Name: **Matric No:**

EE3204/EE3204E Quiz-1 06 Oct 2012 Time: 45 minutes
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Instructions: Answer ALL questions.. For each question, enter the most appropriate choice in the ANSWER TABLE in page 2. Each Question carries 1 mark. It is a CLOSED book test. Non-programmable Calculators are allowed.

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1. Choose the correctly matched pair

   (a) Circuit switching -- no bit error
   (b) Packet switching -- no queuing delay
   (c) Statistical TDM - no buffer
   (d) Fixed TDM -- no congestion

2. Host A sends 1000 frames to host B through an error-free 1Mbps link. While 50% of the frames are of size 1000 bytes, the remaining frames are of size 500 bytes. The frames are transferred in 10 seconds. The throughput rate achieved is

   (a) 0.094 (b) 0.5 (c) 0.60 (d) 0.75

3. In counter based framing, the appearance of 'SYN" pattern inside the body of the frame should be avoided.
   (a) TRUE (b) FALSE

4. A packet is contained within a frame.
   (a) TRUE (b) FALSE

5. In Ethernet, "jam" signal is used to reduce congestion caused by collisions.
   (a) TRUE (b) FALSE

6. Consider a sliding window based flow control protocol that uses a 3-bit sequence number and a window of size 7. At a given instant of time, at the sender, the current window size is 3 and the window contains frame sequence numbers 3, 4 and 5. Now the sender receives RR2 and updates the window. What does the new window contain?
   (a) {3,4,5} (b) {3,4,5,6} (c) {3,4,5,6,7} (d) {3,4,5,6,7,0}

7. Node A transmits 1000 byte frames to node B using selective-repeat ARQ protocol with window size 3 over a 10 Mbps link. The link is 200 km long. The frame error probability is 0.1. The propagation delay on the link is 5μs/km. Approximately how many frames are sent by A in one second?
   (a) 964 (b) 321 (c) 0.77 (d) 1250

8. IP addresses are more attractive than Ethernet hardware addresses for the purpose of routing, because

   (a) IP addresses are hierarchical whereas Ethernet addresses are not.
   (b) IP addresses are just 4-byte long whereas Ethernet addresses are 6-byte long
   (c) IP addresses aid software-based routing whereas Ethernet addresses aid hardware-based routing
   (d) IP routers are less expensive than Ethernet switches

9. Which of the following statements is TRUE?
   (a) CRC can detect any number of bit errors
   (b) Sentinel based framing is used for packets at layer 3
   (c) Transport layer is the first (from bottom) end-to-end layer.
   (d) There are no layer-2 functions carried out in IP routers

10. Three hosts A, B and C attempt to transmit on an Ethernet. Each host has a steady queue of frames ready to send. At an instant of time, all the three hosts attempt to send their frames simultaneously and collision occurs. We say that the three hosts enter into a backoff race. Suppose that this collision is the first, second, and third collision experienced by host A, B, and C, respectively. What is the probability that host B wins the race? Host B is said to win if it transmits its current frame successfully before any other host and also before any other collision in the network.
    (a) 7/64 (b) 8/64 (c) 13/64 (d) 22/64

11. Virtual circuit (VC) based forwarding is better than source routing (SR) based forwarding, because
    (a) VC forwarding requires shorter header when compared to SR forwarding.
    (b) VC forwarding requires fixed-size header whereas SR forwarding header size could be different for different packets.
    (c) Both (a) and (b)
    (d) None of (a) and (b)

12. Host A at LAN 1 wants to send a frame to Host B at LAN 2 and the two LANs are connected by router R. In this case, by using R's ARP tables, Host A writes the MAC address of Host B in its frame and broadcast it.
    (a) TRUE (b) FALSE

13. Choose the correctly matched pair:
    (a) Ethernet broadcast address – 11:11:11:11:11:11
    (b) 10 Base 2 Ethernet -- at most 2 segments
    (c) IP layer -- flow control
    (d) Stop-and-wait ARQ -- 1 bit sequence number

14. A packet is 8sec long on a 100-km long link. How long (in sec) is this packet on a 200-km long link?
    (a) 2 (b) 4 (c) 8 (d) 16

15. Ethernet requires a minimum frame size of 64 bytes in order to
    (a) enable the nodes to quickly resolve collisions
    (b) enable every node to receive a fair service in terms of bandwidth usage
    (c) enable nodes to detect bit errors due to collisions
    (d) none of the above

ANSWER TABLE:

Qn	1	2	3	4	5	6	7	8
Ans	D	C	B	A	B	D	A	A
Qn	9	10	11	12	13	14	15	
Ans	C	A	C	B	D	C	D	