

- Note:**
1. Question 1 is compulsory.
 2. Attempt any 3 from Q2 to Q6.
 3. Indicate your answer with various sketches whenever necessary.

- Q1.** Attempt any **four**. [20]
- (a) List pros and cons of any one modern device in design of a tutor for kids.
 - (b) List techniques in qualitative research.
 - (c) Differentiate between mental model and implementation model.
 - (d) Explain effect on data structures when appropriate data controls are not used.
 - (e) What are the four interfaces that give name WIMP.
- Q2.** (a) Explain briefly software evolution process. [10]
(b) Design a UI for any multimedia application. [10]
- Q3.** (a) Provide a systematic design analysis for municipal corporation's mobile app that includes all the area details in terms of ward etc. Also give the interface guidelines. [10]
(b) Explain seven stages of action and three levels of processing. [10]
- Q4.** (a) A UI designer wants to design an application for people with difficulty using keyboard. Comment on selecting proper device based controls. [10]
(b) Differentiate between quantitative and qualitative research in knowing the users. [10]
- Q5.** (a) State and explain principles of Gestalts theory. [10]
(b) Provide suitable analysis and Interface design for state road transportation system. [10]
- Q6.** Write Short notes on following. [20]
- (a) Statistical Graphics
 - (b) Guidance and Feedback
 - (c) Interview Questions
 - (d) Goal directed Design

(3 hrs)

Marks: 80

- N.B.** (1) Question one is Compulsory.
 (2) Attempt any 3 questions out of the rest.
 (3) Assume suitable data if required.

- Q1.** a. What are various system models of distributed system? (05)
 b. Prove that a k-stage linear pipeline can be at-most k times faster than that of a non-pipelined serial processor. (05)
 c. Compare parallel and distributed Systems by giving real time examples for each (05)
 d. The time required to execute a task with single processor is 1200ms and with 8 processors it takes 200ms. Find the efficiency of parallel computing. (05)
- Q2.** a. Illustrate 4-stage pipeline architecture. (10)
 b. Differentiate between Message oriented & Stream oriented communications (10)
- Q3.** a. Describe any one method of Logical Clock synchronization with the help of an example. (10)
 b. Illustrate the parallel algorithm for sorting numbers in ascending order with an example and analyze the performance of this algorithm in terms of parallel run time and communication cost. (10)
- Q4.** a. What is the need for process migration and explain the role of resource to process and process to resource binding in process migration. (10)
 b. Illustrate the implementation details of pipelined floating-point adder. (10)
- Q5.** a. Discuss and differentiate various client-centric consistency models by providing suitable example application scenarios. (10)
 b. Discuss Ricart-Agrawala's algorithm and Justify how this algorithm optimized the message overhead in achieving mutual exclusion. (10)
- Q6.** Write a short note on any two (20)
 a. File caching schemes
 b. An architecture of Information System
 c. Load balancing techniques
