

1) subnetting the given ip range

Given IP range  $172.16.20.64/26$  and subnet mask is  $28$  bits  
 $\downarrow$   
 $01000000$

$\therefore$  Four networks would be.

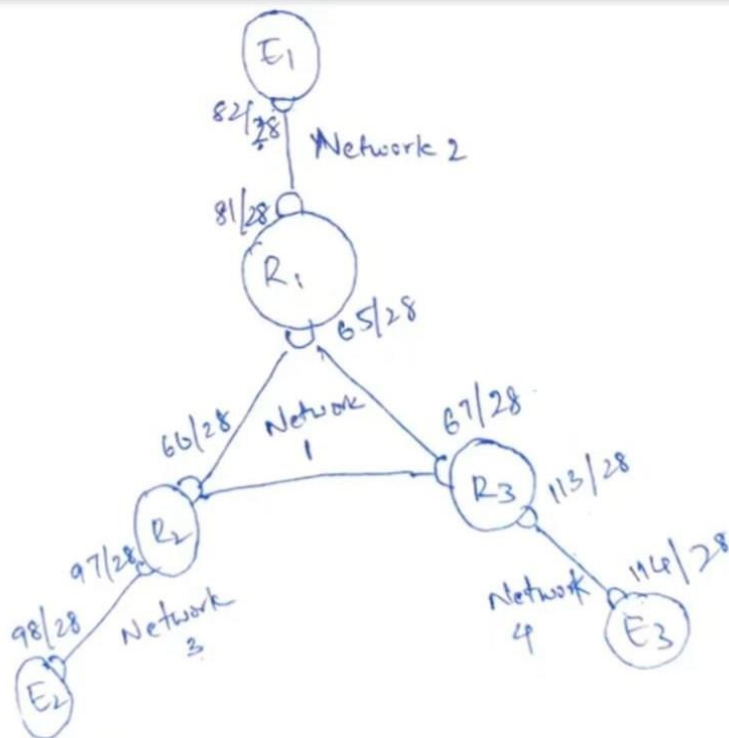
$01000000 \rightarrow 64 \rightarrow 172.16.20.64$

$01010000 \rightarrow 80 \rightarrow 172.16.20.80$

$01100000 \rightarrow 96 \rightarrow 172.16.20.96$

$01110000 \rightarrow 112 \rightarrow 172.16.20.112$

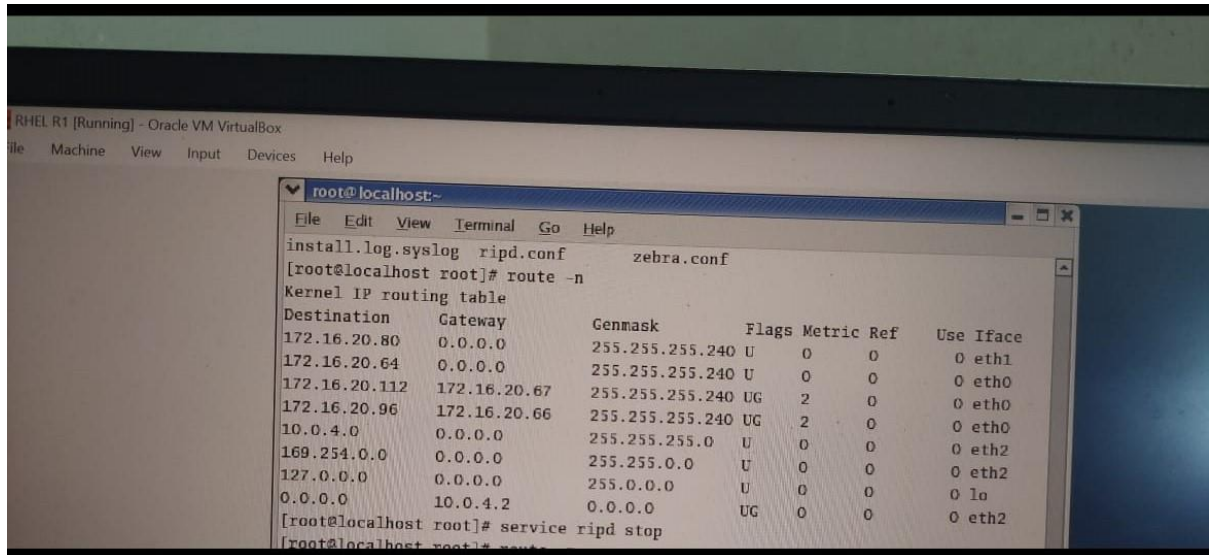
2) Assignment of ip addresses to all interfaces (refer task 1 for more info of how to assign ip addresses) - this is one way of setup I followed not the only way of setup



3)task 1 part 1 final routing tables(3 tables) and task 1 part 2 final routing tables(3 tables)-forgot to take screenshots-lazy

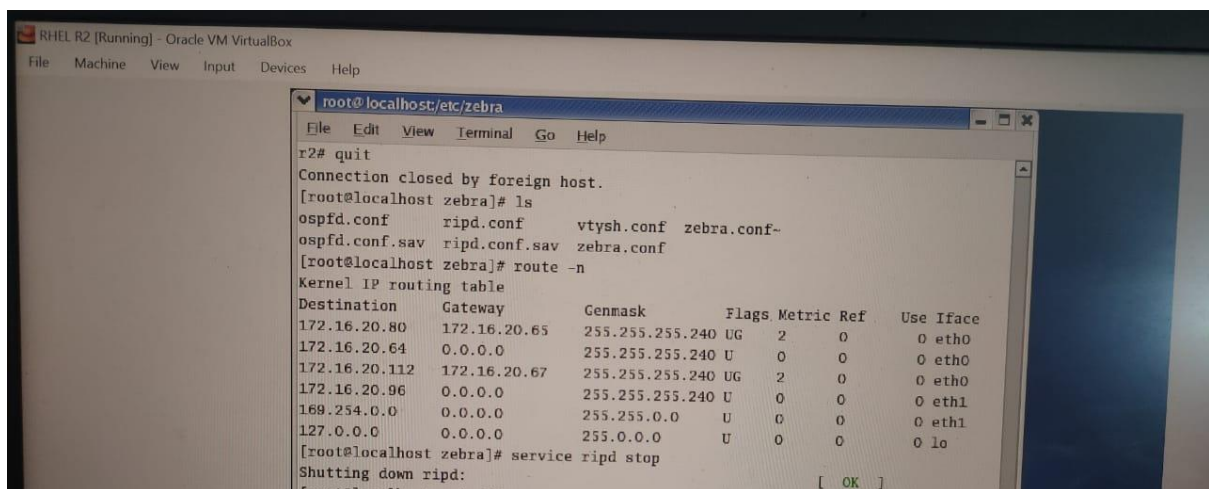
4)Final routing tables after task 2 part 1(RIPD=RIPv2)

a)router 1



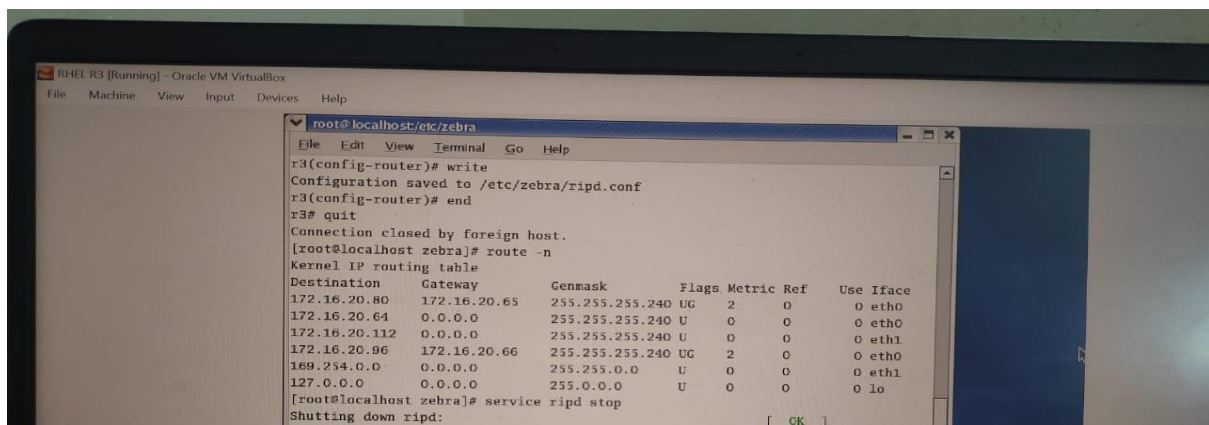
```
root@localhost:~  
File Edit View Terminal Go Help  
install.log syslog ripd.conf zebra.conf  
[root@localhost root]# route -n  
Kernel IP routing table  
Destination Gateway Genmask Flags Metric Ref Use Iface  
172.16.20.80 0.0.0.0 255.255.255.240 U 0 0 0 eth1  
172.16.20.64 0.0.0.0 255.255.255.240 U 0 0 0 eth0  
172.16.20.112 172.16.20.67 255.255.255.240 UG 2 0 0 eth0  
172.16.20.96 172.16.20.66 255.255.255.240 UG 2 0 0 eth0  
10.0.4.0 0.0.0.0 255.255.255.0 U 0 0 0 eth0  
169.254.0.0 0.0.0.0 255.255.0.0 U 0 0 0 eth2  
127.0.0.0 0.0.0.0 255.0.0.0 U 0 0 0 eth2  
0.0.0.0 10.0.4.2 0.0.0.0 UG 0 0 0 eth2  
[root@localhost root]# service ripd stop  
[root@localhost root]# route
```

b)router 2



```
root@localhost/etc/zebra  
File Edit View Terminal Go Help  
r2# quit  
Connection closed by foreign host.  
[root@localhost zebra]# ls  
ospfd.conf ripd.conf vtysh.conf zebra.conf-  
ospfd.conf.sav ripd.conf.sav zebra.conf  
[root@localhost zebra]# route -n  
Kernel IP routing table  
Destination Gateway Genmask Flags Metric Ref Use Iface  
172.16.20.80 172.16.20.65 255.255.255.240 UG 2 0 0 eth0  
172.16.20.64 0.0.0.0 255.255.255.240 U 0 0 0 eth0  
172.16.20.112 172.16.20.67 255.255.255.240 UG 2 0 0 eth0  
172.16.20.96 0.0.0.0 255.255.255.240 U 0 0 0 eth1  
169.254.0.0 0.0.0.0 255.255.0.0 U 0 0 0 eth1  
127.0.0.0 0.0.0.0 255.0.0.0 U 0 0 0 lo  
[root@localhost zebra]# service ripd stop  
Shutting down ripd:  
[ OK ]
```

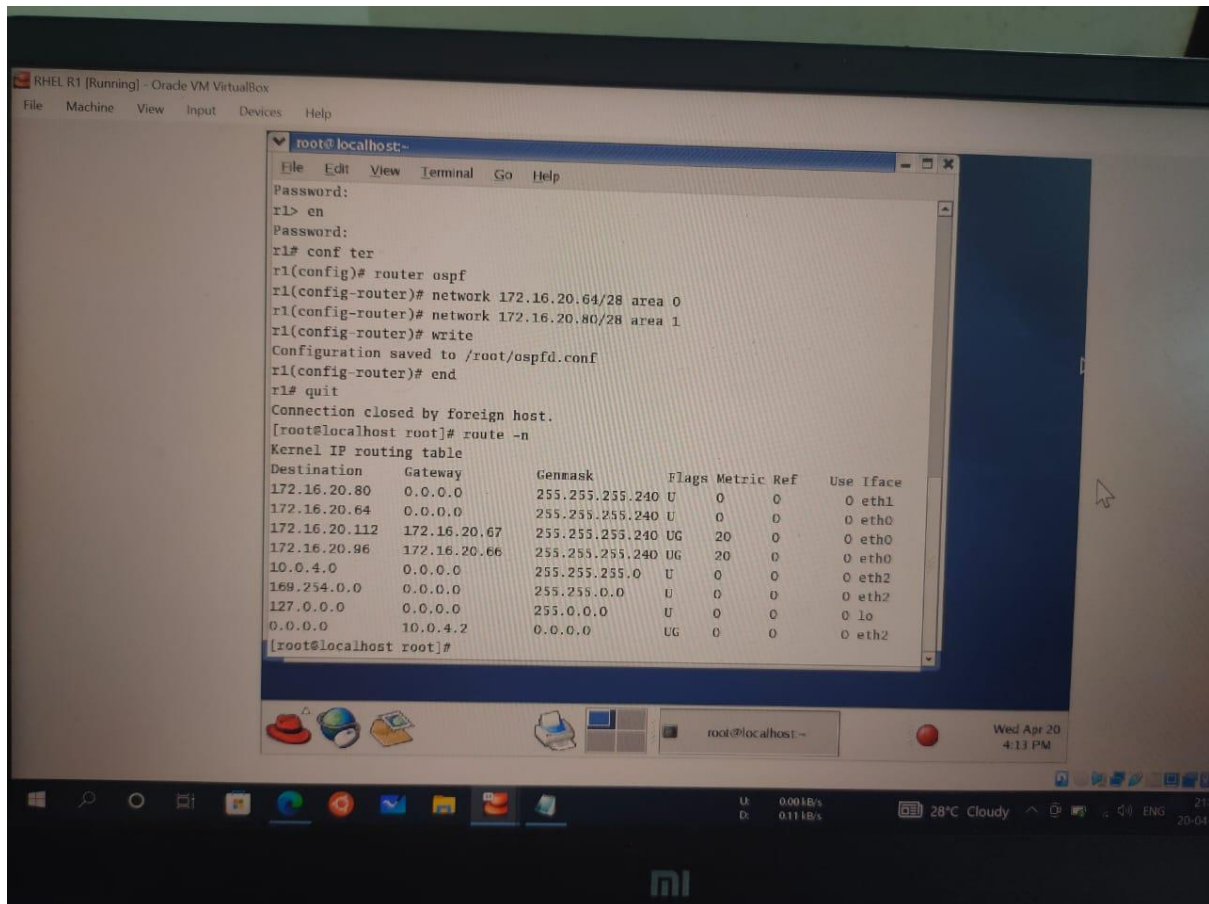
c)router 3



```
root@localhost/etc/zebra  
File Edit View Terminal Go Help  
r3(config-router)# write  
Configuration saved to /etc/zebra/ripd.conf  
r3(config-router)# end  
r3# quit  
Connection closed by foreign host.  
[root@localhost zebra]# route -n  
Kernel IP routing table  
Destination Gateway Genmask Flags Metric Ref Use Iface  
172.16.20.80 172.16.20.65 255.255.255.240 UG 2 0 0 eth0  
172.16.20.64 0.0.0.0 255.255.255.240 U 0 0 0 eth0  
172.16.20.112 0.0.0.0 255.255.255.240 U 0 0 0 eth1  
172.16.20.96 172.16.20.66 255.255.255.240 UG 2 0 0 eth0  
169.254.0.0 0.0.0.0 255.255.0.0 U 0 0 0 eth1  
127.0.0.0 0.0.0.0 255.0.0.0 U 0 0 0 lo  
[root@localhost zebra]# service ripd stop  
Shutting down ripd:  
[ OK ]
```

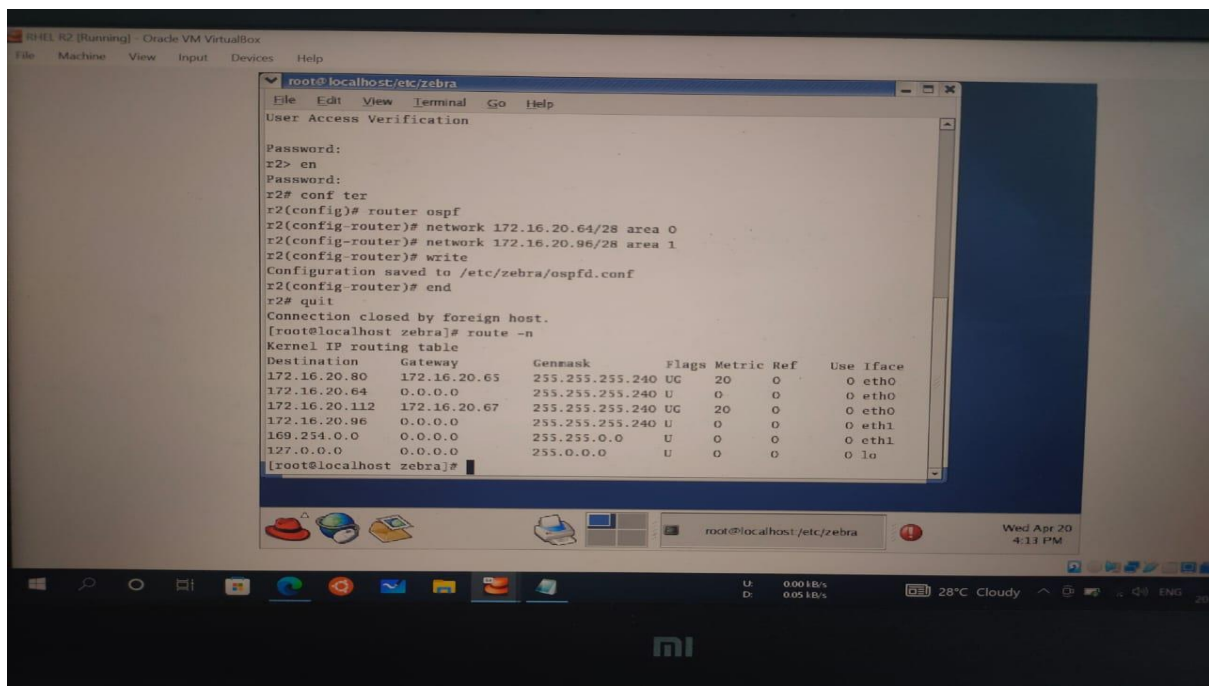
## 5) Final routing tables after task 2 part 2 (OSPF=ospf)

### a) router 1



```
root@localhost:~  
File Edit View Terminal Go Help  
Password:  
r1> en  
Password:  
r1# conf ter  
r1(config)# router ospf  
r1(config-router)# network 172.16.20.64/28 area 0  
r1(config-router)# network 172.16.20.80/28 area 1  
r1(config-router)# write  
Configuration saved to /root/ospfd.conf  
r1(config-router)# end  
r1# quit  
Connection closed by foreign host.  
[root@localhost root]# route -n  
Kernel IP routing table  
Destination Gateway Genmask Flags Metric Ref Use Iface  
172.16.20.80 0.0.0.0 255.255.255.240 U 0 0 0 eth1  
172.16.20.64 0.0.0.0 255.255.255.240 U 0 0 0 eth0  
172.16.20.112 172.16.20.67 255.255.255.240 UG 20 0 0 eth0  
172.16.20.96 172.16.20.66 255.255.255.240 UG 20 0 0 eth0  
10.0.4.0 0.0.0.0 255.255.255.0 U 0 0 0 eth2  
169.254.0.0 0.0.0.0 255.255.0.0 U 0 0 0 eth2  
127.0.0.0 0.0.0.0 255.0.0.0 U 0 0 0 lo  
0.0.0.0 10.0.4.2 0.0.0.0 UG 0 0 0 eth2  
[root@localhost root]#
```

### b) router 2



```
root@localhost/etc/zebra  
File Edit View Terminal Go Help  
User Access Verification  
Password:  
r2> en  
Password:  
r2# conf ter  
r2(config)# router ospf  
r2(config-router)# network 172.16.20.64/28 area 0  
r2(config-router)# network 172.16.20.96/28 area 1  
r2(config-router)# write  
Configuration saved to /etc/zebra/ospfd.conf  
r2(config-router)# end  
r2# quit  
Connection closed by foreign host.  
[root@localhost zebra]# route -n  
Kernel IP routing table  
Destination Gateway Genmask Flags Metric Ref Use Iface  
172.16.20.80 172.16.20.65 255.255.255.240 UG 20 0 0 eth0  
172.16.20.64 0.0.0.0 255.255.255.240 U 0 0 0 eth0  
172.16.20.112 172.16.20.67 255.255.255.240 UG 20 0 0 eth0  
172.16.20.96 0.0.0.0 255.255.255.240 U 0 0 0 eth1  
169.254.0.0 0.0.0.0 255.255.0.0 U 0 0 0 eth1  
127.0.0.0 0.0.0.0 255.0.0.0 U 0 0 0 lo  
[root@localhost zebra]#
```

c)router 3

