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T-3 EXAMINATION (DECEMBER 2018)

B.Tech 7th Sem. (ECE)

COURESE CODE: 10M11EC113 **MAX. MARKS: 35**

COURSE NAME: Advanced Telecommunication Networks

COURSE CREDITS: 3 **MAX. TIME: 2 Hrs.**

Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means. Attempt all parts of a question altogether.

Q1(a). An IPv4 datagram has arrived with the following information in the header (in hexadecimal):

0*45 00 00 54 00 03 58 50 20 06 00 00 7C 4E 03 02 B4 0E 0F 02

a) Are there any options?
b) What is the size of data?
c) How many more routers can the packet travel to?
d) What is the identification number of the packet? **(0.5+1+1+0.5=3)**

Q1(b). An IPv4 datagram arrives with fragmentation offset of 0 and an M bit of 0. Is this a first fragment, middle fragment, or last fragment? **(1)**

Q1(c). Given a fragmented datagram (in IPv4) with an offset of 120, how can you determine the first and last byte numbers? **(1)**

Q2. Draw the format of IPv6 datagram and discuss each field in detail. **(5)**

Q3(a). Discuss the possible strategies for transition from IPv4 to IPv6. **(2.5)**

Q3(b). What is the minimum size of a UDP datagram? **(1)**

Q3(c). What can you say about the TCP segment in which the value of the control field is one of the following?

a. 000000
b. 000001
c. 010001 **(0.5*3=1.5)**

Q4(a). In cases where reliability is not of primary importance, UDP would make a good transport protocol. Give examples of specific cases. **(1.5)**

Q4(b). An IP datagram is carrying a TCP segment destined for address 130.14.16.17/16. The destination port address is corrupted, and it arrives at destination 130.14.16.19/16. How does the receiving TCP react to this error? **(1.5)**

Q4(c). Do port addresses need to be unique? Why or why not? Why are port addresses shorter than IP addresses? **(1+1=2)**

Q5(a). Discuss SYN flooding attack problem in detail. **(2.5)**

Q5(b). How does SCTP overcome SYN flooding attack problem? **(2.5)**

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Q6(a). A window holds bytes 2001 to 5000. The next byte to be sent is 3001. Draw the figures to show the situation of the window after the following two events.

a. An ACK segment with the acknowledgment number 2500 and window size advertisement 4000 is received.

b. A segment carrying 1000 bytes is sent. **(1.5+1=2.5)**

Q6(b). In SCTP, the state of a receiver is as follows:

a. The receiving queue has chunks 1 to 8, 11 to 14, and 16 to 20.

b. There are 1800 bytes of space in the queue.

c. The value of *lastAck* is 4.

d. No duplicate chunk has been received.

e. The value of *cumTSN* is 5.

Show the contents of the receiving queue and the variables. **(1.5)**

Q6(c). The following is a dump of a TCP header in hexadecimal format.

05320017 00000001 00000000 500207FF 00000000

a. What is the source port number? b. What is the destination port number? **(0.5*2=1)**

Q7. When does congestion occur in a network? Discuss the various congestion control strategies in detail. **(1+4=5)**

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