Roll No. : ....

Total No. of Questions : 9]   [Total No. of Pages : 4

67060-N

M.C.A. 2nd Semester (2 Years Course) Examination, July–2021
(w.e.f. 2020-21)

COMPUTER NETWORKS AND DISTRIBUTED SYSTEMS

Paper–20MCA22DA2

Time : **Three Hours**]   [Maximum Marks : 80

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note :– Q. No. **1** is compulsory with 8 parts each of 2 marks. In addition to Q. No. 1, attempt *four* more questions by selecting *one* from each Unit. All questions carry equal marks.

1. (i) Explain how confirmed services are different from unconfirmed ones.

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(ii) What do you mean by Acknowledgement Frames ?

(iii) Write down the working principle of CSMA with collision detection in Medium Access Sublayer.

(iv) Define Multicasting. What is congestion control in multicasting ?

(v) Define the term virtualization in context to distributed systems.

(vi) List down key characteristics of Stream Oriented Communication.

(vii) What do you understand by Decentralized Implementation ?

(viii) Define and state the importance of Process Resilience.

Unit–I

2. (i) Data encoding is an important aspect of Data Communication. Justify.

(ii) Explain the concept of multiplexing and de-multiplexing with appropriate examples.

3. (i) Mention the layer which is responsible for controlling the operation of subnet. Also elaborate the working of this layer in OSI reference model.

(ii) What is Protocol Hierarchy ? How interfaces and services are related and dependent on each other ?

Unit-II

4. (i) Data link protocols almost always put CRC in a trailer rather than in a header. Explain why ? 4

(ii) Explain in detail the working of persistent carrier sense multiple access protocol in sublayer. https://www.mdustudy.com 4

5. Explain the addressing, establishment of connection and releasing a connection as elements of Transport layer protocols.

Unit-III

6. (i) Mention any *four* performance evaluators based on which performance of Distributed Systems can be judged.

(ii) Differentiate the working of Multiple Servers from Proxy Servers in terms of their roles and characteristics.

7. (i) Based on what characteristics, Remote Procedure Call is designed and implemented. Detail out.

   (ii) Write down the role of the following components in maintaining synchronization in Distributed Systems : Logical Clocks and Election algorithms.

Unit–IV

8. (i) Write down the sequence of steps followed while implementing active replication technique with the hlep of diagram and example.

   (ii) What is Linearizability Consistency Model ? Elaborate the same to maintain consistency in distributed systems.

9. (i) What are basic objectives behind Fault Tolerance ? Explain various phases involved in Fault Tolernace ?

   (ii) Elaborate the Symmetric Cryptosystem Algorithm (DES) with the help of self explanatory flowchart.