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67060-N

MCA 2nd Semester 2 year Course w.e.f. 2020-21
Examination, May-2023
COMPUTER NETWORKS & DISTRIBUTED
SYSTEMS

Paper- 20MCA22DA2

Time allowed : 3 hours]

[Maximum marks : 80

Note: Attempt any five question in all. **Question No. 1 is compulsory.** In addition to the compulsory question, attempt four more questions selecting **one** question from each unit. All Questions carry equal marks.

1. Compulsory Question: 8×2
- (i) Enlist the various key characteristics of multicast communication.
 - (ii) What do you mean by naming in a distributed system?
 - (iii) Explain the term failure masking.
 - (iv) Define the secure channel briefly. What is the purpose of the secure channel?
 - (v) Explain the various parameters used to represent sine waves.
 - (vi) Why are guard bands used in multiplexing? Explain with a suitable example.

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(vii) Define modulation. Explain any two modulation techniques with a suitable diagram.

(viii) What do you mean by in-band signaling?

Unit-I

2. What is the need for the network reference model? Explain TCP/IP network model in detail. Explain the various addressing involved in the internet for employing the TCP/IP protocols 16
3. Distinguish between the following with suitable diagram 6,5,5
 - (a) Synchronous transmission and Asynchronous transmission
 - (b) Analog and Digital signals
 - (c) Wired and Wireless Network

Unit-II

4. (a) Explain High-Level Data Link Control in detail. Explain various configurations and frame formats present in HDLC. What is the importance of the P/F bit in polling and selecting? 10
- (b) What do you mean by ISDN? Explain narrowband ISDN with its various user interfaces 6
- (c) Explain the following in detail: 2 × 8
 - (i) Virtual Terminal
 - (ii) File Transfer Protocol

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Unit-III

6. (a) What is the role of virtualization in distributed systems? Explain the various architecture of virtual machines. How client thread is different from kernel thread? 10
- (b) Explain the term distributed systems. Illustrate the various design goals of the distributed system 6
7. What do you mean by mutual exclusion? Write down various algorithms for implementing mutual exclusion in a distributed system with the help of a suitable diagram. 16

Unit-IV

8. (a) How replication is used as a scaling technique? Explain client-centric consistency models available with suitable example 8
- (b) Explain the failure model in distributed system. How recovery is done in distributed systems when a failure occurred? 8
9. Explain the following in detail with suitable examples and applications 2 × 8
 - (a) Attribute Naming and Directory Services
 - (b) Firewalls