National University of Computer and Emerging Sciences, Lahore Campus

	Course Name:	Human Computer Interaction	Course Code:	CS422
	Degree Program:	BS-CS	Semester:	Fall 2019
	Exam Duration:	180 Minutes	Total Marks:	75
	Paper Date:	19th December 2019	Weight	40%
	Section:	C and D	Page(s):	10
	Exam Type:	Final Exam		

Student : Name:_____ Roll No._____ Section:_____

Instruction/ Notes: Attempt all questions. Before starting the paper, make sure you have the exam of your section, as different sections have different exams. Use the given space only. Extra sheets are not allowed. Your answers should be precise and to the point. Avoid cutting or overwriting. Use blue pens to attempt the paper.

Q1. You have to design a simple notepad for the visually impaired. For this purpose you need to provide an appropriate auditory icon (natural sounds) for each of the following events. Note that operations 2 & 3 are opposites and therefore must have appropriately opposite sounds. (6 marks)

1. New Open door sound
2. Open Pop sound
3. Save Water pouring in jug sound
4. Print Dot matrix printer sound
5. Find Papers rustling sound
6. Exit Close door sound

Q2. If a software is launched: (4 marks)

a) without interviews of the users, what kind of problems will it have? List down only two.

1. The user characteristics may not be recorded
2. The requirements of the user will not be recorded

b) without contextual observations, what kind of problems will it have? List down only two.

1. The real work environment will not be recorded, so the eventual software will lack required features

2. The tacit knowledge of the user will not be recorded

Q3. a) List down the five tools for layout in the table given below: (2.5 marks)

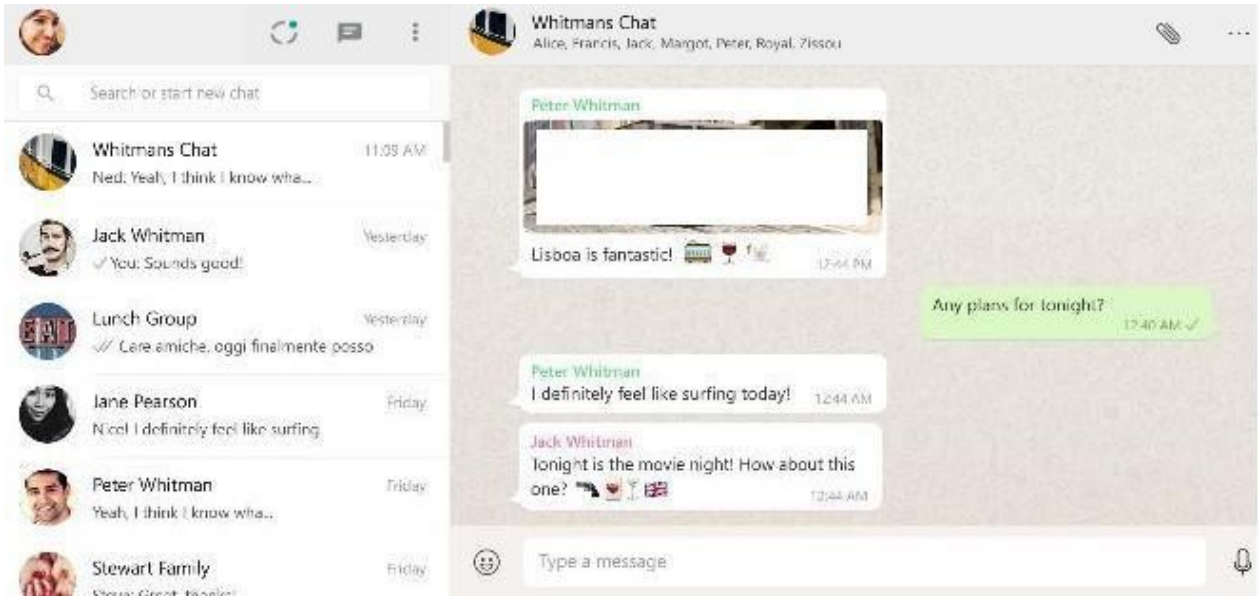
Label Name	Tools for layout
T1	Grouping of items
T2	Ordering of items
T3	Alignment
T4	Decoration (color, font, etc.)
T5	White space

Q3. b) Label the image below by precisely identifying where and how the designer has applied T1, T2, T3, T4 and T5 (be neat in labeling). The image is of WhatsApp Web interface, the web version of WhatsApp messenger service. (7.5 marks)

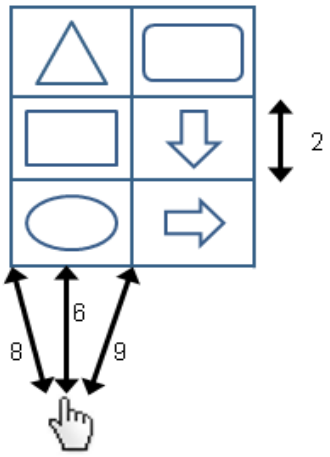
* Use arrows to connect the appropriate portion of the image with the respective Label name

** Identify at least 3 examples in the image corresponding to each tool.

Different answers were accepted.



Q4. Consider the image below. It has six buttons of equal size. Using Fitts' law, calculate the time it will take to acquire the button with triangle on it. Various measurements (in pixels) are given in the figure. Use the appropriate ones to calculate the time. Assume that the value of all coefficients used in Fitts' law is 1. **There is no partial credit for this question. Show all intermediate steps.** (10 marks)



Formula:

Working & Answer:

MT = a + b*Log base 2 (2D/W)

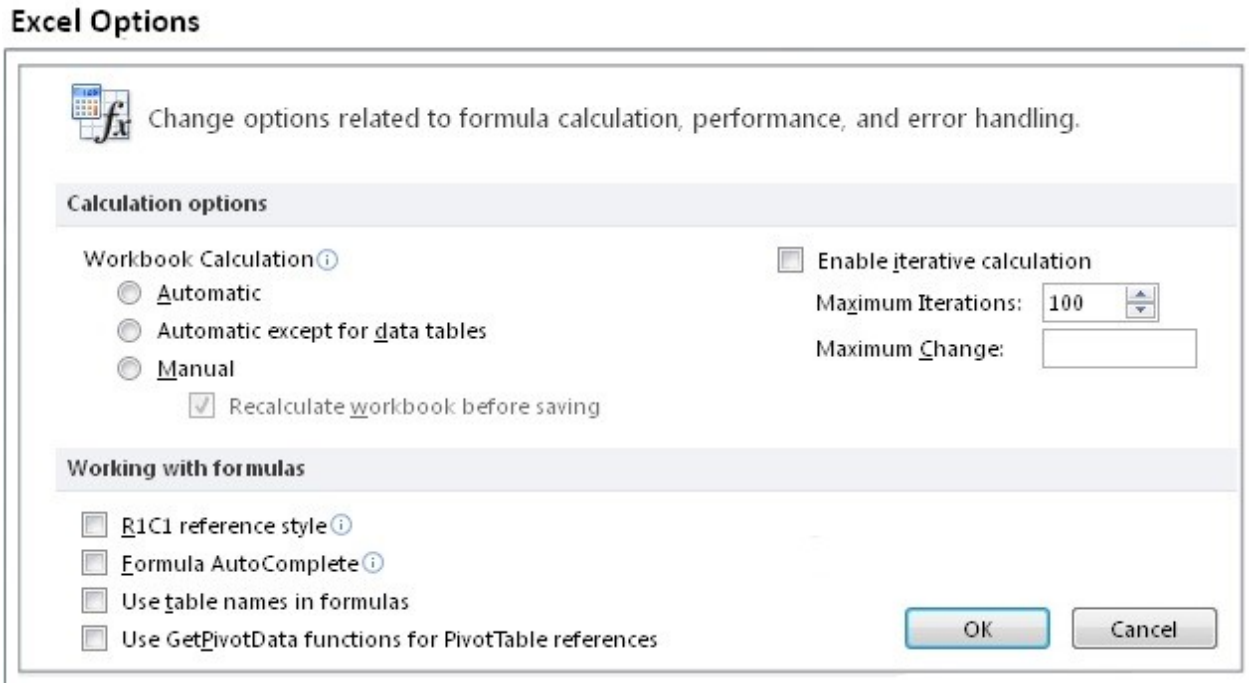
D = 11 (Till the center of target)
W = 2
Answer: 4.459 seconds

Q5. Your goal is to **save an unnamed PowerPoint slideshow as "File.ppt"**. Explain this process using seven stages of Norman's model of interaction. List all 7 stages in the right order, along with what happens in each stage. (7 marks)

1. user establishes the goal
2. formulates intention
3. specifies actions at interface
4. executes action
5. perceives system state
6. interprets system state

7. evaluates system state with respect to goal

Q6. Consider the MS Excel Options Dialog box in the figure below. You want to set *workbook calculation* to manual. You also want to enable *Formula AutoComplete* and *Use table name* fields. Next you need to change *Maximum Iterations* to 102 by clicking the up arrow twice. Finally, set *maximum Change* to 0.1 by typing '0.1' in the field. As a user, you always move from field to field using a mouse. Assume your hand is initially on the mouse and currently "OK" button is selected. Also assume that this dialog box is dismissed by clicking the "OK" button at the end. Using KLM-GOMS, determine the minimum time needed to perform this exact task in seconds. Note K = 0.2s, P = 1.1s, H = 0.4s and M=1.35s. **There is no partial credit for this question. Show all intermediate steps.** (10 marks)



Main string: PKPKPK PKK PKHKKK HPK

Rule 0: MPMKMPMKMPMK MPMKMK MPMKHMKMKMK HMPMK

Rule 1: MPK MPK MPK MPKMK MPK HMKMKMK HMPK

Rule 2: MPKMPKMPK MPKMK MPK HMKKK HMPK

OR

MPKMPKMPK MPKK MPK HMKKK HMPK

Sum 20.2 Seconds or 18.85 seconds (both answers accepted)

Q7. Multiple Choice Questions: Encircle only ONE of the given options in the following questions. (15 marks)

"The app designed for two different user categories will not be the same." This statement is:

a) Always true
b) Sometimes true, but not always
c) Always false
d) Can't be determined

Which of the following statement is true:

a) Both preference and satisfaction goals are quantifiable
b) Neither preference nor satisfaction goals are quantifiable
c) Preference goals are quantifiable, but satisfaction goals are not
d) Satisfaction goals are quantifiable, but preference goals are not

"An educated user has to enter his name in a text box. He puts in 5 in the text box erroneously. The system gives an error to enter only alphabets." How could you improve the design of this interface:

a) Giving him choices of names to choose from
b) Restrict entering numbers in the name text field.
c) Giving him a default name in the text field before he starts entering
d) Allow him to give input in the name field using voice

The eye has _____ for low light vision, _____ for color vision and _____ for pattern/movement.

a) cones; rods; ganglion cells
b) rods; ganglion cells; cones
c) rods; cones; ganglion cells
d) ganglion cells; cones; rods

Which of the following sensory memory is used to store stimuli received through the skin:

a) iconic memory
b) echoic memory
c) haptic memory
d) feel memory

Over a short period of time, we find it easier to remember the string of numbers “404 894 6743″ because:

a) Numbers are easier to remember than arbitrary characters.
b) The grouping of the numbers is significant
c) Ten numbers are not that many to have to remember from working memory.
d) None of these

_____ involves watching and listening to users.

a) Observation
b) Evaluation
c) Qualitative research
d) Interaction

Frequent users of an interface require:

a) step-by-step (prompted)
b) short cuts
c) menu paths
d) Both a and c

A pair of scissors icon cannot be replaced with knife because it would violate.

a) Attention
b) Perception
c) Consistency
d) Affordance

_____ is the process by which we use the knowledge we have to draw conclusions or infer something new about the domain of interest.

a) Rehearsing
b) Reasoning
c) Problem Solving
d) Skill acquisition

When we input text to the computer via on-screen keyboard on a monitor, the input device is:

a) the keyboard
b) the mouse
c) the hand
d) the screen

Text to speech synthesizer would take which one of the following as input:

a) A handwritten image
b) A picture of text
c) A Word document
d) An A4 sized printout

Optical character recognition converts:

a) texts into speech
b) images into text
c) virtual reality into text
d) documents into text

The standard sound of signing into Windows is an example of:

a) auditory icons
b) earcons
c) metacons
d) wincons

Which of the following statement is correct:

a) Work reengineering is done before making the conceptual model.
b) Work reengineering is done after making the conceptual model.
c) The usability engineering lifecycle does not allow work reengineering
d) None of the above

Q8. Maria is a fresh freelancer, who has got a project to design the website interface for a university. Being an HCI student, guide Maria on how to take up the designing project, stepwise. Make a 13 point plan, **in order of execution**. Your approach should encompass all important aspects of usability and designing. Hint: Your hands-on experience of your HCI course project will help you in making her plan. (13 marks)

1.

2.

3.

4.

5.

6.

7.

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9.

10.

11.

12.

13.