NA Assignment   4

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1.

   a. **GSM – Global System for Mobile communication :** It is developed by The European Telecommunications Standards Institute and depends mainly on 900 Mhz and 1900 MHz network bands. Supports 3G technology in India.

   b. **CDMA – Code Division Multiple Access :** CDMA Network is the competitor for GSM Network in India and *it depends on 450 MHz, 800 MHz and 1900 MHz* network bands

   c. **LTE - Long Term Evolution** is a 4G Technology developed for GSM Network. It is the first 4G Technology used in mobile phones across world and was proposed by NTT DoCoMo. It is a high speed data transferor for mobile phones with 299.6 Mbps(Megabits per Second) download speed and 75.4 Mbps up load speed. *It depends on 700 MHz, 750 MHz, 800 MHz, 850 MHz, 1800 MHz, 1900 MHz, 2100 MHz, 2600 MHz frequency bands.*

   d. **HSDPA - High Speed Downlink Packet Access** is an advanced technology to 3G Technology i.e., 3.5 Technology. It supports a speed of 7.2 Mbps (Megabits per Second) but its actual speed is 3 Mbps only.

   e. **HSUPA – High Speed Uplink Packet Access** is another technology besides of HSDPA. It is created by Nokia and supports a speed of 5.76 Mbps (Megabits per Second).

   f. **UMTS – Universal Mobile Telecommunications System** is also a 3G Technology i.e., 3rd Generation Technology which is commonly called as WCDMA (Wideband CDMA). It provides faster *data transfer rates at 42 Mbps* (Megabits per second).

   g. **EV-DO – Evolution Data-Only**. It mainly runs on CDMA Networks for 3G. It supports a speed of 2.4 Mbps (Megabits per Second) but its *actual speed is 450 Kbps* (Kilobits per Second).

2. IP of /28 of class c subnet mask - 255.255.255.240 =
   11111111.11111111.11111111.11110000
   So, number of subnets = 2^4 - 2 = 14
   Similarly number of hosts = 14

3.

IPv4	IPv6
32 bit length represented as decimal	128 bit length represented as hexadecimal.
Fragmentation is done by sender and forwarding routers.	Fragmentation is done only by sender.
No packet flow identification.	Packet flow identification is available in header using the Flow Label.
Address Resolution Protocol (ARP) is available to map IPv4 addresses to MAC addresses.	Address Resolution Protocol (ARP) is replaced with a function of Neighbor Discovery Protocol (NDP).
Internet Group Management Protocol (IGMP) is used to manage multicast group membership.	IGMP is replaced with Multicast Listener Discovery (MLD) messages.