**COMP 1587 - CS1 - Internet Protocols: Exercises**

1. i) What class is the IP address 168.59.107.145?

Class B  
 ii) What is the default subnet mask for this class?   
255.255.0.0  
2. Taking into account only the structure of the IPv4 packet headers:   
 i) What is the maximum permittable size (in bits) for an IPv4 packet?

32  
 ii) How many IPv4 addresses can exist?   
2^32  
3. Suppose that a router uses the following routing table:

|  |  |  |
| --- | --- | --- |
| SubnetNumber | SubNetMask | NextHop |
| 128.96.39.0 | 255.255.255.128 | Interface 0 |
| 128.96.39.128 | 255.255.255.128 | Interface 1 |
| 128.96.40.0 | 255.255.255.128 | Interface 2 |
| 192.4.153.0 | 255.255.255.192 | Interface 3 |
| Default | - | Interface 4 |

Which interface will the router use for the next hop for each of the following destination addresses:   
 i) 128.96.39.10

0  
 ii) 128.96.40.12

2  
 iii) 128.96.39.151

0   
 iv) 192.4.153.17

3   
 v) 192.4.153.90

3  
Tip: Apply each subnet mask and if the corresponding subnet number matches the SubnetNumber column, then use the entry in Next-Hop.   
  
4. How many subnets and hosts per subnet can you get from the network 174.20.0.0 / 255.255.240.0?

10101110.00011000.00000000.00000000 212-2 = 4094 host per subnet

11111111.11111111.**11110000.00000000** /20

10101110.00011000.00000000.00000000 = 174.20.0.0 Network Address 24 = 16-2 = 14subnet