EE3009 Tutorial 5 (Solution)

Question 1

a) No VC number can be assigned.

b) Each link has 2 VC numbers available. Totally, there are four links.
   Hence, there are $2^4 = 16$ combinations.

Question 2

Destination Address Range	Interface	Number of Addresses
1000 0000 ~ 1011 1111	0	2^6
1100 0000 ~ 1101 1111	1	2^5
1110 0000 ~ 1111 1111	2	2^5
0000 0000 ~ 0111 1111	3	2^7

Question 3

Maximum size of each fragmented datagram in user bytes = 480

(Note: there are 20 bytes in IP header).

Number of fragments required $= \left\lceil \dfrac{3000 - 20}{480} \right\rceil = 7$

Each fragment will have identification number 422. The segment offsets of the fragments are 0, 60, 120, 180, 240, 300, and 360.

Each fragment except the last one will be of size 500 bytes (incl. 20 bytes of IP header) and will have the More flag equal to 1. Last fragment will be of size 120 bytes (incl. 20 bytes of IP header) and will have the More flag equal to 0.

Question 4

Device	Interface	IP Address	Subnet Mask	Default Gateway
R1	Fa0/0	192.168.1.33	255.255.255.224	---
	S0/0/0	192.168.1.65	255.255.255.224	---
R2	Fa0/0	192.168.1.97	255.255.255.224	---
	S0/0/0	192.168.1.94	255.255.255.224	---
PC1	NIC	192.168.1.62	255.255.255.224	192.168.1.33
PC2	NIC	192.168.1.126	255.255.255.224	192.168.1.97