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MCS-218

MASTER OF COMPUTER APPLICATIONS (MCA) (NEW)

Term-End Examination

June, 2023

MCS-218 : DATA COMMUNICATION AND COMPUTER NETWORKS

Time : 3 Hours *Maximum Marks : 100*

Note : *(i) Question No. **1** is compulsory and carries 40 marks.*

*(ii) Attempt any **three** questions from the rest.*

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1. (a) Given a signal whose amplitude varies from + 6.4 V to – 6.4 V. If we want to quantise it into 64 levels, what would be the quantised values corresponding to signals of – 3.6 V and + 0.88 V ? 5

P. T. O.

(b) What is the minimum and maximum length of the IEEE 802.3 Ethernet frame ? Differentiate between 10 Base 2 and 10 Base T ethernet cables. 1+4

(c) List and explain policies that can be used to avoid congestion. 1+4

(d) What is meant by public key cryptography ? Explain RSA key generation with an example. 2+4

(e) Explain the terms Virus, Worm, Trojan and Malware. 1+1+1+1

(f) What is noise in a signal ? Explain any *three* types of noise in transmission. 2+3

(g) What is multiplexing ? Explain synchronous time division multiplexing. 2+3

(h) Explain Bellman–Ford algorithm with a suitable example. 5

2. (a) Define transmission and propagation delays. Explain the working of fiber optic cable. 2+3

(b) What is PCM ? Why is PAM a necessary pre-requisite to PCM ? 2+3

(c) Differentiate between circuit switching and packet switching. 5

(d) List and explain the functionality of layers in OSI reference model. 5

3. (a) Explain the terms : CRC, Error detection, Checksum, Forward error correction and Parity check. 1×5

(b) What is Piggybacking ? Explain stop and wait ARQ with timing diagram, when ACK is lost. 2+3

(c) What is p-persistent CSMA ? Calculate the throughput of slotted ALOHA protocol. 2+3

(d) Explain the features of a transparent bridge. Discuss the operation of bridges in different LAN environments. 2+3

4. (a) What are the important services provided by the network layer ? Compare virtual circuit and datagram approach. 3+4

(b) What is IP addressing ? Describe the address representations according to address range. 2+4

(c) Explain the features of M2M communication. Differentiate between leaky bucket and token bucket shaper. 3+4

5. (a) List the *three* types of services provided by Transport layer to Application layer. 4

(b) How is a TCP connection established ? Explain typical three way handshake operation with a diagram. 2+4

(c) What is a Modulo Function ? Explain the principle of Elliptic curve cryptography. 2+3

(d) What is vulnerability ? List and explain Browser and Operating system related vulnerabilities. 2+3