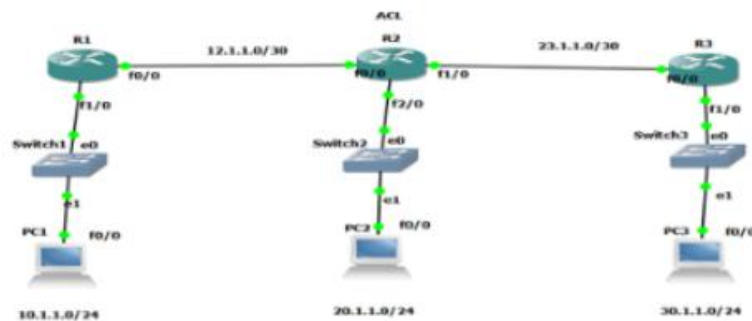Q.N.1. Remote access VPNs rely on which two security technologies for encrypted communication? (5 marks) (Choose one option) IPSec, SSH SSH, SSL IPSec, SSL L2TP, SSL

Correct answer: IPSec, SSL

Q.N.2.

Refer the diagram and answer the questions:


```
R1#show access-lists
Extended IP access list 110
   10 permit tcp 30.1.1.0 0.0.0.255 10.1.1.0 0.0.0.255
   20 permit icmp 20.1.1.0 0.0.0.255 10.1.1.0 0.0.0.255
   30 deny tcp 20.1.1.0 0.0.0.255 eq telnet 10.1.1.0 0.0.0.255 eq telnet
   40 permit ip 30.1.1.0 0.0.0.255 any
   50 deny ip any any
R1#sh run int f1/0
Building configuration...

Current configuration : 106 bytes
!
interface FastEthernet1/0
 ip address 10.1.1.1 255.255.255.0
 ip access-group 101 out
 duplex full
end
```

a. In which situation we use standard ACL and extended ACL?

b. Which sequence number deny telnet PC2 to PC1?

c. What is the main propose of sequence number 20?

a.

- **Standard ACL:** filters source IP only, placed near destination

- **Extended ACL:** filters source, destination, protocol, port, placed near source

b.

- **Sequence number: 30**

c.

- **Purpose of sequence 20:** allows ICMP (ping) from PC2 to PC1

Q.N.3. On which network device are packet filtering firewalls commonly deployed? (5 marks) (Choose one option) Routers Repeaters Hubs Switches

✅ **Answer: Routers**

Q.N.4.

Refer to the exhibit. What does the router use as its OSPF router-ID?

```
Router#sh ip int br
Interface           IP-Address      OK? Method Status                     Protocol
GigabitEthernet0/0  192.168.10.1    YES manual administratively down down
GigabitEthernet0/1  172.16.50.88    YES manual administratively down down
GigabitEthernet0/2  10.10.8.2       YES manual administratively down down
Loopback0           172.16.88.10    YES manual up                         up
Loopback4           unassigned      YES unset  up                         up
Vlan1               unassigned      YES unset  administratively down down
Router#
```

📍 Mark

(Choose one option)

- ☐ 172.16.88.10
- ☐ 172.16.50.88
- ☐ 192.168.10.1
- ☐ 10.10.8.2

172.16.88.10

Q.N.5. What is the broadcast address for the subnet 192.168.20.64/26? (5 marks) (Choose one option) 192.168.20.63 192.168.20.255 192.168.20.95 192.168.20.127

✅ **Answer: 192.168.20.127**

Q.N.6. VLANs primarily enhance network ____? (5 marks) (Choose one option) Speed Loop Bandwidth Security

✅ **Answer: Security**

Q.N.7. Which wireless security standard offers the highest level of encryption and protection? (5 marks) (Choose one option) WPA2 WPA WEP WPA3

✅ **Answer: WPA3**

Q.N.8. What is the primary purpose of HSRP (Hot Standby Router Protocol)? (5 marks) (Choose one option) To dynamically assign IP addresses to routers in a network. To encrypt data traffic between routers. To ensure redundancy and high availability for the default gateway. To provide load balancing across multiple routers

✅ **Answer:** To ensure redundancy and high availability for the default gateway.

Q.N.9. Which layer of the OSI model is responsible for ensuring data is delivered error-free and in the correct order? (5 marks) (Choose one option) Transport Layer Network Layer Data Link Layer Session Layer

✅ **Answer: Transport Layer**

Q.N.10. What is the main advantage of segmenting a network into VLANs? (5 marks) (Choose one option) It reduces network congestion by logically separating traffic. It increases the total number of physical connections. It enables encryption for secure communication. It replaces the need for routers in the network.

Correct answer:
It reduces network congestion by logically separating traffic.

Q.N.11. Which of the following is a valid private IP address range? (5 marks) (Choose one option) 173.16.0.0 - 173.31.255.255 11.0.0.0 - 11.255.255.255 192.168.100.0 - 192.168.255.255 169.255.0.0 - 169.255.255.255

✅ **Answer:**
192.168.100.0 - 192.168.255.255

Q.N.12. What is a primary characteristic of EtherChannel? (5 marks) (Choose one option) It can bundle mixed types of 100 Mb/s and 1 Gb/s Ethernet links. It consists of multiple parallel links between a switch and a router. It can combine up to a maximum of 4 physical links. It is made by combining multiple physical links that are seen as one link between two switches.

✅ **Answer:**
It is made by combining multiple physical links that are seen as one link between two switches.

Q.N.13. What is the broadcast address of the subnet 172.19.32.0/20? (5 marks) (Choose one option) 172.19.255.255 172.19.39.255 172.19.47.255 172.19.63.255
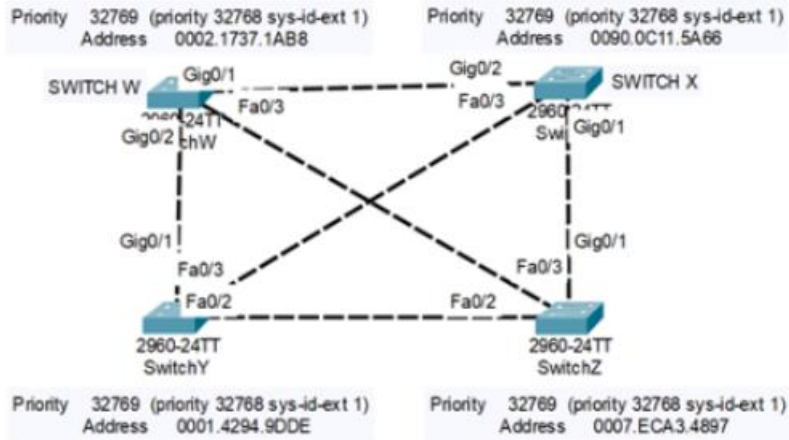
✅ **Answer:**
172.19.47.255

Q.N.14. What action does a Layer 2 switch take when it receives a frame with an unknown destination MAC address? (5 marks) (Choose one option) The switch sends a copy of the packet to the CPU for processing. The switch drops the frame The switch forwards the packet and adds the destination MAC address to its MAC address table. The switch floods the frame to all ports except the receiving port in the given VLAN.

✅ **Answer:**
The switch floods the frame to all ports except the receiving port in the given VLAN.

Q.N.16.

Refer the diagram and answer the questions:

Priority   32769 (priority 32768 sys-id-ext 1)
Address   0002.1737.1AB8

Priority   32769 (priority 32768 sys-id-ext 1)
Address   0090.0C11.5A66

SWITCH W   Gig0/1
Gig0/2   Fa0/3
Gig0/2 hW

Gig0/2
Fa0/3   SWITCH X
2960
Swi Gig0/1

Gig0/1
Fa0/3
Fa0/2
2960-24TT
SwitchY

Gig0/1
Fa0/3
Fa0/2
2960-24TT
SwitchZ

Priority   32769 (priority 32768 sys-id-ext 1)
Address   0001.4294.9DDE

Priority   32769 (priority 32768 sys-id-ext 1)
Address   0007.ECA3.4897

Which switch is root bridge? why?
Identify the name of port in switch W. (RP ,DP,ALT BLOCKING)

Root Bridge: Switch Y (lowest MAC: 0001.4294.9DDE)

Switch W port roles:

- **Gig0/1 → Root Port (RP)**
- **Fa0/3 → Designated Port (DP)**
- **Gig0/2 → Alternate/Blocking (ALT)**

Q.N.18. Which protocol is responsible for resolving IP addresses into MAC addresses in a local network? (5 marks) (Choose one option) ARP (Address Resolution Protocol) DHCP (Dynamic Host Configuration Protocol) ICMP (Internet Control Message Protocol) DNS (Domain Name System)

ARP (Address Resolution Protocol) ✅

Q.N.19.

Q.N.19. After obtaining an IP address, how does a client prevent an IP conflict? (5 marks) (Choose one option) Internet Relay Chat None of the mentioned Broader Gateway Protocol Address Resolution Protocol

Address Resolution Protocol (ARP) ✅

Q.N.20. How do TCP and UDP differ in establishing a connection between two endpoints? (5 marks) (Choose one option) UDP uses SYN, SYN-ACK, and FIN bits in the frame header, while TCP uses SYN, SYN-ACK, and ACK bits. TCP uses a three-way handshake, while UDP does not guarantee message delivery. UDP provides reliable message transfer, while TCP is a connectionless protocol. TCP uses synchronization packets, while UDP uses acknowledgment packets.

TCP uses a three-way handshake, while UDP does not guarantee message delivery. ✅