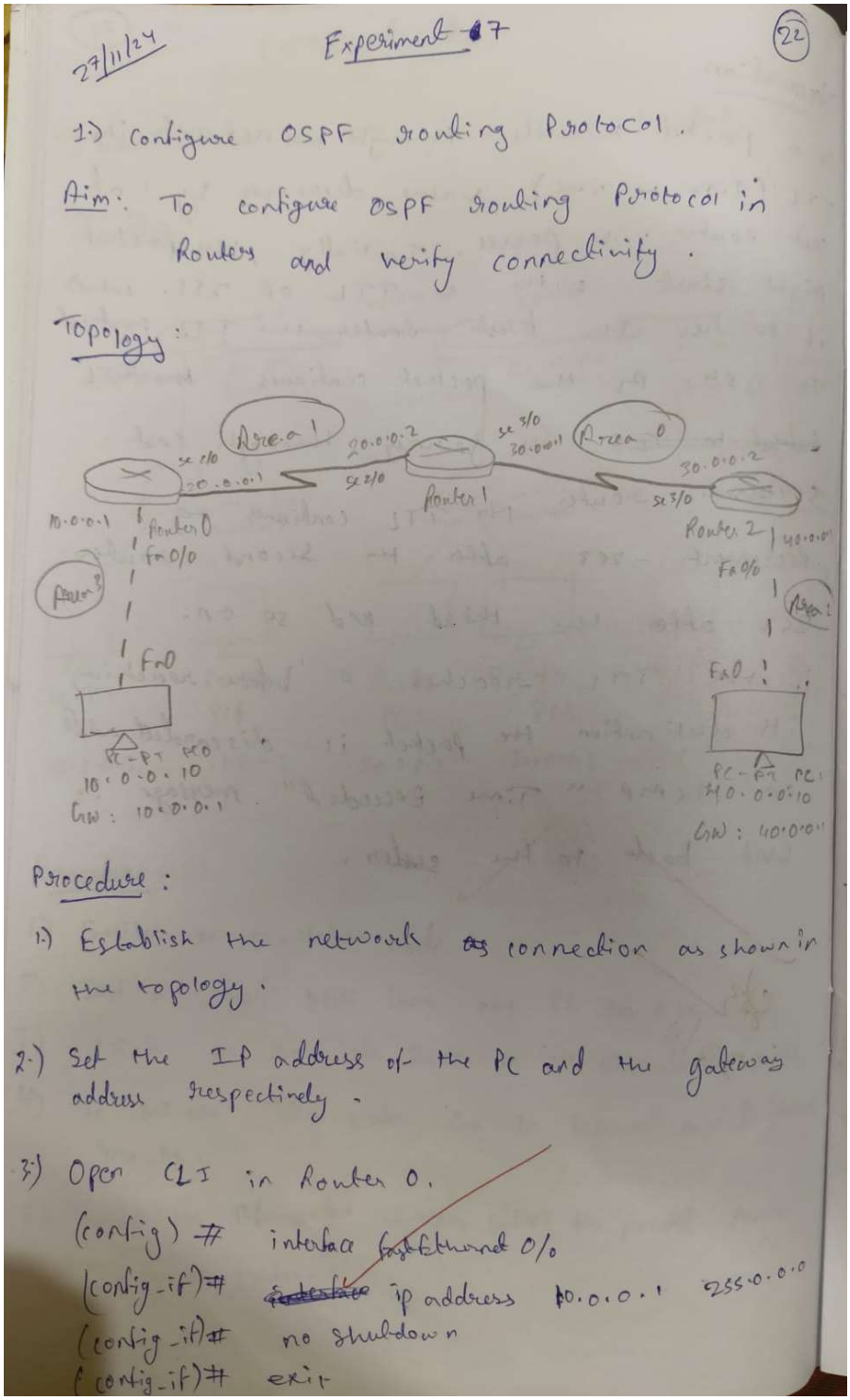
**Program 8**

**Aim:**Configure OSPF routing protocol .

**Topology , Procedure and Observation:**



(config) # interface serial 2/0
(config-if) # ip address 20.0.0.1 255.0.0.0
(config-if) # encapsulation PPP
(config-if) # clock rate 64000.

Open CLI in Router 1

(config) # interface serial 2/0
(config-if) # ip address 20.0.0.2 255.0.0.0
(config-if) # encapsulation PPP
(config-if) # no shutdown
(config-if) # exit

(config) # interface serial 3/0
(config-if) # ip address 30.0.0.1 255.0.0.0
(config-if) # encapsulation PPP
(config-if) # clock rate 64000.
(config-if) # no shutdown
(config-if) # exit.

Open CLI in Router 2.

(config) # interface FastEthernet 0/0
(config-if) # ipaddress 40.0.0.1 255.0.0.0
(config-if) # no shutdown
(config-if) # exit

```
(config)# interface serial 3/0
(config-if)# ip address 30.0.0.2 255.0.0.0
(config-if)# encapsulation PPP
(config-if)# no shut down
(config-if)# exit.
```

4.) Enable ip routing by configuring ospf routing protocol.

In Router R0

```
(config)# router ospf 1
(config-router)# router-id 1.1.1.1
# network 10.0.0.0 0.255.255.255 area3
# network 20.0.0.0 0.255.255.255 area1
# exit.
```

In Router R1

```
(config)# router ospf 1
(config-router)# router-id 3.3.3.3
# network 30.0.0.0 0.255.255.255 area
# network 40.0.0.0 0.255.255.255 area
# exit.
```

5.) check the routing table.

```
Router# show ip route.
```

You can see the code O which stands for the OSPF connection.

There must be one interface up to keep ospf (25) process up. so it's better to configure loopback address to router.

R0 (config) # interface loopback 0
(config-if) # ip add 172.16.1.252 255.255.0.0
# no shutdown.

R1 (config) # interface loopback 0
R1(config-if) # ip add 172.16.1.253 255.255.0.0
# no shutdown.

R2 (config) # interface loopback 0.
(config-if) # ip add 172.16.1.254 255.255.0.0
# no shutdown

6.) Check Routing table of R3.
You can see the code O here now.

7.) Create virtual link between R1 and R2.

R1 (config) # router ospf 1
(config-router) # area 1 virtual-link 2.2.2.2

R2 (config) # router ospf 1
(config-router) # area 1 virtual-link 1.1.1.1
# area 0 virtual-link 3.3.3.3

R3(config) # router ospf 1

(config-router) # area 0 virtual-link 2.2.2.2

8.) Check connectivity between host 10.0.0.10 to 40.0.0.10.

Observation:. After config the ospf routing protocol and establishing the virtual link, the two end hosts can communicate seamlessly.

Output:

PC0:

PC > ping 40.0.0.10

Pinging 40.0.0.10 with 32 bytes of data.

Reply from 40.0.0.10 byte = 32 time = 9ms TTL=

(4 times)

Ping statistics for

Packets Sent = 4 Received = 3 lost =

18/12/24

**Screen Shots:**