**TASK # 2**

1. For Development (requiring 120 PCs):

- 2^7 = 128 (the smallest power of 2 greater than 120)

- Therefore, we need 7 bits for Development.

2. For Finance (requiring 35 PCs):

- 2^6 = 64 (the smallest power of 2 greater than 35)

- Therefore, we need 6 bits for Finance.

3. For HR (requiring 10 PCs):

- 2^4 = 16 (the smallest power of 2 greater than 10)

- Therefore, we need 4 bits for HR.

Total bits required = 7 (Development) + 6 (Finance) + 4 (HR) = 17 bits

Number of subnets = 2^17 = 131,072

Since the network address given is 200.16.100.0/24, it already has 24 bits reserved for network addressing. Therefore, we need to borrow 17 - 24 = -7 bits from the host portion to accommodate the subnets.

Now, let's calculate the new subnet mask:

New subnet mask = 24 + (-7) = 17

So, the subnet mask for the new subnets will be /17.

Now, we can calculate the subnet addresses for each department:

1. For Development:

- Number of subnets: 2^7 = 128

- Subnet size: 2^(17-7) = 2^10 = 1024

- Subnet addresses: 200.16.100.0/17 to 200.16.127.0/17

2. For Finance:

- Subnet addresses: 200.16.128.0/17 to 200.16.143.0/17

3. For HR:

- Subnet addresses: 200.16.144.0/17 to 200.16.159.0/17