



# UNIVERSITY OF GHANA

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**B.SC, FIRST SEMESTER UNIVERSITY EXAMINATIONS: 2017/2018**

**DEPARTMENT OF COMPUTER SCIENCE**

**CSIT303: HUMAN COMPUTER INTERACTION (HCI) (3 CREDITS)**

## INSTRUCTION:

*Answer all questions in section A and any other four (4) in section B*

## TIME ALLOWED:

**TWO AND HALF (2½)**

**HOURS**

### **SECTION A (ANSWER ALL QUESTIONS IN THIS SECTION)**

1. The persona is not an actual user of the product, but is indirectly affected by it and its use refers to \_\_\_\_\_ persona

- a. Primary
- b. Secondary
- c. Served
- d. Negative

1. \_\_\_\_\_ is a powerful, multipurpose design tool that helps overcome several problems that currently plague the development of digital products.

- a. Scenario

- b. Persona
- c. Prototype

1. The goals of HCI are:

- a. Usability and User Experience
- b. Learn ability and Comfort
- c. Tasks and Goals

1. WYSIWYG stands for \_\_\_\_\_.

- a. Where you see is where you get
- b. What you see is what you get
- c. When you see it when you get

5. Which of the following device cannot be useful for a visually impaired person?

- a. a typical keyboard
- b. a typical monitor
- c. a typical speaker
- d. a typical processor

6. Which of the following is not true?

- a. Utility refers to the functionality of a system
- b. Usability is concerned with adding complexity to the system
- c. Usability is concerned with making systems easy to use
- d. Poorly designed computer system can be extremely annoying to users

7. Which of the given statements correctly defines effectiveness in terms of one of the usability goals?

- a. It is a very general goal and refers to how good a system at doing what it is supposed to do.
- b. It refers to the way a system supports users in carrying out their tasks.
- c. It involves protecting the users from dangerous conditions
- d. It involves protecting the users from undesired situations

8. HCI deals with:

- a. Design of interactive system only
- b. Evaluation of interactive system only
- c. Implementation of interactive system only
- d. All of the given choices

9. Human beings interact with the outside world, using their ...

a. input channels

- output channels

- sense of sight

- All of the given

10. \_\_\_\_\_ refers to the relationship between controls and their effects in the world.

a. Visibility

b. Affordance

c. Mapping

11. \_\_\_\_\_ is a very general goal of Usability and refers to how good a system is at doing what it is supposed to do.

a. Effectiveness

b. Efficiency

c. Utility

12. \_\_\_\_\_ is what goes on in our heads when we carry out our everyday activities?

- a. Cognition
- b. Learnability
- c. Memorability

13. Using icons on the desktop to represent operations is a type of \_\_\_\_\_ constraint.

- a. Physical
  - Logical
  - Cultural
- None of these

14. A \_\_\_\_\_ is usually a collection of icons that are reminiscent of the purpose of the various modes.

- a. Button
- b. Pointer
- c. Palette
- d. Title bar

15. Which are the most significant senses for the average person when it comes to interacting with a computer?

- a. Sight and hearing
- b. Hearing, touch and smell
- c. Hearing and touch
- d. Sight, hearing and touch

16. \_\_\_\_\_ refers to the way a system supports users in carrying out their tasks.

- a. Efficiency
- b. Effectiveness
- c. Utility

17. Roughly, \_\_\_\_\_ percent of the male population has some degree of colour blindness.

- a. 10
- b. 20
- c. 30
- d. 40

18. \_\_\_\_\_ is the least technical way of collecting data, but it can be difficult and tiring to write and observe at the same time.

- a. Audio recording
- b. Taking notes
- c. Observation
- d. Video

19. Evaluations done during design to check that product continues to meet users' needs are known as \_\_\_\_\_ evaluation.

- a. Formative
- b. Summative
- c. Relative
- d. None of the given

20. \_\_\_\_\_ minimizes errors.

- a. Affordance
- b. Visibility
- c. Constraints
- d. None of these

***SECTION B (ANSWER ONLY FOUR(4) QUESTIONS FROM THIS SECTION)***

A. What is a prototype in HCI? Explain why prototyping is an important activity of the interactive system design life cycle and briefly describe the different prototyping techniques used in design life cycle and identify which stages of the design life cycle these are used and why?

[10 Marks]

A. Describe three populations of users with special needs. For each of these populations, suggest three ways current interfaces could be improved to better serve them.

[5 Marks]

A. Give three (3) examples of interactive designs used currently and explain how different they are from previous technologies.

[3 Marks]

A. What are the four(4) basic activities involved in the process of interactive design.

[2 Marks]



A. What is envisionment? Give reasons why envisionment in system design is relevant.

[5 Marks]

A. State and briefly explain five (5) usability goals.

[5 Marks]

A. There are many different kinds of vending machines in the world. Each offering a range of goods, requiring the user to part with some money. Figure 1.0 shows photos of two different vending machines, one that provides soft drinks and the other a range of snacks. Both use an instructional mode of interaction. However, the way they do so is quite different.

Describe the interactions required to obtain a soda from the first machine and a bar of chocolate from the second. Determine which of the vending machines is associated with complex user interactions and state the at least two problems associated with this user interaction?



a.

(b)

Figure 1.0: Vending Machines

[10 Marks]

A. Papaye restaurant Osu branch has employed you to design an application that will make it possible for customers to place orders on phone and on the internet. With your knowledge in Human Computer Interaction, describe two(2) methods you are most likely to use in your requirement gathering and explain why you think those methods are best.

[8 Marks]

A. **Click & Print Certificates** is a useful little shareware program for printing a variety of certificates and awards. the program offers a "style buddy" to help the user select which of a number of certificates to print. Discuss the usability issues associated with the interface. Provide fully labeled sketch indicating all the user interface design controls (widgets) that can that can address the usability issues identified.



[6 Marks]

A. You have been asked to design an Automatic Teller Machine that is universally accessible. Explain the design principles that can be used to guide your design.

[6 Marks]

A. a) Briefly discuss the following Data Gathering Methods

i) Interview

ii) Questionnaire

iii) Focus Groups

[6 Marks]

A. State and explain all the types of scenarios.

[8 Marks]

A. Define design as used in HCI. State and explain the two types of designs.

[4 Marks]

A. Define functional and non-functional requirements.

[2 Marks]

A. The interface of a lift has physical buttons that allow users to select a

specific floor, open the door, close the door, or ring the alarm.

Consider a complete replacement of the physical button panel with a LCD touchscreen panel.

I. Give two advantages of a touchscreen panel in the lift?

[2 marks]

I. What would be two disadvantages of a complete replacement?

[2 Marks]

A. What is the difference between recall and recognition? Discuss how interactive designers make use of this distinction.

[6 Marks]

A. State any three expert evaluation methods. For each of them, provide a brief description and how it can be used for software interface evaluation.

[6 Marks]

A. Consider the two design principles, “visibility” and “constraints”. Explain each principle and describe an example of it being used in a good design.

[4 marks]

A. Write short notes on the following:

i) Metaphor

ii) Mental model

iii) Stories

[6 Marks]

A. State and explain the various ways we may interact with an interactive system, giving examples in each case.

[5 Marks]

A. What is human-centered design approach? Give four reasons why it is important to employ this approach in interactive product design life cycle.

[5 Marks]

A. Explain why the creation of user scenarios is important in the design process.

[2 Marks]

A. Explain the differences between ethnographic observation and normal observation?

[2 Marks]