09/5/12 Shift I (02)+1 = 3.

Printed Pages : 2

MCA-414

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 1457

Roll No. | | | | | | | | | | |

M.C.A.

(SEMESTER-IV) THEORY EXAMINATION, 2011-12

COMPUTER NETWORKS

Time : 3 Hours] *[Total Marks : 100*

Note : Attempt **all** Sections.

Section – A

1. Attempt **all** the questions : $10 \times 2 = 20$

   (a) Write functions of physical layer of ISO-OSI reference model.

   (b) Explain fragmentation of packet and its need in internet.

   (c) Compare point to point networks with multipoint networks.

   (d) What is virtual LAN ? Explain its applications.

   (e) Compare and contrast MAC address with IP address.

   (f) Differentiate between adaptive and non-adaptive routing algorithms.

   (g) What is meant by packet switching ?

   (h) Explain UDP and compare it with TCP.

   (i) Functioning of email gateway.

   (j) Explain sliding window protocol.

Section – B

2. Attempt any **three** parts. $3 \times 10 = 30$

   (a) What is transmission media ? Explain various transmission media by specifying its data rate, bandwidth and naming conventions.

   (b) What is LAN ? Explain various design parameters of an *Ethernet* LAN.

   (c) Explain distance vector routing algorithm with a suitable example. And contrast it with link state routing protocol.

   (d) Why TCP is preferred over UDP in some applications ? Explain the reason and also mention those applications.

   (e) Define the DNS and its requirement. Explain the specific features of it.

Section – C

Attempt **all** questions in this section. $5 \times 10 = 50$

3. Attempt any **two** parts. $2 \times 5 = 10$

   (a) What is meant by the topology of a network ? Explain various topologies for the network with clear sketch of its broadcast domain and collision domain.

   (b) Explain the functions of physical layer of ISO-OSI reference model of the network.

   (c) Define the switching and explain the various methods of it with suitable examples.

4. Attempt any **two** parts. $2 \times 5 = 10$

   (a) What are the error and flow control techniques in a network ? Explain various ARQ techniques with suitable examples. Discuss error and flow techniques implemented in Ethernet LAN.

   (b) What is hamming code ? Calculate the hamming code for following message string : 1100101 with each and every step explained clearly.

   (c) What is multiple access communication ? Explain various multiple access techniques.

5. Attempt any **two** parts. $2 \times 5 = 10$

   (a) What is an interconnecting device in the internet ? Explain various interconnecting devices used in the internet with suitable example.

   (b) Define IP Addressing. Compare and contrast IPv4 with IPv6.

   (c) What is meant by QoS ? Explain various techniques to achieve this in the internet.

6. Attempt any **one** part. $1 \times 10 = 10$

   (a) Explain the functions of transport protocol of ISO-OSI reference model of network.

   (b) Explain the steps of *setting up* a circuit for data communication and *closing* of it after data transmission in TCP with suitable example.

7. Attempt any **one** part. $1 \times 10 = 10$

   (a) What is public key encryption method ? And compare it with private key cryptography. Explain RSA algorithm with suitable example.

   (b) What is SMTP ? Explain its various components with suitable examples.