Cairo University **Computer Networks1**
Faculty of Engineering **Fall 2022**

Revision Questions Answers

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1. The following message "1001011" is transmitted using a data link layer that applies the hamming coding technique with even parity check. The resulting parity bits equals:
   P0= 1
   P1=0
   P2=1
   P3=0

2. The bit-stream "1101 0111 11" is transmitted using the standard CRC method. The generator polynomial is x3 + 1. At the receiver side, make your checks and tell if the data is correct or not .
   And in all cases, what is payload i.e "message" without the extra CRC bits?

   Correct -> no remainder , m=1101 0111

3. In a Go-Back-N protocol, the window size is 3. Frames with sequence number 1, 2, 3, have been sent. The sender just received an ACK for frame 1. And frames 4,5,6, 7 and 8 are waiting to be sent.
   Assume frame 2 has been lost and the receiver never received it. What frame(s) would the sender need to retransmit (send twice)?
   A. (2,3,4)
   B. (1,2,3)
   C. All frames will be sent once
   D. Only frame 2
4. Selective-Repeat protocol is commonly used with noisy channels (T/F)
5. In Selective-Repeat, sender and receiver window sizes (maximum outstanding frames) must be less than
   A. MAX_SEQ/2
   B. (MAX_SEQ+1)/2
   C. (MAX_SEQ -1)/2
   D. MAX_SEQ
6. In Go-Back-N protocol there is only one timer and it is ack timer (T/F)
7. For a sliding window protocol, If Tt = 3 ms and the round trip delay is 30ms calculate the window size which should guarantee a 100% channel utilization
   A. 4
   B. 5
   C. 11
   D. 21

8. Station A uses 32-byte packets to transmit messages to Station B using a sliding window protocol. The round-trip delay between A and B is 80 milliseconds and the bottleneck bandwidth on the path between A and B is 128 kbps. What is the optimal window size that A should use?
   A. 20

B. 41
C. 162
D. 320

9. Consider a network topology using stop and wait ARQ protocol A---------R---------- B (here R is store and forward router)
Tp=1μs, Tt(data)=1000μs, Tt(ack)=10μs File Size =10000bits, Packet size=1000bits. How long will it take for A to send whole file to B?
A. 30.24 msec
B. 20.24 msec
C. 34.3 msec
D. 44.48 msec

10. ..... is one protocol that, one of its functionalities is to select the best path for data to be transmitted through?
A. UDP
B. IP
C. Ethernet
D. TCP

11. The following character encoding is used to send the following character sequence "H I ESC U FLAG": H: 01101101 , I: 11110011 , U: 10010111 , ESC: 11100000 , FLAG: 01111110 . Knowing that the data link layer uses Flag Bytes with BIT stuffing as a framing method. the total number of bits get transmitted through the physical layer is _____ bits.
A. 49
B. 50
C. 51
D. 59