

- N. B. :**
- (1) Question no. 1 is **compulsory**.
  - (2) Attempt any **four** questions out of remaining questions.
  - (3) Assumptions made should be **clearly** stated.
  - (4) Figures to the **right** indicate **full** marks.
  - (5) **All** questions carry **equal** marks.
1. (a) Compare and contrast multicomputers with multiprocessors. 10  
(b) What are the middleware services offered to the distributed system ? 10
  2. (a) Explain the architecture of Message-Queuing system. 8  
(b) What are the advantages of using threads over processes ? 6  
(c) Justify "Weighted Reference counting is more efficient to simple reference counting". 6
  3. (a) Explain the issues related to migrating Resource Segment in process migration. 10  
(b) What is the need of determining Global State ? Explain the process in detail. 10
  4. (a) Explain the need of 3-phase Commit. 8  
(b) What is CORBA ? Explain the architecture. 8  
(c) Suggest methods of masking client crashes in a distributed system. 4
  5. (a) Explain the process of Concurrency Control using pessimistic and optimistic Time Stamp Ordering. 10  
(b) Explain Election algorithms for selecting co-ordinator. 10
  6. (a) Explain different steps involved in electronic payment for credit card transaction using SET protocol in an E-Commerce application. 10  
(b) Explain Client Centric Consistency models and explain the difference in each. 10
  7. Short notes on any **two** :— 20
    - (a) CODA file system
    - (b) Name Resolution in DNS
    - (c) Parameter Passing in RMI.