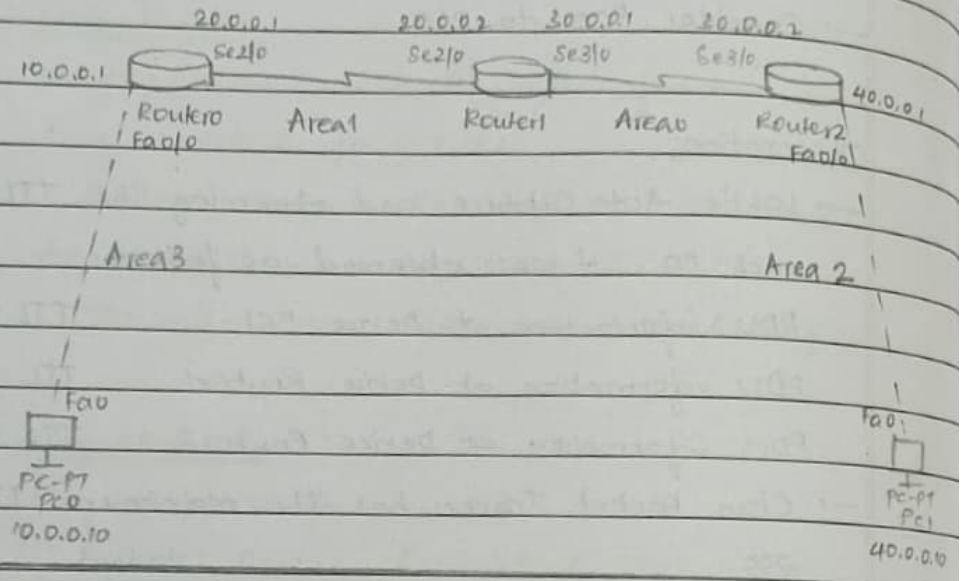
PAGE NO :
DATE : 27/11/2024

LAB-07

01. **Objective:**

Configure OSPF routing protocol.

Topology:



Procedure:

→ Place 2 end devices and 3 routers as in the figure.

→ connect the end devices to routers via copper crossover wires and routers to routers via serial wire

→ Set the IP addresses & gateways as in figure

→ Now go to each router and configure.

→ **Router0:**

```
# interface serial 2/0
# ip address 20.0.0.1 255.0.0.0
# encapsulation ppp
# clock rate 64000
# no shut  # exit
# interface fa 0/0
# ip address 10.0.0.1 255.0.0.0
# no shut
# exit
```

→ Router1: # interface serial 2/0
ip address 20.0.0.2 255.0.0.0
encapsulation ppp
no shut
exit
interface serial 3/0
ip address 30.0.0.1 255.0.0.0
encapsulation ppp
clock rate 64000
no shut
exit

→ Router2: # interface serial 3/0
ip address 30.0.0.2 255.0.0.0
encapsulation ppp
no shut
exit
interface fa 0/0
ip address 40.0.0.1 255.0.0.0
no shut
exit

→ Enable IP routing by configuring OSPF.

→ Router R0: # router ospf 1
router-id 1.1.1.1
network 10.0.0.0 0.255.255.255 area 3
network 20.0.0.0 0.255.255.255 area 1
exit

→ Router1: # router ospf 1
router-id 2.2.2.2
network 20.0.0.0 0.255.255.255 area 1
network 30.0.0.0 0.255.255.255 area 0
exit

PAGE NO :
DATE :

→ Router2: # router ospf 1
router-id 3.3.3.3
network 30.0.0.0 0.255.255.255 area 0
network 40.0.0.0 0.255.255.255 area 2
exit

→ Configure loopback address to routers.
→ Router0: # interface loopback 0
ip add 172.16.1.252 255.255.0.0
no shut
→ Router1: # interface loopback 0
ip add 172.16.1.253 255.255.0.0
no shut
→ Router2: # interface loopback 0
ip add 172.16.1.254 255.255.0.0
no shut

→ Create virtual link between Router0 and router1
→ Router0: # router ospf 1
area 1 virtual-link 2.2.2.2
→ Router1: # router ospf 1
area 1 virtual-link 1.1.1.1

Observations:
→ Once the IP routing was enabled by OSPF.
#show ip route indicated:
O IA 40.0.0.0/8 [110/129] via 20.0.0.2, 00:04:23, Serial2/0
O IA 30.0.0.0/8 [110/128] via 20.0.0.2, 00:07:28, Serial2/0
→ After loopback. # show ip route indicated
O IA 20.0.0.0/8 [110/128] via 30.0.0.1 00:18:58, Serial2/0
→ After virtual link, # show ip route indicated
O IA 20.0.0.0/8 [110/128] via 30.0.0.1, 00:01:55, Serial2/0
O IA 10.0.0.0/8 [110/129] via 30.0.0.1, 00:01:56, Serial2/0

→ Ping PC1 via PC0:

ping 40.0.0.10

Ping statistics for 40.0.0.10:

Packets: Sent = 4, Received = 3, Lost = 1 (25% loss)

→ Ping PC0 via PC1:

ping 10.0.0.10

Ping statistics for 10.0.0.10:

Packets: Sent = 4, Received = 4, Lost = 0 (0% loss)

→ Hence, the OSPF routing was set up and the pings were succesful

27/11/24