UTHM
Universiti Tun Hussein Onn Malaysia

UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
SEMESTER II
SESSION 2021/2022

COURSE NAME	:	HUMAN COMPUTER INTERACTION
COURSE CODE	:	DAT 10102
PROGRAMMECODE	:	DAT
EXAMINATION DATE	:	JULY 2022
DURATION	:	2 HOURS
INSTRUCTION	1.	ANSWER ALL QUESTIONS
	2.	THIS FINAL EXAMINATION IS AN **ONLINE** ASSESSMENT AND CONDUCTED VIA **CLOSED BOOK.**
	3.	STUDENTS ARE **PROHIBITED** TO CONSULT THEIR OWN MATERIAL OR ANY EXTERNAL RESOURCES DURING THE EXAMINATION CONDUCTED VIA CLOSED BOOK

THIS QUESTION PAPER CONSISTS OF **SIXTEEN (16)** PAGES

SECTION A (10 MARKS)

Q1 The definition of each component in human computer interaction (HCI) are as follows, **EXCEPT**
A human
B discipline
C interaction
D computer

Q2 The history of HCI comprises of **THREE (3)** waves, **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 studies a human and a machine in communication. It draws from supporting knowledge of both of the _____ and _____.
A Human and computer side
B Machine and human side
C Interaction and human side
D Interaction and machine side

Q4 Supporting knowledge on the human side in terms of HCI studies of human and a machine communication consist of _____.
A programming language
B computer graphics
C social science
D operating systems

Q5 Interaction between users and computers occurs at the user's interface which includes both _____ and _____.
A desktop platforms and application platforms
B hardware and software
C interface and systems
D application and systems

Q6 Usability is one of the key concepts in HCI. It is concerned with making systems _____.
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 The goal of HCI are 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 focused primarily on building systems that were easy-to-learn and easy-to-use during this time. The possibilities of personal computing were endless, but desktop computers weren't very viable tools at first. At this stage, HCI deals with how most of us interact with computer systems. The desktop folder metaphor was part of a larger 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　Email is an example of tools and organizations during this time. 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 consider **FOUR (4)** main aspects of _____, physical abilities and limitations they may have, perceptual systems work and find attractive and enjoyable when they use computers.

A　　put people first
B　　user interaction
C　　users expect and need
D　　achieve efficient and safe interaction

SECTION B (10 MARKS)

Q11   Hardware, software and application are a part of system functionality in HCI factors.

True/False

(1 mark)

Q12   Knowledge about machine capabilities and limitations is one of a discipline in HCI, in terms of information processing.

True/False

(1 mark)

Q13   Sociologist is a knowledge about how people work and related together.

True/False

(1 mark)

Q14   User interface consist of increasing output, quality and innovation, also decrease costs and errors.

True/False

(1 mark)

Q15   Product designer should consider ergonomic aspect of the physical elements of the interactive system.

True/False

(1 mark)

Q16   Cognitive processes and capabilities with motivation, enjoyment, satisfaction and personally experience are some features of user factor.

True/False

(1 mark)

Q17   Some environmental factor in HCI includes noise, heating, lighting, ventilation and also health and safety.

True/False

(1 mark)

Q18   Psychologists explain about how people perceive information through eyes, ears and focus on their attention.

True/False

(1 mark)

Q19   There are various systems methodologies that have been developed which attempt to involve users in the design process from computer scientist.

True/False

(1 mark)

Q20   Organization factor contains of cost, timescales, budgets, staff, equipment and buildings

True/False

(1 mark)

SECTION C (60 MARKS)

Q21   The design approaches of HCI gives an impact to develop a new system or application. The **MOST** design approach suit for interface design purpose refers to
A   System-centered design
B   Task-centered system design
C   Goal-centered design
D   User-centered design

Q22   Choose the **BEST** design approach according to the situation given below.
(a)   myASNB apps
  A   System-centered design
  B   Task-centered system design
  C   Goal-centered design
  D   User-centered design

(b)   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 Word 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)   Gmail
  A   System-centered design
  B   Task-centered system design
  C   Goal-centered design
  D   User-centered design

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Q23 Which of the following is the **CORRECT** order for **FOUR (4)** phases Task-centered process?

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 is the **CORRECT** order for **FOUR (4)** phases in Walkthrough evaluation process?

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 of the following is the **CORRECT** to describe the differences of Empirical Evaluation and Heuristics Evaluation?

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 There are several types of measurements that can be made during evaluation. Each of them implies from the demographic background and categories. Identify the suitable measurement for the following 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)** approaches of evaluation paradigms. Which of the following talks about 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 evaluation approaches that set rules for the targeted user?
   A   'Quick' and 'dirty' evaluation
   B   Usability testing
   C   Field studies
   D   Predictive Evaluation

Q29 A scenario, an artifact or prototype to a product should be consider before use this approach.
   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

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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 Conceptual model is a description of the proposed system in terms of a set of integrated ideas and concepts. **TWO (2)** main categories for conceptual model 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 What conceptual model do you think is **MOST** suited to 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 many evaluation techniques and they can be categorized in various ways. Each of the techniques implement almost all of the design work from pre-production, production to post-production.

(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   One important observation related to the accessibility of interactive applications and services by different user groups, including people with disabilities, is that no single interface implementation is likely to suffice for all different users.

(a)   The above statement refers 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

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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 considering good if it allows the user to achieve his or her goals and satisfies the usability requirements of the design. Thus, a standard of usability has been developed by international bodies to ensure compliance by a large community of designer's standards require. Classify each of the standard below.

        (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 forth 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

Q39   Which of the following is the **MOST** suitable usability goals and user experience goal for a mobile device that allows young children to communicate with each other and play collaborative games.
    I.   usability goals: have good utility, user experience goal: helpful
    II.   usability goals: effective and efficient to use, user experience goal: motivating
    III.   usability goals: easy to remember how to use, user experience goal: helpful, enjoyable
    IV.   usability goals: easy to learn, user experience goal: entertaining, fun
    A   I and II
    B   II and III
    C   III and IV
    D   I and IV

Q40   Which of the following is the **MOST** suitable usability goals and user experience goal for a video and computer conferencing system that allows students to learn at home during pandemic Covid-19.
    I.   usability goals: easy to remember how to use, user experience goal: emotionally fulfilling and motivating
    II.   usability goals: effective and efficient to use, user experience goal: satisfying
    III.   usability goals: have good utility, user experience goal: helpful
    IV.   usability goals: easy to remember how to use, user experience goal: entertaining, enjoyable and fun
    A   I and II
    B   II and III
    C   III and IV
    D   I and IV

Q41   Which of the following is the **MOST** suitable usability goals and user experience goal for an Internet application that allows the general public to access their medical records via interactive TV.
    I.   usability goals: effective and efficient to use, user experience goal: motivating
    II.   usability goals: have good utility, user experience goal: helpful, satisfying
    III.   usability goals: easy to learn, user experience goal: entertaining, fun
    IV.   usability goals: easy to remember how to use, user experience goal: emotionally fulfilling and motivating
    A   I and II
    B   II and III
    C   III and IV
    D   I and IV

Q42   Which of the following is the **MOST** suitable usability goals and user experience goal for an online community that provides support for people who have recently been bereaved.
   I.   usability goals: effective and efficient to use, user experience goal: motivating
   II.   usability goals: easy to remember how to use, user experience goal: emotionally fulfilling and motivating
   III.   usability goals: have good utility, user experience goal: helpful
   IV.   usability goals: easy to learn, user experience goal: entertaining, enjoyable and fun
   A   I and II
   B   II and III
   C   III and IV
   D   I and IV

Q43   Which of the following is the **MOST** suitable usability goals and user experience goal for an interactive application that can share videos, pictures and comments with all peoples around the world.
   I.   usability goals: have good utility, user experience goal: helpful
   II.   usability goals: safe to use, user experience goal: entertaining, enjoyable and fun
   III.   usability goals: effective and efficient to use, user experience goal: aesthetically pleasing
   IV.   usability goals: easy to remember to use, user experience goal: emotionally fulfilling and motivating
   A   I and II
   B   II and III
   C   III and IV
   D   I and IV

Q44   Figure **Q44(a)** shows a website offering services across the world. Study the figure and choose the **BEST** solution to enhance the design interface of the website.

   (a) Cluttered interface
      A   Know the targeted audience
      B   Add help and documentation
      C   Creativity in combining colors
      D   Aesthetic and minimalist design

   (b) Lack of contrast
      A   Know the targeted audience
      B   Add help and documentation
      C   Creativity in combining colors
      D   Aesthetic and minimalist design

   (c) Bad consistency
      A   Add help and documentation
      B   Match between system and the real world
      C   Recognition rather than recall to the icon
      D   Standard and consistency to the design style

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(d) Poor navigation and operation
- A   Add help and documentation
- B   Match between system and the real world
- C   Recognition rather than recall to the icon
- D   Standard and consistency to the design style

(e) The Information Architect
- A   Match between system and the real world
- B   Visible to the system status and feedback
- C   Recognition rather than recall to the icon
- D   A well-structured design to the interface

(f) Not-responsive design
- A   Match between system and the real world
- B   Visible to the system status and feedback
- C   Recognition rather than recall to the icon
- D   A well-structured design to the interface

(g) Clunky and sluggish
- A   Match between system and the real world
- B   Visible to the system status and feedback
- C   Recognition rather than recall to the icon
- D   A well-structured design to the interface

(h) Lack of text hierarchy
- A   Add help and documentation
- B   Match between system and the real world
- C   Recognition rather than recall to the icon
- D   Standard and consistency to the design style

Q45   As a user interface designer, you had given a task to perform Heuristic evaluation based on Jacob Nielsen's ten Heuristics. Clarify each of the key user interface that you can use during the evaluation of the following interactive system.

(a) Nintendo Super Mario
- I.   Match between system and the real world
- II.   Flexibility and efficiency of use
- III.   Recognition rather than recall
- IV.   User control and freedom
- A   I, II and III
- B   II, III and IV
- C   I, III and IV
- D   I, II, III and IV

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(b) Google Drive
  I.   Aesthetic and minimalist design
  II.   Flexibility and efficiency of use
  III.   Consistency and standards
  IV.   Visibility of system status
  A   I, II and III
  B   II, III and IV
  C   I, III and IV
  D   I, II, III and IV

(c) Cisco Webex Meetings
  I.   Manage errors
  II.   Help and documentation
  III.   Aesthetic and minimalist design
  IV.   Match between system and the real world
  A   I, II and III
  B   II, III and IV
  C   I, III and IV
  D   I, II, III and IV

(d) Trivago apps
  I.   Visibility of system status
  II.   Recognition rather than recall
  III.   Flexibility and efficiency of use
  IV.   Match between system and the real world
  A   I, II and III
  B   II, III and IV
  C   I, III and IV
  D   I, II, III and IV

(e) mySPR website
  I.   Manage errors
  II.   Help and documentation
  III.   Aesthetic and minimalist design
  IV.   Flexibility and efficiency of use
  A   I, II and III
  B   II, III and IV
  C   I, III and IV
  D   I, II and IV

(f)   TNG eWallet apps
  I.   Help and documentation
  II.   Consistency and standards
  III.   Recognition rather than recall
  IV.   Aesthetic and minimalist design
  A   I, II and III
  B   II, III and IV
  C   I, III and IV
  D   I, II, III and IV

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(g) MySejahtera apps

    V.   Help and documentation
    VI.   Consistency and standards
    VII.   Recognition rather than recall
    VIII.   Aesthetic and minimalist design

    A   I, II and III
    B   II, III and IV
    C   I, III and IV
    D   I, II, III and IV

-END OF QUESTIONS –

FINAL EXAMINATION

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Figure Q44(a)