1. ( ) Which of the following statements is incorrect? (A) The primary rate of a telephone channel is 64 Kbps, i.e. 8-bit sampling at 8 KHz. (B) The T1 link consists of 24 time-multiplexed telephone channels. (C) The T1 rate is 1.544 Mbps. (D) The bandwidth of the T3 link is 3 times the T1 rate. (E) none of the above.

2. ( ) Connect each of the 5 items of the left to the most relevant item on the right. The mapping should be one-on-one. 

3. ( ) Each channel of the cable TV has a bandwidth of 4 MHz. Assume that the signal to noise (power) ratio for each channel is 500. When we use this cable TV channel to transfer digital data, what is the channel capacity according to the Shannon's channel capacity theory? (A) 36 Mbps, (B) 48 Mbps, (C) 56 Mbps, (D) 64 Mbps, (E) none of the above. (note: here, M = 1,000,000)

4. ( ) According to the 7-layer network architecture of the Open Systems Interconnection (OSI), at which layer should data encryption be done? (A) application, (B) presentation, (C) session, (D) transport, (E) none of the above.

5. ( ) The minimum distance for a code system is 3 bits. What are the maximum numbers of bit errors that can be detected and corrected, respectively? (A) 2-bit error detection and 1-bit error correction, (B) 3-bit error detection and 1-bit error correction, (C) 3-bit error detection and 2-bit error correction, (D) 4-bit error detection and 3-bit error correction, (E) none of the above.

6. ( ) We use \( g(D) = D^3 + 1 \) as the generator polynomial for cyclic redundancy check (CRC). A code word consists of the data bit string followed by the CRC bit string (with the CRC on the right side). Which of the following is a valid code word? (A) 00110111, (B) 00110110, (C) 00110100, (D) 00110011, (E) none of the above.

7. ( ) If we wish to develop a code system which belongs to the Hamming code class, how many CRC bits should we use for 64-bit data? (A) 7 bits, (B) 8 bits, (C) 9 bits, (D) 10 bits, (E) none of the above.

8. ( ) We use the go-back-7 ARQ. The sender sends 7 packets with sequence numbers (SN): 0, 1, 2, 3, 4, 5, and 6. If all the packets are received correctly with the exception of the packet with SN=3. What is the next batch of packets that the sender should send? (A) 3456789, (B) 3456012, (C) 3456701, (D) 0123456, (E) none of the above.

9. ( ) We use the zero-stuffing technique for bit-oriented framing. We choose 0111110 as the flag. For the data stream 011111101111011110111001, how many stuffing 0’s should be inserted? (A) 1, (B) 2, (C) 3, (D) 4, (E) none of the above.

10. ( ) When the packet size increases, which of the following is not true in general? (A) The overhead of packetizing decreases. (B) The point-to-point transmission delay increases. (C) The average delay for the entire network increases. (D) It becomes more difficult to control the delay of an individual packet traveling through the network. (E) none of the above.

11. ( ) One of the hosts at YAHOO.COM has the IP address: 204.71.200.33. According to the address classification scheme for IPv4, this address belongs to (A) Class A, (B) Class B, (C) Class C, (D) non-classified, (E) none of the above.

12. ( ) Which of the following statements regarding ATM is incorrect? (A) ATM based networks are connection-oriented virtual-circuit network. (B) ATM can be used to carry the TCP/IP traffic by use of the type-5 ATM Adaptation Layer. (C) ATM networks carry data by use of 53-byte fixed-length cells; however, the length of the cells can be varied under the Variable Bit Rate mode. (D) ATM has the provisions for different qualities of service and the control of source-destination time relation. (E) none of the above.