LONDON METROPOLITAN UNIVERSITY

**FIRST-SIT PRACTICAL EXAMINATION** **Year Long 2021**

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|---|---|
| **Module Code:** | **CT4005NI** |
| **Module Title:** | **Computer Hardware and Software Architectures** |
| **Module Leader:** | **Puranjan Acharya (Islington College)** |

| | |
|---|---|
| **Date:** | 19th September, 2021. |
| **Day / Evening:** | Day |
| **Start Time:** | 9 AM |
| **Duration:** | 12 hours |

| | |
|---|---|
| **Test Type:** | **Practical Examination** |
| **Materials supplied:** | None |
| **Materials permitted:** | Writing equipment only |
| **Warning:** | Candidates are warned that possession of unauthorized materials in a test is a serious assessment offence. |

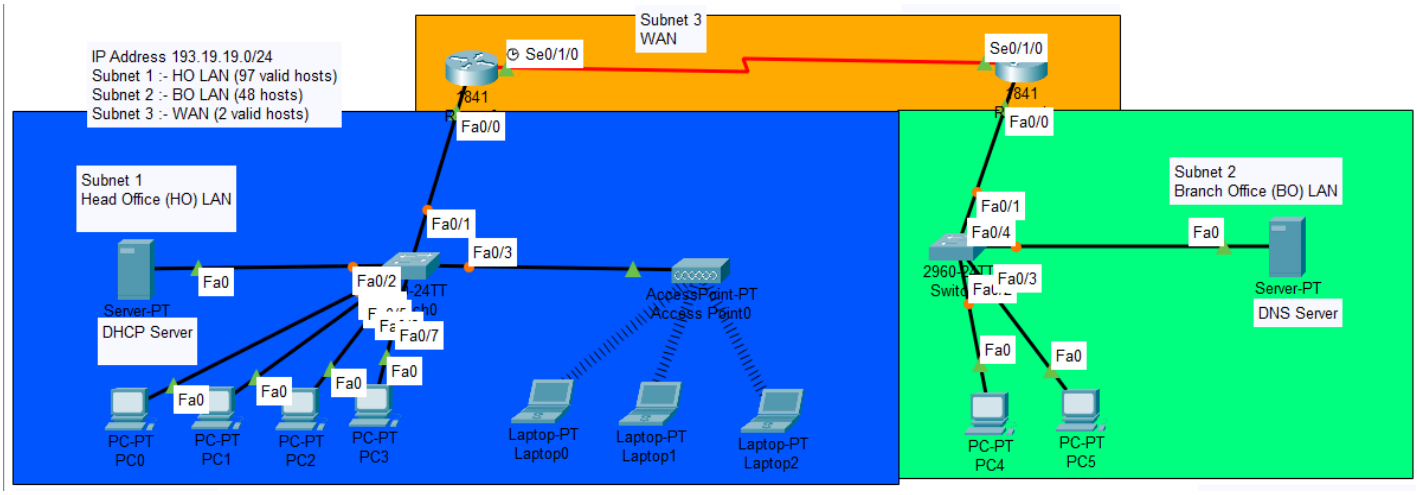
| | |
|---|---|
| **Instructions to candidates:** | This test accounts for **30%** of your total module grades.<br><br>You are to **submit this test paper**, in the google classroom. |

**Last Name : Shrestha**

**First Name : Rabina**

**London Met Id. No : 20049416**

**Topology:**




**Task 1 (Subnetting) [18]**

1. Subnet the IP **193.19.19.0/24** for: - **[ 9 x 2 = 18]**

    a) Head Office (HO) LAN (97valid hosts)

    b) Branch Office (BO) LAN (48 valid hosts)

    c) WAN (2 valid hosts)

Fill in the Following Information (Write the address with the subnet mask included in CIDR Notation)

a. Subnet 1 HO LAN:

| Network Address | Usable IP Address Range | Broadcast Address |
|---|---|---|
| 193.19.19.0/25 | 193.19.19.1/25 – 193.19.19.126/25 | 193.19.19.127/25 |

b. Subnet 2 BO LAN:

| Network Address | Usable IP Address Range | Broadcast Address |
|---|---|---|
| 193.19.19.128/26 | 193.19.19.129/26 – 193.19.19.190/26 | 193.19.19.191/26 |

c. Subnet 3 WAN:

| Network Address | Usable IP Address Range | Broadcast Address |
|---|---|---|
| 193.19.19.192/30 | 193.19.19.193/30 – 193.19.19.194/30 | 193.19.19.195/30 |

**Task 2 (Configure Static IP) [32]**

2. HO Router0 LAN interface (fa0/0) ✇First usable IP address of Subnet 1 HO LAN.

Fill in the following information for Router fa0/0 interface: **[ 2 X 2 = 4]**

| | |
|---|---|
| IP Address | 193.19.19.1 |
| Subnet Mask | 255.255.255.128 |

3. DHCP Server ✇Second usable IP address of Subnet1 HO LAN

Fill in the following information for DHCP Network Interface Card interface: **[ 4 x 2 = 8]**

| | |
|---|---|
| IP Address | 193.19.19.2 |
| Subnet Mask | 255.255.255.128 |
| Default Gateway | 193.19.19.1 |
| DNS Server | 193.19.19.130 |

4. HO Router0 WAN interface S0/1/0 ✇First usable IP of WAN subnet3

Fill in the following information for HO Router WAN interface S0/1/0 **[ 2 X 2 = 4]**

| | |
|---|---|
| IP Address | 193.19.19.193 |
| Subnet Mask | 255.255.255.252 |

5. BO Router1 WAN interface S0/1/0 ✇Second usable IP of WAN subnet3

Fill in the following information for BO Router1 WAN interface S0/1/0 **[ 2 X 2 = 4]**

| | |
|---|---|
| IP Address | 193.19.19.194 |
| Subnet Mask | 255.255.255.252 |

6. BO Router1 LAN interface (fa0/0) ✇First usable IP address of Subnet 2 BO LAN

Fill in the following information for Router fa0/0 interface: **[ 2 X 2 = 4]**

| | |
|---|---|
| IP Address | 193.19.19.129 |
| Subnet Mask | 255.255.255.192 |

7. DNS Server ✇Second usable IP address of Subnet 2 BO LAN

Fill in the following information for DNS Network Interface Card interface: **[ 4 X 2 = 8]**

| | |
|---|---|
| IP Address | 193.19.19.130 |
| Subnet Mask | 255.255.255.192 |
| Default Gateway | 193.19.19.129 |
| DNS Server | 193.19.19.130 |

**Task 3: Configure DHCP and DNS Service. [14]**

8. Configure DHCP Service in DHCP Server as instructed in the packet tracer activity file.

Fill in the following information for DHCP Service **[ 5 X 2 = 10]**

| | |
|---|---|
| Pool name | serverPool |
| Default Gateway | 193.19.19.1 |
| DNS Server | 193.19.19.130 |
| Start IP Address | 193.19.19.0 |
| Subnet Mask | 255.255.255.128 |

9. Configure DNS service in DNS Server as instructed in the packet tracer activity file.

Fill in the following information for DNS Server **[ 2 X 2 = 4]**

| | |
|---|---|
| Domain Name | www.cisco.com |
| IP Address | 193.19.19.130 |

**Task 4: Configure Wireless Access point [6]**

10.Configure Wireless Access Point as instructed in the packet tracer activity file.

Fill in the following information for Wireless Access point: **[ 3 X 2 = 6]**

| | |
|---|---|
| Wi-Fi SSID Name | home_wifi |
| Encryption type | WPA2 PSK |
| Wi-Fi Password | 1234ABCD |

**Task 5: Configure Static Routing [18]**

11.Configure Static Routing in both HO Router0 and BO Router1

a. Fill in the following information for Static routing in Router0: **[3 X 3=9]**

| | |
|---|---|
| Destination Network Address | 193.19.19.128 |
| Destination Network Address Subnet Mask | 255.255.255.192 |
| Next hop IP address | 193.19.19.194 |

b. Fill in the following information for Static routing in Router1: **[ 3 X 3 = 9]**

| | |
|---|---|
| Destination Network Address | 193.19.19.0 |
| Destination Network Address Subnet Mask | 255.255.255.128 |
| Next hop IP address | 193.19.19.193 |

**Task 6: Verify Connectivity [12]**

12.Verify connectivity **[ 4 X 3 = 12]**

Do a ping test from PC0 to PC5 and answer the following question.

a) Does the ping test successfully?

Yes, the ping test was successful. Type in ping 193.19.19.132; which is the Ip address of PC5 in command prompt of PC0. The command prompt might show “Request timed out” a few times which is completely normal. Continue to ping until the command prompt shows the following information:

C:\>ping 193.19.19.132

Pinging 193.19.19.132 with 32 bytes of data:

Reply from 193.19.19.132: bytes=32 time=1ms TTL=126
Reply from 193.19.19.132: bytes=32 time=12ms TTL=126
Reply from 193.19.19.132: bytes=32 time=8ms TTL=126
Reply from 193.19.19.132: bytes=32 time=2ms TTL=126

Ping statistics for 193.19.19.132:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 1ms, Maximum = 12ms, Average = 5ms

Once the command prompt shows 0% loss, the ping test is successful, as all the data sent is received by PC5. The command prompt also shows the round-trip times in milli-seconds in which the minimum value is 1ms, maximum value is 12ms, and average 5ms.

b) What is the IP address PC5 that you found from the ping test?

From the ping test the Ip address of PC5 was found to be 193.19.19.132.

Do a ping test from Laptop0 to www.cisco.com and answer the following question:

c) Does the ping test successfully?

Yes, the ping test was successful. Type in ping ww.cisco.com; which is the domain name, in the command prompt of Laptop0.

C:\>ping www.cisco.com

Pinging 193.19.19.130 with 32 bytes of data:

Reply from 193.19.19.130: bytes=32 time=17ms TTL=126
Reply from 193.19.19.130: bytes=32 time=10ms TTL=126
Reply from 193.19.19.130: bytes=32 time=19ms TTL=126
Reply from 193.19.19.130: bytes=32 time=23ms TTL=126

Ping statistics for 193.19.19.130:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:

Minimum = 10ms, Maximum = 23ms, Average = 17ms

Once the command prompt shows 0% loss, the ping test is successful. The command prompt also shows the round-trip times in milli-seconds in which the minimum value is 10ms, maximum value is 23ms, and average 17ms.

d) What is the IP address of www.cisco.com that you found from the ping test?

From the ping test the Ip address of www.cisco.com was found to be 193.19.19.130.

**END**