

a. Discuss THREE major goals of Human Computer Interaction (HCI) (6 Marks)

- i) *To understand the factors that determine how people use technology*
- ii) *Another major goal is to develop tools and techniques to enable building suitable systems*
- iii) *To achieve efficient, effective, and safe interaction*

b. According to the theory of mental models, everyday reasoning depends on the simulation of events in mental models. Briefly discuss any FIVE assumptions made in the theory. (5 Marks)

- ✓ *Each model represents a possibility*
- ✓ *Models are iconic insofar as possible*
- ✓ *Models explain deduction, induction, and explanation*
- ✓ *The theory gives a 'dual process' account of reasoning*
- ✓ *The greater the number of alternative models needed, the harder it is.*

c. Briefly explain the difference between a Design Model and a User Model? (4 Marks)

- ✓ *Design model is the model that the designers have of how the system should work while the **User model** is created out of a system image in order to be able to work with it and may carry with it ideas from other designs that the designer never intended to be part of this one.*

d. Giving examples, discuss the two Major types of reasoning (5 Marks)

- **Deductive reasoning:**

*Deductive reasoning starts with the assertion of general rule and proceeds from there to a guaranteed specific conclusion. In deductive reasoning, if the original assertions are true, then the conclusion must also be true. For example, math is deductive:*

*If  $a = 4$   
And if  $b = 1$   
Then  $2a + b = 9$*

- **Abductive reasoning: taking your best shot**

*Abductive reasoning typically begins with an incomplete set of observations*

*and proceeds to the likeliest possible explanation for the set. Abductive reasoning yields the kind of daily decision-making that does its best with the information at hand, which often is incomplete.*

*For example A medical diagnosis is an application of abductive reasoning: given a set of symptoms.*

- e. There are many software project development models. You have been employed as a project manager in Software Development Company. A big organization wants software for management. Describe the probable model you can opt for and give the reasons. (5 Marks)

I would opt for Waterfall model – it is a linear sequential flow, often used with projects that have a defined set of requirements. Reflective of its name, the model's process flows steadily downwards through the phases of software implementation.

It is the probable model because it is:

- ✓ *Simple and easy to understand and use*
- ✓ *Easy to manage due to the rigidity of the model. Each phase has specific deliverables and a review process.*
- ✓ *Phases are processed and completed one at a time.*
- ✓ *Works well for smaller projects where requirements are very well understood.*
- ✓ *Clearly defined stages.*
- ✓ *Well, understood milestones.*
- ✓ *Easy to arrange tasks.*

- f. State and explain the main activities of software production. (5 Marks)

- ✓ **Software Evolution** - *This is a process of developing software initially, then timely updating it for various reasons.*
- ✓ **Software Validation** – *In this process, evaluation software product is done to ensure that the software meets the business requirements as well as the needs of end users*
- ✓ **Software Development** - *In this process, designing, programming, documenting, testing, and bug fixing is done.*
- ✓ **Software Specifications** – *In this process, detailed description of a software system to be developed with its functional and non-functional requirements.*