



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

PAPER ID : 214435

Roll No.

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M. C. A.

(SEM. IV) THEORY EXAMINATION, 2014-15
COMPUTER NETWORKS

Time : 3 Hours]

[Total Marks : 100

Note : Attempt all questions. All questions carry equal marks.

1 Attempt any four parts of the following : 5×4=20

- (a) Describe the TCP/IP protocol suite in brief.
- (b) What does the Nyquist theorem have to do with communication ?
- (c) Define as switch. List the three conventional switching methods.
- (d) List the layers of the Internet model.
- (e) What do you understand by network topology ? Compare and contrast different network topologies used in LAN.
- (f) Explain baud rate with a suitable example. If a binary signal is sent over a 30 kHz channel whose signal-to-noise ratio is 20 dB. What is the maximum achievable data rate ?

2 Attempt any two parts of the following : 10×2=20

- (a) Answer each question :
- (i) What is IEEE 802.11 standard ?
 - (ii) Compare and contrast CSMA/CD with CSMA/CA.
- (b) Which of the following CRC generators guarantee the detection of a single bit error ?
- (i) $x + 1$
 - (ii) $x^2 + 1$
- (c) Answer each question :
- (i) How does the Ethernet address 1A : 3B : 4C : 6D : 2E : 1F appear on the line binary ? Explain.
 - (ii) Define and explain the type of the following destination address :
FF:FF:FF:FF:FF:FF

3 Attempt any two parts of the following : 10×2=20

- (a) Describe and compare the following two approaches to congestion handling :
- (i) The token bucket algorithm
 - (ii) Hop-by-hop choke packets
- (b) A computer on a 6-Mbps network is regulated by a token bucket. The token bucket is filled at a rate of 1 Mbps. It is initially filled to capacity with 8 megabits. How long can the computer transmit at the full 6 Mbps ?
- (c) Describe hamming code. How it is used for error detection and correction ? Illustrate with the help of a suitable example.

4 Attempt any two parts of the following : 10×2=20

- (a) What is UDP ? What is the maximum and minimum size of a UDP datagram ? Also discuss the use of UDP.
- (b) The following is the dump of a TCP header in hexadecimal format :
05320017 00000001 00000000 500207FF
00000000
 - (i) What is the sequence number ?
 - (ii) What is the destination port number ?
 - (iii) What is the acknowledgment number ?
 - (iv) What is the window size ?
- (c) What is cryptography ? Differentiate between symmetric key cryptography and asymmetric-key cryptography.

5 Attempt any two parts of the following : 10×2=20

- (a) Discuss the following :
 - (i) RSA Algorithm
 - (ii) Transport Layer Security
- (b) What is MIME ? Explain standard content-Types of MIME in detail.
- (c) Write short notes on any of the following :
 - (i) FTP
 - (ii) IP Sec
 - (iii) VDN