Hands-On Project 6-3 (10 marks)

|  |  |  |  |
| --- | --- | --- | --- |
| Network/prefix | Subnet mask | Host bits | Number of hosts |
| 172.16.1.0/24 | 255.255.255.0 | 8 | 254 |
| 10.1.100.128/26 | 255.255.255.192 | 6 | 62 |
| 10.1.96.0/19 | 255.255.224.0 | 13 | 8190 |
| 192.168.1.0/24 | 255.255.255.0 | 8 | 254 |
| 172.31.0.0/16 | 255.255.0.0 | 16 | 65534 |
| 10.255.255.252/30 | 255.255.255.252 | 2 | 2 |
| 172.28.240.0/20 | 255.255.240.0 | 12 | 4090 |
| 10.44.108.0/22 | 255.255.252.0 | 10 | 1022 |
| 192.168.100.24/21 | 255.255.248.0 | 11 | 2046 |
| 172.23.64.0/18 | 255.255.192.0 | 14 | 16382 |
| 192.168.5.128/25 | 255.255.255.128 | 7 | 126 |

Hands-On Project 6-4 (10 marks)

|  |  |  |  |
| --- | --- | --- | --- |
| Network ID | Required hosts | Host bits needed | Network ID/prefix |
| 172.16.1.0 | 254 | 8 | 172.16.1.0/24 |
| 10.1.100.128 | 62 | 6 | 10.1.100.128/26 |
| 10.1.96.0 | 8190 | 13 | 10.1.96.0/19 |
| 192.168.1.0 | 200 | 8 | 192.168.1.0/24 |
| 172.31.0.0 | 65000 | 16 | 172.31.0.0/16 |
| 10.255.255.252 | 2 | 2 | 10.255.255.252/30 |
| 172.28.240.0 | 4000 | 12 | 172.28.240.0/20 |
| 10.44.108.0 | 900 | 10 | 10.44.108.0/22 |
| 192.168.240.0 | 2200 | 12 | 192.168.240.0/20 |
| 172.23.64.0 | 16000 | 14 | 172.23.64.0/18 |
| 192.168.5.128 | 110 | 7 | 192.168.5.128/25 |

Part II:

Complete the table (10 marks):

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | PC1 | PC2 | PC3 | PC5 | PC6 |
| IP Address (in Octets) | 192.168.1.1 | 192.168.1.2 | 192.168.1.3 | 192.168.1.5 | 192.168.1.6 |
| IP Address (in Binary) | 11000000.10101000.00000001.00000001 | 11000000.10101000.00000001.00000010 | 11000000.10101000.00000001.00000011 | 11000000.10101000.00000001.00000101 | 11000000.10101000.00000001.00000110 |
| Subnet Mask (in Binary) | 11111111.11111111.11111111.11111100 | 11111111.11111111.11111111.11111100 | 11111111.11111111.11111111.11111000 | 11111111.11111111.11111111.11111100 | 11111111.11111111.11111111.11111100 |
| Subnet Mask (in Octets) | 255.255.255.252 | 255.255.255.252 | 255.255.255.248 | 255.255.255.252 | 255.255.255.252 |
| Network ID (in Binary) | 11000000.10101000.00000001.00000000/30 | 11000000.10101000.00000001.00000000 | 11000000.10101000.00000001.00000000 | 11000000.10101000.00000001.00000000 | 11000000.10101000.00000001.00000000 |
| Network ID (in Octets) | 192.168.1.0/30 | 192.168.1.0/30 | 192.168.1.0/29 | 192.168.1.4/30 | 192.168.1.4/30 |
| Range of the Hosts in side the same network | 192.168.1.0 to 192.168.1.3 | 192.168.1.1 to 192.168.1.2 | 192.168.1.1 to  192.168.1.6 | 192.168.1.5 to  192.168.1.6 | 192.168.1.5 to  192.168.1.6 |

Questions:

Scenario i:

(1 marks) PC A: 192.168.1.1/24 PC B: 192.168.1.2/24

(2 marks) Ping command work from A to B? If not, did the failure occur in sending or in returning?

It worked.

(2 marks) Ping command work from B to A? If not, did the failure occur in sending or in returning?

It worked.

Scenario ii:

(1 marks) PC A: 192.168.1.1/24 PC B: 192.168.2.1/24

(2 marks) Ping command work from A to B? If not, did the failure occur in sending or in returning?

not worked, did the failure occur in sending!

(2 marks) Ping command work from B to A? If not, did the failure occur in sending or in returning?

It worked.

Scenario iii:

(1 marks) PC A: 192.168.1.1/25 PC B: 192.168.1.2/24

(2 marks) Ping command work from A to B? If not, did the failure occur in sending or in returning?

It worked.

(2 marks) Ping command work from B to A? If not, did the failure occur in sending or in returning?

It worked.

Scenario iv:

(1 marks) PC A: 192.168.1.1/25 PC B: 192.168.1.2/24

(2 marks) Ping command work from A to B? If not, did the failure occur in sending or in returning?

It worked.

(2 marks) Ping command work from B to A? If not, did the failure occur in sending or in returning?

It worked.

Bonus question (10 marks):

1. If both hosts are on the same subnet, they should be able to ping each other. If they are on different subnets, they weil ping fail.
2. if the host is on a different subnet and no gateway is configured, ARP resolution fails, and the ping fails