FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA

SCHOOL OF INFORMATION AND COMMUNICATION TECHNOLOGY

DEPARTMENT OF INFORMATION AND MEDIA TECHNOLOGY

FIRST SEMESTER 2018/2019 EXAMINATION

MARKING GUIDE FOR EVALUATION OF FINAL EXAMINATION

COURSE CODE: IMT 413

COURSE TITLE: Human-Computer Interaction

COURSE LECTURER: Dr. H. O. Aliyu

NUMBER OF QUESTIONS: 5

DETAILS:

- The examination is made up of **five** (5) essay questions
- Question 1 carries **30 marks** while each of questions 2-5 carries **15 marks.**
- Question ONE is compulsory for all candidates.
- Every candidate is expected to answer any other two from questions 2-5.

Question 1:

a. **Award ½ mark for each of the bold items mentioned in i-vi below and additional ½ mark for correct description**   **(6 marks max.)**

   i.   **Safety**: to ensure the safety/security of users and application data
   ii. **Utility**: to ensure the system provides all services that may be required by the intending users.
   iii. **Effectiveness**: to guarantee that users are able to accomplish their tasks using the system with little help
   iv. **Efficiency**: to ensure users achieve their goals of using the system in good time
   v.   **Usability**: to facilitate user's learning and use of the system
   vi. **Appeal**: to ensure users get good first impression about the system

b. **Award ½ mark for each of the bold items mentioned in i-xiii below and additional ½ mark for correct description**   **(8 marks max.)**

   i.   **Needs analysis**: to define and analyze the nature and purpose of the system. This includes information about the type of system (e.g., website, video game, spreadsheet), the people it will serve and the benefits it will provide.
   ii.   **User and task analysis**: user analysis involves the consideration of the general characteristics (e.g., age, education, and experience with computers) of the intended class of users of the system. Task analysis takes into consideration, the users' goals (what they want to accomplish) and the tasks or activities carried out to achieve the goals.
   iii. **Functional analysis**: this entails the analysis of the functionalities to be provided by the system to enable the users accomplish their tasks and goals.
   iv.   **Requirements analysis**: this Describes the formal specifications required to implement the system. E.g., Data dictionaries, Entity-relationship diagrams, Object oriented modeling
   v.   **Setting usability specifications**: this involves answering the question "How good is the application?" and defining performance measures (such as number of tasks completed, number of errors, etc.) and preference measures (such as first impression, overall satisfaction)
   vi.   **Design**: involves defining the visual organization of contents to create clarity and consistency Layout and appealing appearance with good look and feel.
   vii. **Prototyping**: creating low- or high-fidelity prototypes of the design
   viii. **Evaluation**: evaluating the prototype to know the extent to which the final product will satisfy the intended users.

c. **Award 2 marks for any 3 of items i-iv**   **(6 marks max.)**

   i.   **A competitive advantage (in conversion rates):** Employing HCI techniques will ensure high usability of the website. A highly usable e-commerce website has the potential to boost the conversion rate; i.e., the fraction of the visitors of the website who will eventually place an order, thereby reducing the cost of making sales for the company.

ii.   **Reduced development and maintenance costs:** Employing HCI techniques will help us know about the prospective users of the website in advance and consider their preferences in the selection and implementations of features and functionalities, thereby reducing the costs of making changes later as the development life cycle.

iii. **Improved productivity:** It will boost the productivities of the internal users (e.g., sales, stores, etc.) of the website as well as help the external visitors (customers) get what they want quickly and place their orders easily.

iv.   **Reduced support costs:** By achieving the various goals of HCI (such as utility, usability, effectiveness and efficiency) on the website; it will reduce the cost of hiring support staff to handle the volume of customer complaints that may come as result of not having such features. It will also reduce the cost incurred by customers to ledge complaints and get supports.

d. Award ½ mark for each of i and ii below   (1 mark max.)
    i.   Sense of sight
    ii. Sense of hearing

e. Award 2 marks for any acceptable presentation   (2 marks max.)
    Recognition involves putting on the appropriate software interface, graphical items/contents/elements/icons which the user can recognize as the tool which can be used (e.g., by clicking) to issue certain commands while Recall involves the omission of such recognizable elements and expecting the user recall the needed commands from memory. For example, A computer with a GUI allows us to recognize commands on a menu, instead of remembering them as in DOS and UNIX User-centered development practices often encourage the use of recognition as much as possible.

f. Award 1 mark each for any two of items i-iii   (2 marks max.)
    i.   User's background/previous knowledge/experience
    ii. User's mental model of the interface and/or the icon
    iii. User's expectation

g. For each of the two websites, www.futminna.edu.ng and www.abu.edu.ng, award 1 mark for identifying the content organization used for the website and 1½ marks for stating how the organizational schemes and structures corroborate or dispute the candidate's perceived affordances of the content elements.   (5 marks max.)

Question 2:

a. Award 1 mark for a brief general discussion of globalization as applied to building websites.
    Award 2 marks each for any four (4) of items i-v below correct explanation; award only 1 mark if it is mentioned without explanation or with wrong explanation. Note that

explanation and/or examples given by candidates do not have to be exactly as given in this marking guide but should connote the same meaning and context as given here.

(9 marks max.)

Globalization in a website development is an embodiment of approaches to make a website usable to users across the globe irrespective of their cultural backgrounds and/or geographical locations. Globalization entails Internalization and localization. While localization requires the expression of certain contents of a website in conformity with the language and culture of a geographical location, internationalization requires the identification and expression of certain contents in universal/ culture-neutral/culture-independent formats that are well understood by users internationally. Examples of such culture-sensitive contents that may be considered in globalization of a website include:

i.   **Text:** avoiding the use of jargons or slangs that may be culture-specific and therefore, not understood by many users; such contents can be very difficult to translate for localization.

ii. **Numbers:** numeric values such as currency values/symbols and units of measured quantities are expressed differently across the globe. For example, while a monetary value is expressed as ₦2,500.45 in Nigerian currency, a similar value in the French currency is expressed as 2.500,45€; take note of the positions of the currency symbols, the comma and dot (period) in each case. On units of measured quantities, while the Americans use cubic system (inches/feet and pounds as units of distance and weight respectively), Britain and many other parts of the world use the metric system (meters for distance, grammes for weight and litres for volume).

iii. **Dates:** dates should be expressed in unambiguous formats; certain date formats can have different meanings to different people except with additional information. For example. For example, a date written as 6/10/2019 can mean tenth day of June to some people (especially the Americans) while people in many other parts of the world read it to mean the sixth day of October. A good internalization practice, in this case, is to put keys such as mm/dd/yyyy, mm/dd/yy, dd/mm/yy or dd/mm/yyyy wherever date is to be specified by the user without the date chooser to help the user understand the format expected by the system. Also, when the system displays date, the month component may be written in word for clarity. For example, instead of 6/10/2019, write 10 June, 2019 or June 10, 2019.

iv. **Time:** it is better to express time in 24 hour format than the AM/PM tradition. Since, the whole world is never in the same, it is necessary to clearly state the intended time zone to enable each user match the time to his/her local time. For example, a deadline of 22h00 GMT will mean 11:00 pm to someone in Nigeria on GMT + 1, 4:00 pm to someone in California on GMT-6, and even the early hours of the following day to someone in the far east like Japan or China.

v.   **Colors, Icons and Images**: these are culture-sensitive items need t be localized. For example, while white robes are commonly used by brides in many parts of the world, the color white signifies death in China and they wouldn't accept it in this context of wedding.

Some icons/images of certain gestures have different meanings to different people and they are even meaningless to some others. Hence, localization should be considered when using colors, icons and symbols.

b. **For each of item i-ii below, award 1½ marks for mentioning, 1½ marks for correctly explaining it.** (6 marks max.)

    i. **Use of human translators exclusively:** to get expert translator between the source and target languages to do the translation. Such experts should normally have good cultural backgrounds of the two languages.

    ii. **Use of semiautomatic translation with human oversight:** to start with machine translation and let an expert translator between the source and target languages clean it up since exclusive machine translation is not viable. This saves time.

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Question 3:

a. **Award full 5 marks for mentioning at any three (3) of points i-iv below. If candidate mentions less than three correct points, award 2 marks for each point correctly mentioned.** (5 marks max.)

i. It helps the business that owns the website gain competitive advantage through the impression it gives the visitors of the website and customer satisfaction

ii. It offers a value-added service for user; e.g., when the system identifies the user's location and gives him/her, by default, options that are most suitable for the location

iii. If the information that is most relevant to a particular user is placed near the top of the page, the user can find what he/she wants quickly

iv. A little information from user may permit narrowing range of choices

b. **For each of any two (2) of items i-iv mentioned, award 1 mark for mentioning, two marks for correct explanation and 2 marks for suitable scenario** (10 marks max.)

    i. Personalization based on history of user's activities on the website

    ii. Personalization based on user's preference data stored in retrieved cookies.

    iii. Personalization based on configuration settings/preferences provided via a given interface

    iv. Personalization based on the system's conversation with the user to add dynamics to the options presented to the user.

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Question 4:

a. Organizational schemes refers to the classification systems for organizing the contents of a software application into groups of logically related or similar items while Organizational structures are the mechanisms for defining the relationships among the groups   **(2 marks max.)**

b. **Award ½ mark each for any four (4) items mentioned from:**   **(2 marks max.)**
   i.   Topical organizational scheme
   ii.   Task-oriented organizational scheme
   iii.   Metaphor-driven organizational scheme
   iv.   Audience-specific organizational scheme
   v.   Alphabetical organizational scheme
   vi.   Chronological organizational scheme
   vii.   Geographical organizational scheme
   viii. Hybrid organizational scheme

c. i.   **Award marks for contents organization as follows: identified in the candidate's presentation (8 marks max.)**
   I.   Grouping related contents together with due respect to the mental model of the target users of the website   **(3 marks.)**
   II.   Giving appropriate names to the various groups of items   **(2 marks.)**
   III.   Creating the organizational structure of the contents based on how the various groups relate to one another.   **(3 marks.)**

   ii.   Award 3 marks for a sketch of a low-fidelity prototype of the home page derived from the top of the hierarchy of the organizational structure. Deduct ½ mark for failure to abide by every two of the five principles of the psychology of perception in context: proximity, similarity, symmetry, continuity and closure.

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Question 5:

a. **Award 1 mark for each of items i-v**
   i.   Proximity: we group by distance or location
   ii.   Similarity: we group by type
   iii.   Symmetry: we group by meaning
   iv.   Continuity: we group by flow of lines (alignment)
   v.   Closure: we perceive shapes that are not (completely) there

b. **Award 1 mark for each of any five of the items in i-vi.**   **(5 marks max.)**

i. **Think aloud**: by talking to the user while observing him/her doing the job. E.g., by asking questions about what the user is trying to do currently, whether or not he/she is having any difficulty getting some things done, how he/she would have preferred to do some things, etc.

ii. **Talk right after**: This technique is applicable when it is practically impossible or professionally not allowed to talk to the user during live events. For instance, when talking to them may cause distraction due to the nature of the job. In this case, you document your questions during observation and ask right after the job is completed.

iii. **Role playing:** This is applicable when the event to be observed happen infrequently and the interviewer may not have the opportunity to witness much live event. In this case, someone may need to play the role of a user (i.e., act the user) for the interviewer to observe. It may also be applicable when the event occurs frequently enough but talking is impossible like in "talk right after"; in this case, the interviewer will have the chance to interrupt with questions since the event is being acted.

iv. **Cueing recall with videotape:** This involves getting an official permission to record a live session of the user at work and ask questions during a playback of the record.

v. **Focus groups:** This involves getting a group of domain experts into a discussion on the required topic while the interviewer poses questions to them.

vi. **Mailed surveys/questionnaires:** This involves sending out questionnaires to selected user groups to answer some predetermined questions.

c. Award 1 mark for each of items i-iii   **(3 marks max.)**

i. Hierarchical

ii. Ad hoc (Hyperlinks)

iii. Database (Search engines)

d. In addition to giving the user a way to move about the hierarchy, breadcrumbs readily shows the user where he is on the site, how he got there and where he can go from there   **(2 marks)**