CS 447-003 Networks and Data Communications
Spring 2024
Quiz #10 on April 11, 2024 (SOLUTIONS)

Your Last Three Digits: _____

(please do NOT write all of your student ID or your name)

Grade: _____

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(1) How many Class-C domain(s) are (is) equivalent to a domain with '/26' CIDR (block) prefix (in terms of the number of the host computers)? <u>Show your work for fill credit</u>.

CIDR Block PreFix	# Equivalent Class-C	# of Host Addresses
/27		
/26		
/25		
/24		
/17		
/16		
/15		
/14		

The number of the host computers in a Class-C domain = $2^{(32-24)} = 2^8$

The number of the host computers in a '/26' domain = $2^{(32-26)} = 2^6$

Each '/26' domain = $2^6/2^8$ Class-C domain = ¼ Class-C domain.

(2) What does "BGP" stand for? What is the protocol for?

"BGP" = "Border Gateway Protocol"

BGP is for internet core-routers to <u>exchange their routing information (domains each core-router is aware of as "LOCAL" domains) with other core routers</u>.

(3) What information does "Next Hop" field in each BGP UPDATE carries (explain why it is necessary in "BGP UPDATE")?

The "Next Hop" field indicates <u>the IP address</u> of <u>the (internet core) routers</u> an AS needs to forward for a particular destination domain.

(4) The tier-1 ISPs are difference from any other ISPs (those in tier-2 and tier-3). How (what is the most essential difference)?

The tier-1 ISPs are those ISPs that <u>do not pay to any other ISPs</u> (the only "settlement-free" ISPs).

(5) What is the relationship between "ISP" and "AS"?

An ISP can consist of multiple ASs, while an AS always belongs to only one ISP.