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UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
SEMESTER II
SESSION 2022/2023

COURSE NAME : HUMAN COMPUTER INTERACTION
COURSE CODE : DAT 10102
PROGRAMME CODE : DAT
EXAMINATION DATE : JULY / AUGUST 2023
DURATION : 2 HOURS
INSTRUCTIONS : 1. ANSWER ALL QUESTIONS
2. THIS FINAL EXAMINATION IS
CONDUCTED VIA **CLOSED BOOK**.
3. STUDENTS ARE **PROHIBITED** TO
CONSULT THEIR OWN MATERIAL OR
ANY EXTERNAL RESOURCES DURING
THE EXAMINATION CONDUCTED VIA
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THIS QUESTION PAPER CONSISTS OF **FORTEEN (14)** PAGES

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SECTION A (10 MARKS)

- Q1 The following list provides a definition for each HCI component, **EXCEPT**
- A human
 - B discipline
 - C interaction
 - D computer
- Q2 There are **THREE (3)** waves in HCI's history, **EXCEPT**
- A Wave 1: Desktops & mental models (1980s — 1990s)
 - B Wave 2: Collaboration & communication (1990s — early 2000s)
 - C Wave 3: Self-expression, social change (mid 2000s — 2010s)
 - D Wave 4: Millennium era (end of 2010s — 2050s)
- Q3 HCI researches human-machine communication. It is supported by information on both the _____ and _____.
- A Human and computer side
 - B Machine and human side
 - C Interaction and human side
 - D Interaction and machine side
- Q4 _____ is a source of supporting information on the human side for HCI research of human and machine communication.
- A programming language
 - B computer graphics
 - C social science
 - D operating systems
- Q5 Users and computers communicate at the user's interface, which consists of both - _____ and _____.
- A desktop platforms and application platforms
 - B hardware and software
 - C interface and systems
 - D application and systems
- Q6 One of the main concepts in HCI is usability. Making systems simple to _____.
- A Understand the factors that determine how people use technology
 - B Develop tools and techniques to enables building suitable systems
 - C Easy to learn, remember and safe to use
 - D Put people first
- Q7 HCI in designing interface aims to _____ and _____.
- A produce good and interactive systems
 - B produce beautiful and usable systems
 - C produce usable and safe systems
 - D produce usable and interactive systems

Q8

HCI concentrated mostly on developing easy-to-learn and easy-to-use technologies during this time. Although desktop computers were initially not particularly useful tools, personal computing had limitless potential. HCI now focuses on how the majority of us interact with computers. The desktop folder metaphor was a little aspect of a wider effort to apply a mental model to computer usage.

The description above best described the waves from

- A Wave 1: Desktops & mental models (1980s — 1990s)
- B Wave 2: Collaboration & communication (1990s — early 2000s)
- C Wave 3: Self-expression, social change (mid 2000s — 2010s)
- D Wave 4: Millennium era (end of 2010s — 2050s)

Q9 During the rise of email, people began to communicate with each other not only through computers, but also with the help of computers. Which wave **MOST** suitable for this era?

- A Wave 1: Desktops & mental models (1980s — 1990s)
- B Wave 2: Collaboration & communication (1990s — early 2000s)
- C Wave 3: Self-expression, social change (mid 2000s — 2010s)
- D Wave 4: Millennium era (end of 2010s — 2050s)

Q10 HCI takes into account **FOUR (4)** key features of users expectations and need, physical abilities and limitations they may have, perceptual systems work and _____ when they use computers.

- A put people first
- B user interaction
- C find attractive and enjoyable
- D achieve efficient and safe interaction

SECTION B (10 MARKS)

- Q11** System functionality is comprised of hardware, software, and applications in HCI aspects. True/False
- Q12** One of the disciplines in HCI, in terms of information processing, is understanding the capabilities and limits of machines. True/False
- Q13** Sociologists possess insight about how individuals interact and work together. True/False
- Q14** Increasing production, quality, and innovation are all part of the user interface, which also includes minimizing expenses and failures. True/False
- Q15** The ergonomics of the interactive system's physical components should be taken into account by product designers. True/False
- Q16** Some characteristics of the user factor include cognitive processes and capacities with motivation, enjoyment, satisfaction, and personal experience. True/False
- Q17** Noise, warmth, lighting, ventilation, and health and safety are a few environmental factors that are considered in HCI. True/False
- Q18** Psychologists describe how humans take in information with their eyes, hearing, and attention. True/False
- Q19** In an effort to include users in the design process, a number of systems approaches have been created by computer scientists. True/False
- Q20** The cost, timelines, budget, employees, equipment, and buildings make up the organization element. True/False

SECTION C (40 MARKS)

- Q21** The development of a new system or application is impacted by the HCI design methodologies.
The **MOST** design strategy appropriate for interface design relates to
- A System-centered design
 - B Task-centered system design
 - C Goal-centered design
 - D User-centered design
- Q22** Select the **BEST** design strategy for the situation described below.
- (a) THiJARI apps
 - A System-centered design
 - B Task-centered system design
 - C Goal-centered design
 - D User-centered design
 - (b) CIMB ATM machine
 - A System-centered design
 - B Task-centered system design
 - C Goal-centered design
 - D User-centered design
 - (c) Costa coffee vending machine
 - A System-centered design
 - B Task-centered system design
 - C Goal-centered design
 - D User-centered design
 - (d) Microsoft PowerPoint interface
 - A System-centered design
 - B Task-centered system design
 - C Goal-centered design
 - D User-centered design
 - (e) SMAP UTHM
 - A System-centered design
 - B Task-centered system design
 - C Goal-centered design
 - D User-centered design
 - (f) Outlook
 - A System-centered design
 - B Task-centered system design
 - C Goal-centered design
 - D User-centered design

- Q23** Which of the following **FOUR (4)** task-centered process stages is in the **CORRECT** order?
- A Phase 1 – design, Phase 2 –walkthrough evaluation, Phase 3 – identification and Phase 4 – requirement
 - B Phase 1 –walkthrough evaluation, Phase 2 – design, Phase 3 – requirement, Phase 4 – identification
 - C Phase 1 – identification, Phase 2 – requirement, Phase 3 – design and Phase 4 – walkthrough evaluation
 - D Phase 1 – requirement, Phase 2 – identification, Phase 3 – walkthrough evaluation and Phase 4 – design
- Q24** Which of the following **FOUR (4)** Walkthrough evaluation process stages is in the **CORRECT** order?
- A Select the action in the task > select the task > user expectation knowledge and training to system > presentation of action is possible > go to next task
 - B Select the task > select the action in the task > presentation of action is possible > user expectation knowledge and training to system > go to next task
 - C User expectation knowledge and training to system > presentation of action is possible > Select the action in the task > select the task > go to next task
 - D Presentation of action is possible > User expectation knowledge and training to system > Select the task > select the action in the task > go to next task
- Q25** Which statement about the differences between empirical evaluation and heuristic evaluation is **CORRECT**?
- A Empirical evaluation - design judgment which users not involved, Heuristic evaluation – involves users by evaluation of usability testing and field studies
 - B Empirical evaluation - one of most frequently referred lists of rules is the Jacob Nielsen’s ten keys, Heuristic evaluation - Evaluation occur at each stage of design and throughout the system life.
 - C Empirical evaluation - an interface is considered good if it follows standard design principles and meta-principles, Heuristics evaluation - rules developed over time by trial and error that have shown to work
 - D Empirical evaluation – rules developed over time by trial and error that have shown to work, Heuristics evaluation - an interface is considered good if it follows standard design principles and meta-principles
- Q26** During an evaluation, a variety of measures can be taken. From their backgrounds and categories in terms of demographics, each one indicates. Specify the appropriate measurement for the given application.
- (a) A timeline for FYP project
- A time
 - B counts
 - C ratings
 - D geometry

- (b) My Census 2020
A time
B counts
C ratings
D geometry
- (c) UPU online
A geometry
B user preference
C number of errors
D task completion time
- (d) M2U apps
A geometry
B user preference
C number of errors
D task completion time
- (e) TikTok apps
A time
B counts
C ratings
D geometry
- Q27** There are **FOUR (4)** different assessment paradigm techniques. Of the following, which one discusses Predictive Evaluation?
A end user included to the evaluation
B a demonstration to a product or service
C only experts can evaluate to the design interface
D achieve efficient and safe interaction to the design
- Q28** Which of the following assessment techniques establishes guidelines for the user who is being evaluated?
A 'Quick' and 'dirty' evaluation
B Usability testing
C Field studies
D Predictive Evaluation
- Q29** Before using this strategy, a scenario, an artifact, or a prototype for a product should be taken into consideration.
A 'Quick' and 'dirty' evaluation
B Usability testing
C Field studies
D Predictive Evaluation
- Q30** The following statement are **TRUE** about approaches and ethics, **EXCEPT**
A Predictive Evaluation did not include end user to the evaluation
B 'Quick' and 'dirty' evaluation gets a fast result and analysis
C Usability testing evaluate by the expert evaluators
D Test driving is an example of field studies

- Q31** Common types of activities that user likely to be engaged in when interacting with systems in conceptual model include below, **EXCEPT**
- A Modeling users' task performance
 - B Manipulating and navigating
 - C Exploring and browsing
 - D Instructing and conversing
- Q32** A conceptual model is a description of the suggested system using a collection of connected notions and ideas. The conceptual model has **TWO (2)** main categories, which are
- A Based on actual and based on virtual
 - B Based on activities and based on objects
 - C Based on task and based on situation
 - D Based on fact and based on fiction
- Q33** Which conceptual model do you consider to be **MOST** appropriate for the following application?
- (a) A 3D video games, which used a steering wheel and tactile, audio and visual feedback
 - A Based on actual
 - B Based on virtual
 - C Based on activities
 - D Based on objects
 - (b) the Windows environment
 - A Based on task
 - B Based on fact
 - C Based on activities
 - D Based on objects
 - (c) A web browser
 - A Based on fact
 - B Based on activities
 - C Based on objects
 - D Based on task
 - (d) A simulation pilots
 - A Based on task
 - B Based on fact
 - C Based on activities
 - D Based on objects
 - (e) WordPad
 - A Based on task
 - B Based on fact
 - C Based on activities
 - D Based on objects

- Q34** There are numerous different assessment methods, and they may be grouped in different ways. Almost all of the design work from pre-production, production, and post-production is implemented using each of the methodologies.
- (a) The following evaluation techniques is used to evaluate concept, **EXCEPT**
- A Observing users
 - B Asking users their opinions
 - C Asking experts their opinions
 - D Predict users' performance/user testing
- (b) Which **TWO (2)** techniques from Q34(a) use for pre-production process activities?
- A Observing users & asking users their opinions
 - B Asking users their opinions & asking experts their opinions
 - C Asking experts their opinions & testing users' performance/user testing
 - D Predict users' performance/user testing & modelling users' task performance
- (c) Which **TWO (2)** techniques from Q34(a) during production process activities?
- A Observing users & asking users their opinions
 - B Asking users their opinions & asking experts their opinions
 - C Asking experts their opinions & testing users' performance/user testing
 - D Predict users' performance/user testing & modelling users' task performance
- (d) Which **TWO (2)** techniques from Q34(a) use for post-production process activities?
- A Observing users & asking users their opinions
 - B Asking users their opinions & asking experts their opinions
 - C Asking experts their opinions & testing users' performance/user testing
 - D Testing users' performance/user testing & modelling users' task performance
- Q35** The fact that no interface implementation is likely to be adequate for all various users in terms of the accessibility of interactive applications and services by all user groups, including those with impairments, is a significant finding.
- (a) The sentence above relates to
- A Process-oriented standard
 - B Product-oriented standard
 - C Design principles
 - D Design heuristic
- (b) There are **THREE (3)** additional key requirements from Q35(a), **EXCEPT**
- A encapsulation of design alternatives into abstractions
 - B rationalisation of the resulting design space
 - C rationalisation of the design alternatives
 - D enumeration of design alternatives
- (c) **THREE (3)** requirement needs in enumerate phase, **INCLUDE**
- A Guidelines
 - B Task analysis
 - C Design templates
 - D Engineering models

- Q36** The following is the requirement for rationalize phase, **EXCEPT**
- A Guidelines
 - B task analysis
 - C Engineering models
 - D design space analysis
- Q37** Which of the following is the guidelines of HCI approach to system design?
- A examine the task to be done and consider the fit among the human, computer, and task.
 - B even better than good error messages are careful design which prevents a problem from occurring in the first place.
 - C minimize the user's memory load by making objects, actions, and options visible.
 - D provide information that can be easily searched and provides help in a set of concrete steps that can easily be followed
- Q38** An interface is regarded as effective if it enables the user to accomplish their objectives and complies with the design's usability standards. As a result, worldwide organisations have created a usability standard to assure that a vast community of designers will adhere to it. Decide each of the following standards into its appropriate category.
- (a) Guidance on using alphanumeric and graphical or symbolic codes, screen layout and design as well as the use of windows.
 - A ISO 9241-12: Presentation of information
 - B ISO 9241-13: User guidance
 - C ISO 9241-14: Menu dialogues
 - D ISO 9241-15: Command language dialogue
 - (b) Provides recommendations for the ergonomic design of menus used in user-computer dialogues.
 - A ISO 9241-12: Presentation of information
 - B ISO 9241-13: User guidance
 - D ISO 9241-14: Menu dialogues
 - D ISO 9241-15: Command language dialogue
 - (c) The recommendations cover form structure and output considerations, input considerations, and form navigation.
 - A ISO 9241-14: Menu dialogues
 - B ISO 9241-15: Command language dialogue
 - C ISO 9241-16: Direct manipulation dialogues
 - D ISO 9241-17: Form-filling dialogues
 - (d) This part provides recommendations for ergonomic design includes the manipulation of objects, and the design of metaphors, objects and attributes.
 - A ISO 9241-14: Menu dialogues
 - B ISO 9241-15: Command language dialogue
 - C ISO 9241-16: Direct manipulation dialogues
 - D ISO 9241-17: Form-filling dialogues

- (e) This part provides recommendations for the design and evaluation including Prompts, Feedback, Status, On-line Help and Error Management.
 - A ISO 9241-13: User guidance
 - B ISO 9241-14: Menu dialogues
 - C ISO 9241-15: Command language dialogue
 - D ISO 9241-16: Direct manipulation dialogues

SECTION D (30 MARKS)

Q44 Figure Q44 shows a website offering services across the world. Study the figure and clarify the **BEST** guideline solution of design principles to enhance the design interface of the website.

- (a) Cluttered interface
- (b) Lack of contrast
- (c) Bad consistency
- (d) Poor navigation and operation
- (e) The Information Architect
- (f) Not-responsive design
- (g) Clunky and sluggish
- (h) Lack of text hierarchy
- (i) Non feedback box/form
- (j) Some of the information didn't work/informative.

(10 marks)

Q45 You had been assigned as a user interface designer with performing a heuristic evaluation using Jacob Nielsen's **TEN (10)** heuristics. Provide **FOUR (4)** important user interfaces you might use each of the following to evaluate the interactive system that follows.

- (a) Nintendo Super Mario
- (b) Cisco Webex Meetings
- (c) Trivago apps
- (d) mySPR website
- (e) TNG eWallet apps

(20 marks)

Q46 Which of the following is the **MOST** appropriate user experience and usability goal for each of the following below. Identify **TWO (2)** of each following statement: -

- (a) a mobile device that enables young children to interact with one another and play cooperative games.
- (b) a video and computer conferencing system that enables students to study at home during pandemic Covid-19.
- (c) an Internet application that enables the general public to view their medical information through interactive TV.
- (d) an online community that supports those who have just experienced a loss.
- (e) an interactive application that allows users to exchange comments, movies, and photos with people all over the world.

(10 marks)

-END OF QUESTIONS -

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Figure Q44

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