ASSIGNMENT : 4

TITLE : Static Routing using 3 routers, 3 switches and 6 end devices (2 pcs switch).

Step to configure the complete setup as following →

STEP 1 : TOPOLOGY SETUP

DEVICES NEEDED : (i) 3 Routers : Router 0, Router 1, Router 2
(ii) 3 switches : Switch 0, switch 1, switch 2.
(iii) 6 end devices : PC0 → PC5
(iv) cables : copper straight through (For PCs ↔ switches, switches ↔ Routers) and serial (DCE) for Router ↔ Router.

STEP 2 : CONNECT THE DEVICES

For PCs and switches
→ switch 0 ↔ PC0 and PC1
→ switch 1 ↔ PC2 and PC3
→ switch 2 ↔ PC4 and PC5

For switches to Routers
→ switch 0 ↔ Router 0 (GigE 0/0).
→ switch 1 ↔ Router 1 (GigE 0/0)
→ switch 2 ↔ Router 2 (GigE 0/0)

Interconnect Routers using serial connections (DCE)
→ Router 0 (Serial 0/0/0) ↔ Router 1 (Serial 0/0/0) → Network : (10.0.0.0/30).
→ Router 1 (Serial 0/0/1) ↔ Router 2 (Serial 0/0/0) → Network : (11.0.0.0/30)
→ Router 2 (Serial 0/0/1) ↔ Router 0 (Serial 0/0/1) → Network : (12.0.0.0/30)

Use clock rate on one end of each serial connection (DCE side)

Step 3 : Assign IP Address
• PCs & Routers (LAN side)

Device	Interface	IP Address	Subnet Mask
PC0	FastEthernet0	192.168.1.2	255.255.255.0
PC1	FastEthernet0	192.168.1.3	255.255.255.0
PC2	FastEthernet0	192.168.2.2	255.255.255.0
	FastEthernet0	192.168.2.3	255.255.255.0

Device	Interface	IP Address	Subnet Mask
PC4	Fast Ethernet 0	192.168.3.2	255.255.255.0
PC5	Fast Ethernet 0	192.168.3.3	255.255.255.0

Router	Interface	IP Address	Subnet Mask
R0	Gig 0/0	192.168.1.1	255.255.255.0
R1	Gig 0/0	192.168.2.1	255.255.255.0
R2	Gig 0/0	192.168.3.1	255.255.255.0

Router to Router Serial Interfaces

Link	Interface	IP Address	Subnet Mask
R0↔R1 (10.X)	R0-S0/0/0 -10.0.0.1	R1-S0/0/0 -10.0.0.2	255.255.255.252
R1↔R2 (11.X)	R1-S0/0/1 -11.0.0.1	R2-S0/0/0 -11.0.0.2	255.255.255.252
R2↔R0 (12.X)	R2-S0/0/1 -12.0.0.1	R0-S0/0/1-12.0.0.2	255.255.255.252

STEP 4 : CONFIGURE IP ADDRESS IN ROUTERS

CONFIGURING ROUTER 0

```
Router > enable
Router # configure terminal
Router (config) # interface gig 0/0
Router (config-if) # ip address 192.168.1.1 255.255.255.0
Router (config-if) # no shutdown

Router (config) # interface s0/0/0
Router (config-if) # ip address 10.0.0.1 255.255.255.252
Router (config-if) # clock rate 64000.
Router (config-if) # no shutdown

Router (config) # interface s0/0/1
Router (config-if) # ip address 12.0.0.1 255.255.255.252
Router (config-if) # no shutdown
```

Repeat similar steps for Router 1 and Router 2, assigning respective IPs and clock rate on one side of the serial links.

STEP 5: STATIC ROUTING CONFIGURATION

On ROUTER 0

ip route 192.168.2.0 255.255.255.0 10.0.0.2
ip route 192.168.3.0 255.255.255.0 12.0.0.1

On ROUTER 1

ip route 192.168.1.0 255.255.255.0 10.0.0.1
ip route 192.168.3.0 255.255.255.0 11.0.0.2

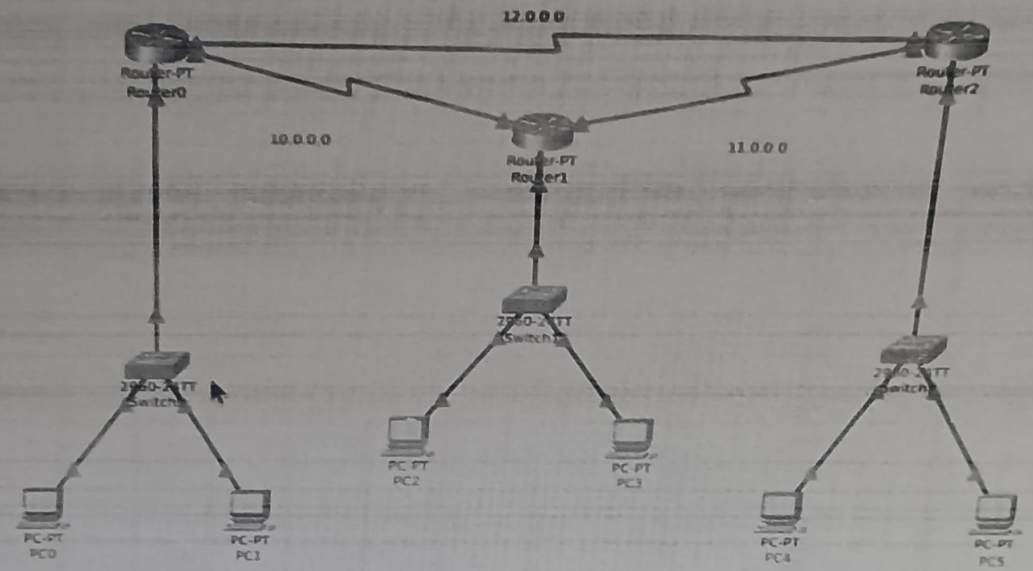
On ROUTER 2

ip route 192.168.1.0 255.255.255.0 12.0.0.2
ip route 192.168.2.0 255.255.255.0 11.0.0.1

STEP 6: TEST THE NETWORK

→ Use ping from PC0 to PC5, and other cross router devices.

→ If everything is configured properly, all pings should be succesful.



Time: 00:37:11

Realtime

Scenario 0

New

Delete

Toggle PDU List Window

Fire | Last Status | Source | Destination | Type | Color | Time(sec)

Successful | PC0 | PC3

Successful | PC4 | Router0

Successful | PC5

Copper Straight-Through