Total No. of Questions : 10]

SEAT No. :

**P3392**

[Total No. of Pages : 4

# [5353] - 595

## T.E. (IT)

## HUMAN COMPUTER INTERACTION

## (2015 Pattern)

*Time : 2½ Hours]* *[Max. Marks : 70*

***Instructions to the candidates:***

1) *Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8, Q.9 or Q.10.*
2) *Neat diagrams must be drawn wherever necessary.*
3) *Figures to the right indicate full marks.*

***Q1)*** a) Understanding users and their behavior is an important factor influencing user-interface design. An automatic syringe is designed to administer proper dose of medicine to the patient. Create a prototype user interface for the same that can set the dose (4 digit numeric) with minimal human error while setting the dose. Justify your design. **[5]**

b) Create a prototype user-interface for a digital wrist watch. How will you make sure that users using analogue wrist watch will have no problem using the new design? **[5]**

OR

***Q2)*** a) Discuss the ways in which a full-page word processor is or is not a direct manipulation interface for editing a document using Shneiderman's criteria. **[5]**

b) What are differences between menu-bar & a tool-bar? Many times users face problems in understanding/learning toolbar icons. How to resolve this issue? **[5]**

***Q3)*** a) There are four main translations involved in the interaction framework viz. articulation, performance, presentation and observation. **[5]**

i) The compact disk player has a button for power off. However its remote control does not have a power off button.

ii) It is difficult in a command line interface to determine the result of copying and moving files in a hierarchical file system.

***P.T.O.***

iii) User is unable to figure out which switches from the bank to turn on to lit the front portion of a classroom.

iv) The user is unable to know whether the voice recorder is in playing or recording state.

Specify in each of the above four cases which of the interaction framework translations are in effective.

b) When systems are not designed to match the way people actually work, then users end up having to do 'work arounds'. Discuss. **[5]**

OR

***Q4)*** a) What influence does the social environment in which you work have on your interaction with the computer? What effect does the organization (commercial or academic) to which you belong have on the interaction? **[5]**

b) How does making a call differs when using **[5]**

i) Cell phone.

ii) Smart phone?

Consider the kinds of user, type of activity and context of use.

***Q5)*** a) How to get to know the system users? Explain various methods adopted in user-centered design. What are the people directly or indirectly affected by a student registration system. **[8]**

b) What is design? What is the golden rule of design? Illustrate the process of interaction design. **[8]**

OR

***Q6)*** a) What is a prototype? Explain different types of rapid prototyping techniques. **[8]**

b) A scenario is an idealized but detailed description of a specific instance of human-computer interaction (HCI). Scenarios specify how users carry out their tasks in a specified context. Write scenarios for purchasing an airline ticket. **[8]**

**Note** - Generate scenarios to cover a wide range of situations, not just the most common ones. Include problem situations that will test the system concept, not just straight forward scenarios.

*Q7)* a) What is the definition of usability as per ISO 9241 standard? Effective applications are both consistent within themselves and consistent with one another. Discuss this in context of Microsoft Office products. **[8]**

b) Explain Nielsen's ten heuristics. **[8]**

OR

*Q8)* a) The cognitive walkthrough is a formalized way of imagining people's thoughts and actions when they use an interface for the first time. During a cognitive walkthrough the evaluator needs to ask four questions as below **[8]**

i) Is the effect of the action the same as the user's goal at that point?

ii) Will users see that the action is available?

iii) Once users have found the correct action, will they know it is the one they need?

iv) After the action is taken, will users understand the feedback they get?

Given below is an action sequence for creating a customized voicemail message on an iPhone.

1) Tap Voicemail.

2) Tap Greeting.

3) Tap Custom.

4) Tap Record and speak your greeting.

5) When you finish, tap Stop.

6) To listen to your greeting, tap Play.

7) To re-record, repeat steps 4 and 5.

8) Tap Save.

Imagine an iPhone interface and create a report of the cognitive walkthrough for the above mentioned task in context with the review questions.

b) Design an experiment to test whether adding color coding to an interface will improve accuracy. Identify your hypothesis, participant group, dependent and independent variables, experimental design, task and analysis approach. **[8]**

***Q9)*** a) KLM (key-store-level) model predicts expert error-free task completion time (human performance) with interactive computing systems. Total predicted time for a task is given by the equation. **[9]**

$$t_{EXECUTE} = t_K + t_P + t_H + t_D + t_M + t_R$$

What does each of the above timing represent?

Develop a KLM model and predict time for the completion of the task "**Change font and style for the word "KLM" to bold, Arial**" using mouse only.

b) Discuss applications meant for computer-mediated communication. **[9]**

OR

***Q10)*** a) Create a GOMS description of the task of photocopying a paper from a Journal. Discuss the issue of closure in terms of your GOMS description. **[9]**

b) Consider the activity of making a telephone call. Record the actions in an HTA diagram or textually. Start off simply, assuming you know the number to dial, but then add more complicated situations : finding the number in an address book, or what to do when the number is engaged. **[9]**