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

PAPER ID : 214421 Roll No. [   ]

MCA.

(SEM. IV) THEORY EXAMINATION 2013-14
COMPUTER NETWORKS

Time : 3 Hours　　　　　　　　　　*Total Marks : 100*

Note :–Attempt **all** questions.

1. Answer any **two** parts of the following :　　**(10×2=20)**

   (a) (i) What do you mean by network topology ? Explain in brief any three such network topologies.

   　　(ii) What is the difference between TCP/IP and OSI model ?

   (b) Which OSI Layer performs of the following activities :

   　　(i) Error detection and correction

   　　(ii) Routing

   　　(iii) Responsibility for delivery between adjacent modes

   　　(iv) Reliable process to process data transportation.

   (c) (i) What are the reasons of using layered protocols ? Explain in brief.

   　　(ii) In mesh topology network with 25 computers, how much cabling is required ?

2. Answer any **two** parts of the following : **(10×2=20)**

   (a) (i) Define Fiber Distributed Data Interface in detail with the help of its frame format.

      (ii) Explain the main performance comparison of 802.3, 802.4 IEEE standard.

   (b) Compare two data link layer protocols : Go Back N and Selective repeat in terms of flow control, error recovery and packet loss.

   (c) (i) Generate the CRC code for the data word of 1100 10101. The divisor is 10101.

      (ii) If a bit string 011111101111101111110 is subjected to bit stuffing, what would be the output string ?

3. Answer any **two** parts of the following : **(10×2=20)**

   (a) Give a classification of different IP addresses. Explain the concept of subnetting.

   (b) (i) Explain the main performance comparison between IPv4 and IPv6.

      (ii) The IP address of a host on class C network is 198.123.46.237. Four networks are allowed for this network. What will be the subnet mask ?

   (c) Write a short note on :

      (i) ARP

      (ii) ICMP.

4. Attempt any **two** parts of the following : (10×2=20)

 (a) What do you mean by congestion control and QoS ? What are the parameters of QoS ? Explain.

 (b) What do you mean by TCP and UDP ? Explain some performance comparison of UDP and TCP.

 (c) (i) What is the difference between open-loop congestion control and closed-loop congestion control ?

 (ii) An ATM network uses a token bucket scheme for traffic shaping. A new token is put into bucket every 5 μs. What is the maximum sustainable net data rate (excluding the header bits) ?

5. Attempt any **two** parts of the following : (10×2=20)

 (a) What is the function of SMTP ? Differentiate between a User Agent (UA) and a Mail Transfer Agent. How does MIME enhance SMTP ?

 (b) Explain data encryption standard algorithm and its working in detail.

 (c) Write short notes on :

 (i) Telnet and Rlogin

 (ii) Virtual private networking

 (iii) Firewall.