

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

MID SEMESTER EXAMINATION

SUMMER SEMESTER, 2017-2018

DURATION: 1 Hour 30 Minutes

FULL MARKS: 75

CSE 4885: Human-Computer Interaction

Programmable calculators are not allowed. Do not write anything on the question paper.

There are **4 (Four)** questions. Answer any **3 (Three)** of them.

Figures in the right margin indicate marks.

1. a) A computer game manufacturer is producing a new game called Gulliver. In this game the players travel through a virtual landscape in which are found various villages. Some of these villages are occupied by Lilliputians, who are only 6 inches tall; some by ordinary people; and some by Brobdingnagians, who are giants. The game uses a fully **immersive VR headset**. You have been asked to advise the game makers. 12+5
 - i. If the user "stands still" in the virtual environment, a Lilliputian village that is very close, a normal village some way off and a Brobdingnagian village in the far distance will all look the same apparent size. What visual cues can the designers use to enable a user to distinguish them? (Say in your answer if any cues are better at distinguishing the miniature village from the normal one, or the normal one from the giant one.)
 - ii. How does this change when the user is allowed to move in the environment?
- b) *Cognition* is the process by which the human gain knowledge from the environment. Write the name of different processes which contribute to the cognition. 8
2. a) The use of color in displays is an ergonomics issue in HCI. The visual system has some limitations with regard to color. Which color conventions we should remember as ergonomic guidelines when we use color in displays? 7
- b) The *model human processor (MHP)* consists of three interacting systems. Each has its own memory and processor. With necessary diagram describe the complete MHP. 10

Ergonomics attempt to make sure that the task is structured to fit the person performing it and in this regard it defines standards and guidelines. 8

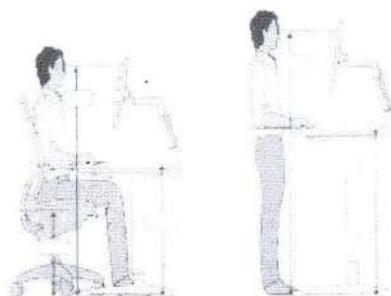


Figure 1: Traditional and standing desk environment

Write some recommendations related to ergonomic issues for traditional and standing desks environment to use a computer. (Figure 1)

3. a) Human visual system perceives the 3D information regarding an object using both physiological and psychological cues. Briefly describe those cues using suitable examples. 8
- b) Interaction can be seen as a dialog between the computer and the user. The choice of interface style can have a profound effect on the nature of this dialog. Write the name of the most common *interface styles* and note the different effects these have on interaction shortly. Draw figures where they are required. 7
- c) Interaction design is a trend in industrial design that emphasizes the role of the user. Describe different phases involved in the process of interaction design with necessary figures and examples. Also mention the core characteristics and goals of interaction design procedure. 10
4. a) Define the following terms used in HCI: 10
- Visual acuity
 - Saccades
 - Fixations
 - Regressions
 - Kinesthesia
- b) What is the *golden rule of design* followed in HCI? Explain with relevant examples. 5
- c) What do you mean by 'gulf of execution' and 'gulf of evaluation' while doing interaction through computers? Consider the interaction framework in Figure 2. 10
- Answer the followings:
- Redraw the framework indicating two gulfs (show in the figure) in the user interface
 - In *Microsoft File Explorer* software, mention some poor mappings of articulation, performance, presentation, and observation.
 - How different types of human error are related to these terms?

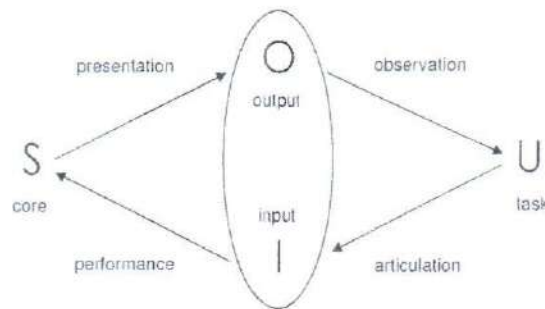


Figure 2: An Interaction Framework