

AMIETE – ET/CS/IT

Time: 3 Hours

JUNE 2014

Max. Marks: 100

PLEASE WRITE YOUR ROLL NO. AT THE SPACE PROVIDED ON EACH PAGE IMMEDIATELY AFTER RECEIVING THE QUESTION PAPER.

NOTE: There are 9 Questions in all.

- Question 1 is compulsory and carries 20 marks. Answer to Q.1 must be written in the space provided for it in the answer book supplied and nowhere else.
- The answer sheet for the Q.1 will be collected by the invigilator after 45 minutes of the commencement of the examination.
- Out of the remaining EIGHT Questions answer any FIVE Questions. Each question carries 16 marks.
- Any required data not explicitly given, may be suitably assumed and stated.

Q.1 Choose the correct or the best alternative in the following: (2×10)

a. _____ provides a remote logon capability.

- | | |
|----------|------------|
| (A) SMTP | (B) TELNET |
| (C) FTP | (D) RSVP |

b. Stop-and-wait protocol is also known as _____.

- | | |
|-----------------------------|------------------------------|
| (A) Sliding Window protocol | (B) Automatic reply protocol |
| (C) Request/reply protocol | (D) Go-Back-N protocol |

c. Adaptive routing is also referred as _____ routing.

- | | |
|----------------|-------------------|
| (A) dynamic | (B) static |
| (C) perfective | (D) none of these |

d. In the source routing protocol, a host can discover a route by sending a _____, which spreads through the entire network using all possible paths to the destination.

- | | |
|---------------------|---------------------|
| (A) recovered frame | (B) recalling frame |
| (C) discovery frame | (D) loading frame |

e. Ethernet address is an example of _____ addressing while IP address is an example of _____ addressing.

- | | |
|------------------------|--------------------------------|
| (A) hierarchical, flat | (B) flat, hierarchical |
| (C) flat, flat | (D) hierarchical, hierarchical |

f. To achieve stability in CSMA/CD back off scheme, a technique known as _____ is used.

- | | |
|---------------------------------|------------------------------------|
| (A) binary exponential back off | (B) polling |
| (C) detection back off | (D) collision exponential back off |

- g. What are the goals in mind of IEEE 802 committee?
- (A) To promote compatibility
 (B) Implementation with minimum efforts
 (C) Accommodate diverse applications
 (D) All of these
- h. The MAC layer receives a block of data from the _____ layer and is responsible for performing functions related to medium access and for transmitting the data.
- (A) LLC (B) LMC
 (C) CLL (D) LCL
- i. The simplest form of flow control is a _____ procedure, in which each PDU must be acknowledged before the next can be sent.
- (A) stop-and-flow (B) stop-and-stop
 (C) stop-and-wait (D) wait-and-stop
- j. A shared routing protocol, called _____, passes routing information between routers within an Autonomous System.
- (A) EPR (B) IPR
 (C) ERP (D) IRP

Answer any FIVE Questions out of EIGHT Questions.

Each question carries 16 marks.

- Q.2** a. Define and briefly explain the following terms associated with internet: ISP, NAP, NSP, POP. (8)
- b. Differentiate between TCP and UDP header. (4)
- c. Four types of primitives are used in standards to define the interaction between adjacent layers in the architecture. What are these? (4)
- Q.3** a. Briefly describe three most significant transmission impairments. (6)
- b. The digital signal is to be designed to permit 160 kbps for a bandwidth of 20 KHz. Determine : (6)
- (i) number of levels (ii) S/N ratio
- c. Define the term-antenna gain. What factors determine antenna gain? (4)
- Q.4** a. Explain the function of scrambling in the context of digital-to-digital encoding techniques. (4)

- b. Why do you need encoding of data before sending over a medium? What are the four possible encoding techniques? Give examples. (6)
- c. Explain basic scheme for Cyclic Redundancy Checking (CRC) and its performance. (6)
- Q.5** a. Mention key advantages and disadvantages of stop-and-wait ARQ technique? Consider the use of 10 K-bit size frames on a 10 Mbps satellite channel with 270 ms delay. What is the link utilization for stop-and-wait ARQ technique assuming $P = 10^{-3}$? (8)
- b. Describe Statistical-TDM. How is the wastage of bandwidth in TDM overcome by Statistical-TDM? (8)
- Q.6** a. Explain how communication via circuit switching takes place. (6)
- b. What is flooding? Explain. Why flooding technique is not commonly used for routing? (5)
- c. Why is it that when the load exceeds the network capacity, delay tends to infinity? (5)
- Q.7** a. List and briefly define key requirements for wireless LANs. (6)
- b. Explain the three persistence protocols that can be used with CSMA. (6)
- c. List out the advantages and drawbacks of ring topology. (4)
- Q.8** a. Why do you need ARP? Explain how ARP works. (6)
- b. Using a suitable example, explain how two fragments are created from an original IP datagram. What tasks are performed by an IP module in a router to fragment long datagram into two pieces? (7)
- c. What is the function of the ICMP? Explain briefly. (3)
- Q.9** a. What is DNS? List four elements that comprise the DNS. Also give a brief description of DNS operation. (8)
- b. Write about any four practical applications of multicasting. List and briefly explain any four functions that are required for multicasting. (8)