ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)
ORGANISATION OF ISLAMIC COOPERATION (OIC)
Department of Computer Science and Engineering (CSE)

MID SEMESTER EXAMINATION   SUMMER SEMESTER, 2022-2023
DURATION: 1 HOUR 30 MINUTES   FULL MARKS: 75
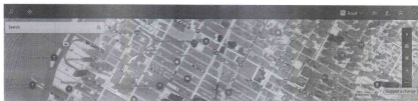
CSE 4849: Human Computer Interaction

Programmable calculators are not allowed. Do not write anything on the question paper.
Answer all 3 (three) questions. Figures in the right margin indicate full marks of questions with corresponding COs and POs in Parentheses.

1. a) Suppose you are customer of BB Bank using their online banking and e-commerce services   10
        via their mobile app. However, you are unaware that their online services remain closed from   (CO3)
        11:00 pm to 05:00 am because of safety reasons. Whenever you try to make a transaction   (PO2)
        between this time period, you get an error message, "The services are temporarily down due
        to maintenance, sorry for the inconvenience", which causes frustration. Rest of the time,
        you can perform transactions just fine.

        Based on the aforementioned scenario, identify which one would be more suitable among
        Norman's model of interaction and Abowd & Beale Framework to analyze the interaction
        problem. Justify your answer by modeling the problem in terms of gulfs (execution/evalu-
        ation) or translation (articulation/performance/presentation/observation) problem and ex-
        plaining how the other model fails to capture it.

    b) While trying to send 500 BDT to your friend via the BB Bank app, you mistakenly entered
        5000 BDT. It asked you for an OTP via SMS and after entering it, the transaction was com-
        pleted. Your friend, not having online banking enabled, later had to physically return the
        money.

        i. Classify the error made during the transaction between slip and mistake. Give appro-   1 + 3
           priate reasoning behind your answer.   (CO3)
                                                                                                      (PO2)

        ii. Propose a redesign of the transaction process to prevent/minimize the error that took   6
            place. You can make any reasonable assumption if necessary. Optionally, you may use   (CO4)
            a rough sketch to strengthen your explanation.   (PO3)

    c) "Ergonomics is not only about the physical properties of interaction, rather it takes a holistic   5
        approach on improving workplace efficiency" — briefly explain with suitable examples.   (CO1)
                                                                                                      (PO1)

2. According to Overleaf, an online editor for LaTeX documents, the ways to create a table are:

    - **Using the 'Insert Table' button in the editor toolbar:** This is a convenient way to create
      a table without writing any LaTeX code. You can select the number of rows and columns,
      and then edit the table cells using the table editor menu. You can also customize the table
      borders, alignment, width, and caption.

    - **Copying and pasting a table from another document while using the 'Visual Editor':**
      This is another easy way to insert a table in Overleaf. You can copy a table from any source,
      such as a Word document or a website, and paste it into your Overleaf project. The table will
      be automatically converted to LaTeX code and displayed in Visual Editor. You can then edit
      the table using the table editor menu as well.

    - **Writing the LaTeX code for the table in Code Editor:** This is the most flexible way to
      create a table in Overleaf, but it requires some knowledge of LaTeX syntax. You can use the

tabular environment to create a table with the desired number of columns and rows, and specify the alignment and borders of each cell. You can also use additional packages, such as array, booktabs, or longtable, to enhance the appearance and functionality of your table.

a) Represent the task of the table creation in LaTeX using GOMS (Goals, Operators, Methods, Selection Rules) model. You can make reasonable assumptions if required.	3 × 4 (CO1) (PO1)
b) Among LaTeX and a *What You See Is What You Get* editor like Microsoft Word, which one is easier for creating a table in terms of information retrieval (recognition and recall)? Consider that a visual editor for table creation in LaTeX does not exist. Give proper justification behind your answer.	1 + 6 (CO2) (PO2)
c) Even without using a visual editor, how can the code editors for LaTeX improve the ease of table creation process in terms of human information retrieval? Provide example(s) to your answer.	6 (CO3) (PO2)

3. The map of Times Square, New York in Bing Maps and Google Maps is shown in Figure 1(a) and 1(b) respectively.

(a) Bing Maps default view

(b) Google Maps default view

Figure 1: Map of Times Square, NY in (a) Bing Maps and (b) Google Maps for Question 3

a) Among the two maps shown in Figure 1, which one is easier to understand and creates less cognitive load? Give appropriate justification to your answer based on Norman's high level design principles: visibility, constraints, mapping, consistency, etc.	10 (CO2) (PO2)
b) How can affordance and metaphors be used to design map applications? Explain by linking appropriate examples to Figure 1.	4 + 4 (CO3) (PO2)
c) Should the design of a map application be different if it is targeted towards elderly people? Justify your answer based on the physical and psychological constraints of the elderly.	7 (CO1) (PO1)