briefly explain various ways of text-entry? Why usage of predictive text-entry may not reduce errors with mobile telephones for input intensive application such as RTPCR test mobile app.</p> | 3 | 2 | 3,4 | 2 |
| 1C. | <p>Consider a project group, wherein each team is assigned a rank as a whole. However, the team members are entitled to get equal ranks irrespective of the contribution. How can this problem be resolved, and mention the term used to describe such a problem?</p> | 2 | 1 | 13 | 3 |

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|-------------------|---|-----------------|-----------------|---------------------|-----------------|
| <p>2A.</p> | <p>The Jebsen-Taylor Hand Function Test (JTHFT) is a standardized and objective measure of fine and gross motor hand function using simulated activities of daily living. The JTHFT has seven subsets which are writing, simulated page-turning, lifting small objects, simulated feeding, stacking, and lifting large, lightweight, and heavy objects. To evaluate hand function using the JTHFT, each of its subset is timed and can be compared with the established norms. As per JTHFT, following are the tests need to be instrumented using one device for the assessment of hand functions.</p> <ol style="list-style-type: none"> 1. Moving large weighted [0.50 kg] cans 2. Picking up small, common objects (e.g., paper clips, bottle caps) and placing them in a container 3. Turning over 7.6×12.7 cm (3×5-inch) cards (simulated page turning) <p>Identify and explain the usage of minimum two components for human, computer, and interaction each, to design the above-mentioned device.</p> | <p>5</p> | <p>1</p> | <p>2,3,4</p> | <p>4</p> |
| <p>2B.</p> | <p>Consider the given example scenario “Students are attempting the assignment on MS teams” for evaluation using cognitive walkthrough and write the answers for following questions with proper justification.</p> <ol style="list-style-type: none"> 1. Will users see that the action is available? 2. Once users have found the correct action, will they know it is the one they need? 3. After the action is taken, will users understand the feedback they get? | <p>3</p> | <p>3</p> | <p>4,5</p> | <p>4</p> |
| <p>2C.</p> | <p>Tableau is the tool which can help to visualize and understand the data. This tool can be easily used to connect to almost any database, drag and drop to create visualizations, and share with a click. Identify an appropriate architecture pattern for designing such a tool and briefly explain with suitable structure.</p> | <p>2</p> | <p>4</p> | <p>3,4,5</p> | <p>3</p> |
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