MANIPAL INSTITUTE OF TECHNOLOGY
MANIPAL
A Constituent Institution of Manipal University

VII SEMESTER B.TECH. (COMPUTER AND COMMUNICATION ENGINEERING /INFORMATION TECHNOLOGY)

END SEMESTER EXAMINATIONS, NOVEMBER 2017

SUBJECT: PROGRAM ELECTIVE – VI

HUMAN COMPUTER INTERACTION [ICT 4010]

REVISED CREDIT SYSTEM

(28/11/2017)

Time: 3 Hours   MAX. MARKS: 50

Instructions to Candidates:

❖ Answer ALL the questions.
❖ Missing data, if any, may be suitably assumed.

1A. A company has just designed a user interface that was an utter disaster. You have been brought in as an HCI consultant to explain what they did wrong. For each of the below quotes from the companies engineers, respond, mention what design principle(s) did they violate and why?

i) "We used it ourselves for over a week! We really loved it! I can't understand why we're getting all these nasty letters from our users!"

ii) "We wanted to save on screen real estate so we used 9 point text throughout the user interface. Well, now it turns out that all these Senior Citizens homes bought our software. They seem to be having trouble reading the text".

iii) "All of us felt that OK and Cancel buttons in the lower right hand corner were boring. So instead, if you click at the top of the dialog box, it closes as if you did "OK", and if you click at the bottom, it closes as if you clicked "Cancel". Labels just take up screen real estate."

iv) "The users seem to be getting stuck on one screen even though the information they need to answer questions was two screens back. Can't they just remember things?"   5

1B. How might you use the notion of reward in interface design to increase the positive emotional response of users? Mention an example of this.   3

1C. What is the significance of 7 (+ or - 2) for human-computer interaction?   2

2A. A group of universities has decided to collaborate to produce an information system to help potential students find appropriate courses. The system will be distributed free to   5

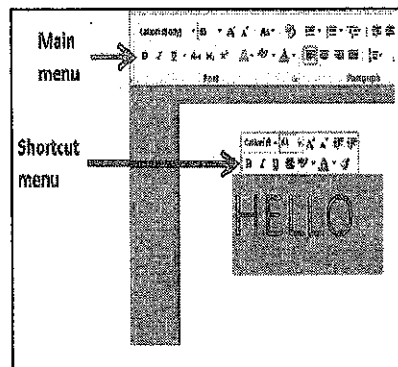ICT 4010   Page 1 of 3

schools and career counselling offices on CD-ROM and will provide information about course contents and requirements, university and local facilities, fees and admissions procedures.

i) Identify the main stakeholders for this system, categorize them and describe them and their activities, currently and with regard to the proposed system, using the CUSTOM framework.

ii) Produce a root definition, using CATWOE, of the system from the viewpoint of the university.

2B. Explain what is meant by the "gulf of execution" and the "gulf of evaluation." How can the idea of Direct Manipulation help designers bridge these two gulfs?   3

2C. What is throughput? How can it be used in the design of interactive systems?   2

3A. You want to evaluate how long would it take to type text and format it over MSWord. Your evaluation task is writing "Hello" then changing it to bold. The interface allows you to bold text using the shortcut menu, main menu or the (CTRL + B). Assume you already have your document opened. Note that a double click is represented as two consecutive clicks. Also note that combinations of keyboard keys are treated as one key stroke.

i) Analyze the task using KLM GOMS (Use the main menu method).

ii) Calculate the total time of the task using KLM GOMS (Use the main menu method).   5

3B. Explain following terms related to the human short term memory:
　　　i)　Digits span
　　　ii)　Chunking
　　　iii) Closure   3

3C. Consider the two design principles "visibility" and "constraints". For each of the two, explain the principle and describe an example of it being used in a good design.   2

4A. Choose an appropriate evaluation method for each of the following situations. In each case identify: i) the subjects, ii) the techniques used, and iii) the measurements that would be appropriate.

　　a) You are at an early stage in the design of a spreadsheet package and you wish to test what type of icons will be easiest to learn.   5

b) You have designed and implemented a new game system and want to evaluate it before release.

4B. Explain haptic interaction with the help of some examples.

3

4C. What features of a modern word processor break the metaphor of composition with pen (or typewriter) and paper?

2

5A. Name four expert review methods. For each of them, offer a brief description and how it could be applied to the interface described below:

A new start-up, DTUI Inc., is designing a system for hospitals that will allow receptionists to check in people at the hospital faster. They wish to develop an interface that meets both the receptionist and patient's needs.

5

5B. Mention the premise of speech-act theory. Using the conversation for action (CfA) method, mention the routes taken for the following two conversation snippets:
Snippet A:
Alison: Have you got the market survey on HCI techniques?
Brian: I've only got the summary figures.
Alison: That'll do.

Snippet B:
Alison: Have you got the market survey on HCI techniques?
Brian: Sorry, it's confidential.

3

5C. Discuss how the Fitts' law can be used to predict performance.

2