○ **20 minutes**

[M1] Quiz 3

* This form will record your name, please fill your name.

[   ]

1. [Checksum] Consider the two 16-bit words (shown in binary) below. Compute the Internet checksum value for these two 16-bit words:

   10110101 01000001   *this binary number is 46401 decimal (base 10)*
   01010011 00000010   *this binary number is 21250 decimal (base 10)* (4 Points)

   ○   10110101 01000001

   ○   00001000 01000011

   ○   00001000 01000100

   ○   <mark>11110111 10111011</mark>

2. [Fundamentals of Transport Layer] Which of the following options is not a service provided by the Transport layer? (4 Points)

○ Point-to-Point reliable data tranfer

○ End-to-End reliable data transfer

○ Flow control

○ In-order data delivery

3. [Principles of Reliable data transfer] Which mechanism can be used to handle packet loss? (4 Points)

○ Cumulative ACK

○ Pipelining

○ Timeout retransmissions

○ Three-way handshake

4. [TCP: Segment Exchange] Consider a scenario with two hosts, Host A and Host B, exchanging application data through a TCP channel. Host A has already sent 99 bytes of application data and Host B has already sent 9 bytes of applications data. At a given time, Host A sends a new packet (PA) to Host B, which answers to Host A with another packet (PB). Both packets PA and PB carry 1 byte of application data. What is the sequence number (Seq) and the acknowledge number (ACK) of PA and PB? (4 Points)

○ Seq(PA)=99, ACK(PA)=9, Seq(PB)=10, ACK(PB)=99

○ Seq(PA)=100, ACK(PA)=10, Seq(PB)=10, ACK(PB)=101

○ Seq(PA)=100, ACK(PA)=9, Seq(PB)=10, ACK(PB)=101

○ Seq(PA)=99, ACK(PA)=100, Seq(PB)=9, ACK(PB)=10

5. [TCP: Flow Control] What information can be sent by the host on the "receiver side" in order to help the host on the "sender side" control the byte stream flow? (4 Points)

○ ACKs/NACKs

○ Socket buffer available space

○ Checksum

○ Source and destination port numbers