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T-3 EXAMINATION (MAY 2019)

B.Tech 6th Sem. (ECE)

COURESE CODE: 10B11EC611 MAX. MARKS: 35

COURSE NAME: Telecommunication Networks

COURSE CREDITS: 4 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. CO indicates Course Outcomes.

Q1. Answer the following questions:

a) An Ethernet MAC sublayer receives 1540 bytes of data from the upper layer. Can the data be encapsulated in one frame? If not, how many frames need to be sent? What is the size of data in each frame? **(2)**

b) How does the Ethernet address AB:CD:E9:F8:C7:D2 appear on line in binary? **(1)**

c) Define network allocation vector (NAV) and its importance. **(2)**

d) Discuss hidden station problem and exposed station problem in wireless LANs. **(2)**

CO-4

Q2(a). An ISP is granted a block of addresses starting with 120.80.0.0/16. The ISP wants to distribute these blocks to 2600 customers as follows.

a) The first group has 200 medium-size businesses; each needs 128 addresses.
b) The second group has 400 small businesses; each needs 16 addresses.
c) The third group has 2000 households; each needs 4 addresses.

Design the subblocks and give the slash notation for each subblock. Find out how many addresses are still available after these allocations. **CO-5** **(1.5+1.5+1.5+1=5.5)**

Q2(b). Write the following mask in slash notation (/n) and justify your answer:

255.255.240.0 **CO-5** **(1.5)**

Q3. a) An IPv4 datagram is carrying 1024 bytes of data. If there is no option information, what is the value of the header length field? What is the value of the total length field?

CO-5 **(1+1=2)**

Q3. b) What is NAT? How can NAT help in address depletion problem? **CO-5** **(2)**

Q3. c) Discuss the possible strategies for transition from IPv4 to IPv6. **CO-5** **(2)**

Q3. d) An IPv4 datagram arrives with fragmentation offset of 0 and an Mbit of 0. Is the datagram fragmented? If fragmented, is this a first fragment, middle, or last fragment?

CO-5 **(1)**

Q4. a) Discuss the various error reporting messages of Internet Control Message Protocol (ICMP). **CO-6** **(2.5)**

Q4. b) How is Dynamic Host Configuration Protocol (DHCP) better than BOOTP and RARP? **CO-6** **(1.5)**

Q4. c) Show the original (unabbreviated) form of the following IP address:

0:234::3 **CO-6** **(1)**

Q4. d) Both IPv4 and IPv6 assume that packets may have different priorities or precedences. Explain how each protocol handles this issue? **CO-6** **(2)**

Q5. What are the shortcomings of Distance Vector Routing (DVR)? Discuss in detail the functioning of Link State Routing (LSR). **CO-6** **(2+2=4)**

Q6. A sender sends a series of packets to the same destination using 5-bit sequence numbers. If the sequence number starts with 0, what is the sequence number after sending 100 packets? **CO-4** **(1.5)**

Q7. Match the following to one or more layers of the OSI model:

a) Communicates directly with user's application program
b) Error correction and retransmission
c) Mechanical, electrical, and functional interface
d) Reliable process-to-process message delivery **CO-1** **(1.5)**