**AACS2034 Fundamentals of Computer Networks**

**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Programme: \_\_\_\_\_\_\_\_\_\_**

**ID: \_\_\_\_\_\_\_\_\_\_\_\_\_\_ Duration: 1 hour**

**PART A: SUBNETTING (10 MARKS)**

You are given the network address of **150.10.0.0** to subnet and provide the IP addressing for a network. Design for a minimum of 1000 subnets.

1. How many bits must be borrowed to this number of subnet? [2 marks]

1. How many subnets does this create? [2 marks]
2. What address class is this network address? [1 mark]
3. What is the custom subnet mask for the subnet in prefix format? [1 mark]
4. How many total usable hosts does this create per subnet? [2 marks]

1. What is the 2nd last usable address in the fifth subnet? [2 marks]

**PART B: VLSM (10 MARKS)**

Design the subnets for the branches using VLSM, according to the required minimum hosts as shown. Design also the subnet for **ONE** WAN link.

|  |  |
| --- | --- |
| **Network address 20.0.0.0** | |
| **Branch** | **Number of usable hosts** |
| Branch A | 5000 |
| Branch B | 1000 |

1. Draw and fill in the table with the subnet addresses that you have designed. [8 marks]

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **No** | **Branch** | **Prefix for new Subnet Mask** | **Subnet Network Address** | **Range of Usable IP addresses** | **Subnet Broadcast Address** |
| 0 |  |  |  |  |  |
| 1 |  |  |  |  |  |
| 2 |  |  |  |  |  |
| 3 |  |  |  |  |  |

1. What is the 2nd last usable address in Branch A subnet? [2 marks]

**PART C:  ESTIMATED DURATION: (35 MINUTES)**

**Instructions**

**1. Enter the following info into the User Profile Dialog:   
Your name, Programme, Tutorial Group and Student ID.**

Graphical user interface, text, application

Description automatically generated

**2.Save your packet tracer file as YourName\_YourProgrammeYourTutGroup.pka**

E.g.: TanAhKao\_RIT1G2.pka

**p/s: 10 marks will be deducted WITHOUT User profile**

1. **Print screen your results and paste in the answer template:**

|  |  |
| --- | --- |
|  | **Screen capture of Ping results**  ***NOTE:*** *ping result MUST be 100%)* |
| Ping Test 1  From PC-A to server-A |  |

Successful ping test contributes to final PT marks.

|  |
| --- |
| **Sample of screen captured for final mark and profile information** |
| **b) Screen capture of PT screen with marks** |
|  |

***Gentle reminder: 10 marks will be deducted if you forgot to capture the marks page.***