

# AMIETE – ET (OLD SCHEME)

Code: AE28  
Time: 3 Hours

Subject: COMPUTER NETWORKS  
Max. Marks: 100

**JUNE 2011**

**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. The \_\_\_\_\_ layer changes bits into electromagnetic signals.
- (A) Physical (B) Data link  
(C) Transport (D) Application
- b. The purpose of \_\_\_\_\_ is packet framing and error-detection functions that are AAL users require
- (A) CPCS (B) SSCS  
(C) SAR (D) None of the above
- c. As the data packets moves from the upper to the lower layers, headers are \_\_\_\_\_ .
- (A) Added (B) Removed  
(C) Modified (D) Rearranged
- d. A channel is extremely noisy for which the value of SNR is almost zero; then the channel capacity will be \_\_\_\_\_.
- (A) Zero (B) 1  
(C) 10 (D) 100
- e. In TDM, the transmission rate of the multiplexed path is usually \_\_\_\_\_ the sum of the transmission rate of the signal sources.
- (A) Greater than (B) Less than  
(C) One less than (D) Equal to
- f. The HDLC \_\_\_\_\_ field defines the beginning and end of a frame.
- (A) Address (B) Flag  
(C) control (D) FCS
- g. IP address in IPv6 consist of \_\_\_\_\_ bits.
- (A) 128 (B) 32  
(C) 4 (D) 64

- h. In the \_\_\_\_\_ random access method, station do not sense the medium.
- (A) Ethernet (B) ALOHA  
(C) CSMA/CD (D) CSMA/ CA
- i. Which type of switching uses a dedicated path? \_\_\_\_\_.
- (A) Packet switching (B) Circuit switching  
(C) Data gram process (D) Message switching
- j. UDP and TCP are both\_\_\_\_\_ layer protocols.
- (A) Data Link (B) Physical  
(C) Transport (D) Network

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**Answer any FIVE Questions out of EIGHT Questions.**  
**Each question carries 16 marks.**

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- Q.2** a. Describe the seven layer OSI reference model of a computer network with a diagram. Discuss the function of each layer. (8)
- b. The Internet is roughly doubling in size every 18 months. If the number of hosts on the Internet in 1996 is 7 million, compute the expected number of Internet hosts in the year 2008. (4)
- c. What is a multiplexer? Give a simple scheme to depict the multiplexing function. (4)
- Q.3** a. A message is broken into three packets. Discuss the transmission of packets using circuit and packet switching with the help of event timing diagram. (8)
- b. With suitable illustrations, explain selective repeat ARQ protocol. (8)
- Q.4** a. Computer A uses stop and wait ARQ protocol to send packets to computer B, A & B are separated by a distance of 4000 kms.  
(i) How long does it take computer A to receive acknowledgement for a packet?  
(ii) How long does it take for computer B to receive a packet of size 1000 bytes if the throughput is 100 Mbps? Assume the speed to be the velocity of light.(5)
- b. What is CSMA scheme? Discuss non-persistent, 1-persistent and p- persistent CSMA with suitable diagram. (6)
- c. Explain why CSMA /CD cannot be used for wireless LANS? (5)
- Q.5** a. A group of N stations share a 64 kbps slotted ALOHA channel. Each station outputs a 1000 bit frame on an average of once in every 100 secs. Find the maximum usable value of N. (5)
- b. Explain the Bellman-Ford algorithm with an example. (7)
- c. Explain the basics of a queuing system with the help of a queuing model. (4)

- Q.6** a. Describe the format of the IP header for IPv4 with a diagram. (8)
- b. How is subnet mask useful in IP addressing? Explain with an example. (4)
- c. A class B network on the Internet has a subnet mask of 255·255·240·0. What is the maximum number of hosts per subnet? (4)
- Q.7** a. Discuss the advantage of extension headers in the version IPv6 over IPv4. (5)
- b. Discuss the following:  
(i) ATM cells.  
(ii) ATM service categories. (4+4+3)  
(iii) Traffic descriptors.
- Q.8** a. Draw the simplified model of conventional encryption and explain the five ingredients of the encryption scheme. (6)
- b. With a diagram of the authentication header, explain the various fields. (6)
- c. Write a note on digital signature. (4)
- Q.9** a. Explain the features of the following data link controls:-  
(i) HDLC  
(ii) Point-to-point (5)
- b. With the help of a block schematic, explain RSVP architecture. (7)
- c. Write a note on RTP. (4)