Assignment-1 (UCS414)

1. For the IP address [172.31.5.0/22](http://172.31.5.0/22) find: Network Address, Broadcast address, First host address, Last host address and number of Hosts
2. A network on the Internet has a subnet mask of 255.255.240.0. What is the maximum number of hosts it can handle?
3. A large number of consecutive IP address are available starting at 198.16.0.0. Suppose that four organizations, *A*, *B*, *C*, and *D*, request 4000, 2000, 4000, and 8000 addresses, respectively, and in that order. For each of these, give the first IP address assigned, the last IP address assigned, and the mask in the *w.x.y.z*/*s* notation.
4. A router has the following (CIDR) entries in its routing table:

**Address/mask Next hop**

135.46.56.0/22 Interface 0

135.46.60.0/22 Interface 1

192.53.40.0/23 Router 1

default Router 2

For each of the following IP addresses, what does the router do if a packet with the following address arrives?

(a) 135.46.63.10

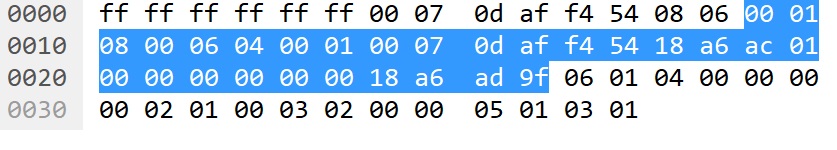
(b) 135.46.57.14

(c) 135.46.52.2

(d) 192.53.40.7

(e) 192.53.56.7

1. Convert the IP address whose hexadecimal representation is C22F1582 to dotted decimal notation.
2. ARP is necessary for the communication amongst the Hosts, justify this statement. Look at the following bits of ARP and clearly mention Source MAC Address, Destination MAC address, Type of ARP, Source IP & Target IP



1. What is significance of address 127.0.0.1, how and where it is being used, explain?
2. An IP datagram of 1000 byres arrives at a router. The router has to forward this packet on a link whose MTU is 100 bytes. Assume the size of IP Header is 20 bytes. Computer the number of fragments that the IP datagram will be divided into for transmission.
3. The address of class B host is to be split into subnet with a 6-bit subnet number. What is the maximum number of subnets and maximum number of hosts in each subnet?
4. A router has just received the following new IP addresses: 57.6.96.0/21, 57.6.104.0/21, 57.6.112.0/21, and 57.6.120.0/21. If all of them use the same outgoing line, can they be aggregated? If so, to what? If not, why not?