THE CATHOLIC UNIVERSITY OF EASTERN AFRICA

A. M. E. C. E. A

P.O. Box 62157

00200 Nairobi - KENYA

Telephone: 891601-6

Ext 1022/23/25

MAIN EXAMINATION

SEPTEMBER –DECEMBER 2021

FACULTY OF SCIENCE

DEPARTMENT OF COMPUTER SCIENCE

REGULAR PROGRAMME

CMT 316: HUMAN COMPUTER INTERFACE

Date: DECEMBER 2021	Duration: 2 Hours
INSTRUCTIONS: Answer Question ONE and any TWO Questions	

Q1.
(a) Define the following terms:
    (i)   Human Computer Interaction (HCI).

[2 Marks]

    (ii)   Ergonomics.

[2 Marks]

(b) Describe the five design principles derived from the Gestalt theory.

[5 Marks]

(c) Information is placed in LTM from STM (working memory) through "rehearsal".
Describe 2 ways with which this process can be optimized.

[4 Marks]

(d) Systems can be evaluated through user participation. Compare and contrast laboratory
studies and field studies in system evaluation.

[8 Marks]

(e)   By use of diagrams explain the following 2 optical illusions.
        (i)   Müller-Lyer illusion
        (ii)   Ponzo illusion

[6 Marks]

(f) Differentiate between multimodal and multimedia systems   **[3 marks]**

Q2.

(a) Briefly explain 5 disciplines that contribute to the study of HCI.

[5 Marks]

(b) It is estimated that at least 10% of the population of every country has a disability that will affect interaction with computers. Employers and manufacturers of computing equipment have not only a moral responsibility to provide accessible products, but often also a legal responsibility. As a designer, how would you take care of persons with the following impairments.

(i)   Visual impairment

(ii) Hearing impairment

(iii) Physical impairment

(iv) Speech impairment

(v)   Dyslexia

[10 Marks]

(c) Is multi-modality always a good thing? Justify your answer.

[5 Marks]

Q3.

(a) Describe the following divisions of ergonomics.
   (i) Physical and Psychological ergonomics
   (ii) Cognitive ergonomics
   (iii)   Organisational ergonomics

[6 Marks]

(b) Discuss the influence that the social environment in which you work have on your interaction with the computer.

[6 Marks]

(c) Graphical user interface (GUI) is the most common type of user interface in use today. Explain in detail why it is also referred to as WIMP.

[8 Marks]

Q4.

(a) Describe the Norman's execution–evaluation cycle7 stage interaction model.

[14 Marks]

(b) Explain how the Norman's model above can be used to demonstrate why some interfaces cause problems to their users.
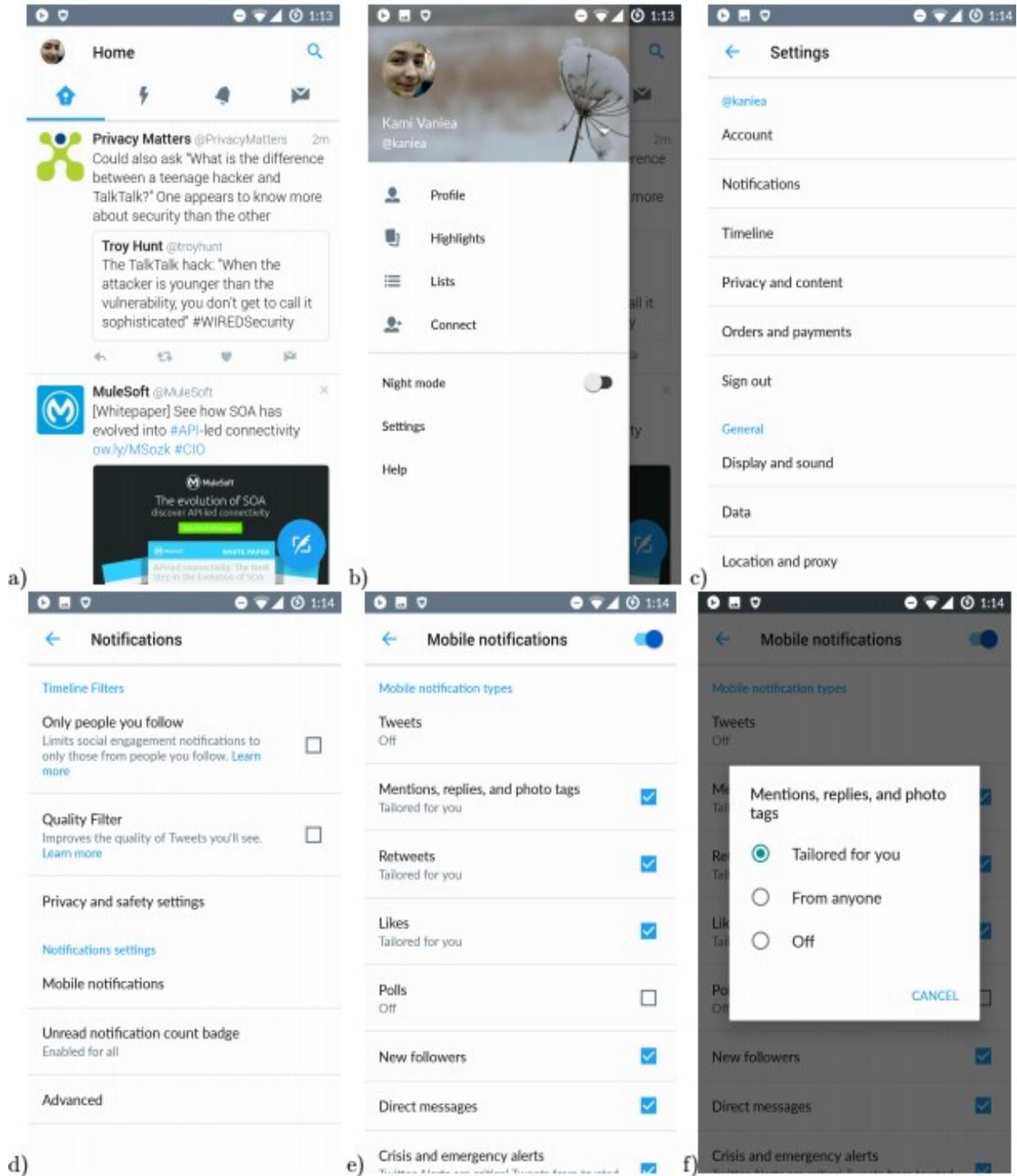
[6 Marks]

Q5.

By default the Android Twitter app shows users notifications about all sorts of things like if they were mentioned in a tweet, if someone likes their tweet, if they get a new follower, etc. Some users like these notifications but others find them annoying. The figure below shows the sequence of screens necessary to disable notifications for "Mentions, replies, and photo tags". Use Heuristic Evaluation with Nielsen's 10 Heuristics to identify five positive or negative aspects of this interaction sequence.

a)

b)

c)

d)

e)

f)

[20 Marks]

END