Report

1. Answer in each steps

2. Step 1
   Total subnets = 256 * 4 = 1024
   usable = 256 * 4 = 1016

3. Step 2

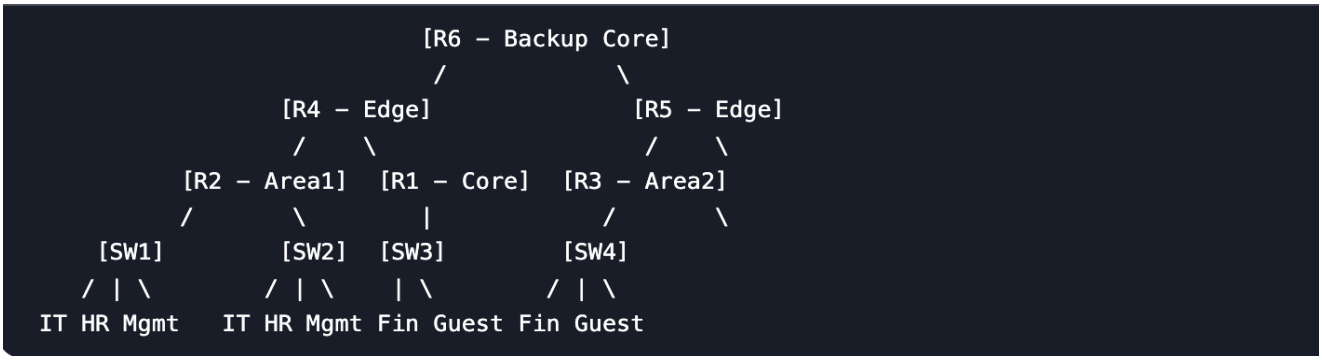
   - Task 3

   1. Command set hostname on router is hostname <routername>
   2. To configure IP on an interface
      - interface name
      - ip address <ip> <subnet>
      - no shutdown
   3. show ip interface brief

   - Task 4
     1. Command enable trunk mode on interface:
        switchport mode trunk
        switchport trunk allowed vlan 10,20,30,40,50
     2. Purpose of management IP address on a switch is an assigned IP address used exclusively for remote administration, monitoring, and configuration of the switch

4. Step 3
   - **OSPF** determines the best route using a cost-based metric, calculated from interface bandwidth, and follows a strict decision-making process to select the shortest path.

2.Diagram Topology



3.Configuration

- VLAN 10: IT
- VLAN 20: HR
- VLAN 30: Finance
- VLAN 40: Guest Wi-Fi
- VLAN 50: Management

3.1 Router 1

R1 core rotuer OSPF Area 0

```
R1(config-if)#
R1(config-if)#
R1(config-if)#
R1(config-if)#router ospf 1
R1(config-router)# network 10.0.14.0 0.0.0.3 area 0
R1(config-router)#network 192.168.50.0 0.0.0.255 area 0
R1(config-router)# network 192.168.60.0 0.0.0.255 area 0
R1(config-router)#
```

```
R1(config)#router ospf 1
R1(config-router)#redistribute rip subnets
R1(config-router)#
```

IP interface

```
R1#show interface brief
                ^
% Invalid input detected at '^' marker.

R1#show ip interface brief
Interface              IP-Address      OK? Method Status                Protocol
FastEthernet0/0        unassigned      YES unset  up                    up
FastEthernet0/0.10     192.168.51.1    YES manual administratively down down
FastEthernet0/0.20     192.168.61.1    YES manual administratively down down
FastEthernet0/0.30     192.168.70.1    YES manual up                    up
FastEthernet0/0.40     192.168.80.1    YES manual up                    up
FastEthernet0/1        10.0.14.1       YES manual up                    up
FastEthernet0/1.50     192.168.90.1    YES manual up                    up
Serial0/1/0            unassigned      YES unset  administratively down down
Serial0/1/1            unassigned      YES unset  administratively down down
FastEthernet0/3/0      unassigned      YES unset  up                    down
FastEthernet0/3/1      unassigned      YES unset  up                    down
FastEthernet0/3/2      unassigned      YES unset  up                    down
FastEthernet0/3/3      unassigned      YES unset  up                    down
Vlan1                  unassigned      YES unset  administratively down down
R1#
R1#
R1#ping 192.168.70.2

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.70.2, timeout is 2 seconds:
.!!!!
Success rate is 80 percent (4/5), round-trip min/avg/max = 0/0/0 ms

R1#ping 192.168.80.1

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.80.1, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 3/4/10 ms

R1#
```

- R2 as OSPF area 1

R2(config)# router ospf 1
R2(config-router)# network 10.0.24.0 0.0.0.3 area 1 (Link to R4)
R2(config-router)# network 192.168.50.0 0.0.0.255 area 1 (IT VLAN)
R2(config-router)# network 192.168.60.0 0.0.0.255 area 1 (HR VLAN)
R2(config-router)# exit

- R2 interface

```
R2#show ip interface brief
Interface              IP-Address      OK? Method Status                Protocol
FastEthernet0/0        unassigned      YES unset  up                    up
FastEthernet0/0.10     192.168.50.1    YES manual up                    up
FastEthernet0/0.20     192.168.60.1    YES manual up                    up
FastEthernet0/1        unassigned      YES unset  up                    up
Ethernet0/0/0          unassigned      YES unset  up                    up
FastEthernet0/1/0      unassigned      YES unset  up                    down
FastEthernet0/1/1      unassigned      YES unset  up                    down
FastEthernet0/1/2      unassigned      YES unset  up                    down
FastEthernet0/1/3      unassigned      YES unset  up                    down
FastEthernet1/0        unassigned      YES unset  administratively down down
FastEthernet1/1        unassigned      YES unset  administratively down down
FastEthernet1/2        unassigned      YES unset  administratively down down
FastEthernet1/3        unassigned      YES unset  administratively down down
FastEthernet1/4        unassigned      YES unset  administratively down down
FastEthernet1/5        unassigned      YES unset  administratively down down
FastEthernet1/6        unassigned      YES unset  administratively down down
FastEthernet1/7        unassigned      YES unset  administratively down down
FastEthernet1/8        unassigned      YES unset  administratively down down
FastEthernet1/9        unassigned      YES unset  administratively down down
FastEthernet1/10       unassigned      YES unset  administratively down down
FastEthernet1/11       unassigned      YES unset  administratively down down
FastEthernet1/12       unassigned      YES unset  administratively down down
FastEthernet1/13       unassigned      YES unset  administratively down down
FastEthernet1/14       unassigned      YES unset  administratively down down
FastEthernet1/15       unassigned      YES unset  administratively down down
Vlan1                  unassigned      YES unset  administratively down down
R2#
R2#ping 192.168.60.1

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.60.1, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 2/4/9 ms

R2#
```

- R3 as OSPF area 2

  router ospf 1
  network 192.168.71.0 0.0.0.255 area 2
  network 192.168.81.0 0.0.0.255 area 2
  network 10.0.36.0 0.0.0.3 area 2
  network 10.0.13.0 0.0.0.3 area 0 (Backbone to R1)

- RIP-OSPF

  For R2
  R4(config)# router rip
  R4(config-router)# version 2
  R4(config-router)# network 10.0.24.0 (Advertise link to R2)
  R4(config-router)# no auto-summary
  For R1
  R4(config)# router rip
  R4(config-router)# version 2
  R4(config-router)# network 10.0.14.0 (Advertise link to R1)
  R4(config-router)# no auto-summary