# SBA Practice Part A

December 24, 2019

## 1 Time estimation

1. 30 minutes to do part A
2. 30 minutes to do part B
3. 45 minutes to do part C

## 2 Part A: You are given the network address of 12.39.0.0 to subnet and provide the IP addressing for a network. Design a minimum of 2000 subnets.

11111111 11111111 11100000 00000000

1. How many bits must be borrowed to this number of subnet?
   (a) 11 bits
2. How many subnet does this create?
   (a) $2^{11} = 2048$
3. What address class is this network address? Class A
4. What is the custom subnet mask?
   (a) Binary: 11111111 11111111 11100000 00000000
   (b) CIDR: 255.255.224.0/19 (2 marks, one part for subnet, one part is for /19)
   (c) Dotted decimal (same as CIDR but without /19?)
5. How many **usable** hosts does this create per subnet?
   (a) 8192 hosts - 2 = 8190 hosts
6. What is the 2nd usable address in the second subnet?
   (a) Second subnet: 12.39.32.2

# 3 Design the VLSM according to the required minimum hosts as shown in the table below. You are required to include the subnet for two (2) WAN links.

| Network Address | 118.0.0.00000000 |
|---|---|
| Branch | Number of usable hosts |
| Branch A1 | 8,000 |
| Branch B1 | 77 |
| Branch C1 | 1,048,574 |

## 3.1 How to do

1. Work out the network address
2. Complete the branch/number of nearest usable host
3. Complete the CIDR
   (a) Note: Some question might as you the subnet mask
   (b) Must convert to dotted decimal, eg: 255.255.255.0
4. Complete subnet network address
   (a) Note: you can do one extra below to verify you get the address correct because of broadcast address
5. Copy paste, use some basic calculation to get
   (a) Subnet Broadcast Address
   (b) Range of IP Address (Note, some question might break this part into 2)
   (c) If question didn't ask for **usable**, then don't minus 2

## 3.2 Network Address

Network Address: 11111111 11110000 000000 00000000

## 3.3 Fill in the table (table given)

| No | Branch/number of nearest usable host | CIDR | Subnet Network Address | Subnet |
|---|---|---|---|---|
| 0 | C1: 1,048,574 (2^20) | /12 | 118.0.0.0 | 1 |
| 1 | A1: 8000 (2^13) | /19 | 118.16.1.0 | 1 |
| 2 | B1: 77 (2^7) | /25 | 118.16.32.0 | 1 |
| 3 | WAN1: 2 | /30 | 118.16.32.128 | 1 |
| 4 | WAN2: 2 | /30 | 118.16.32.132 | 1 |
| EXTRA | USED TO GET BROADCAST ADD for NO 4 | | 118.16.32.136 | |

1. What is the $3^{rd}$ last usable address in Branch $A1$ subnet?
   (a) 118.16.31.252
2. What is the $2^{nd}$ usable address in Branch C1 subnet?
   (a) 118.15.255.253