No. of Printed Pages : 5

MINI-021

M.Tech. IN ADVANCED INFORMATION TECHNOLOGY – NETWORKING AND TELECOMMUNICATION (MTECHTC)

00234

Term-End Examination

December, 2014

MINI-021 : ROUTING ALGORITHMS AND PROTOCOLS

Time : 3 hours *Maximum Marks : 100*

Note :

(i) *Section I is* ***compulsory****.*

(ii) *In Section II, attempt any* ***five*** *questions.*

(iii) *Assume suitable data wherever required.*

(iv) *Draw suitable sketches wherever required.*

SECTION I

1. (a) Explain Virtual Router Redundancy Protocol with the help of the Figure 1 below. *15*

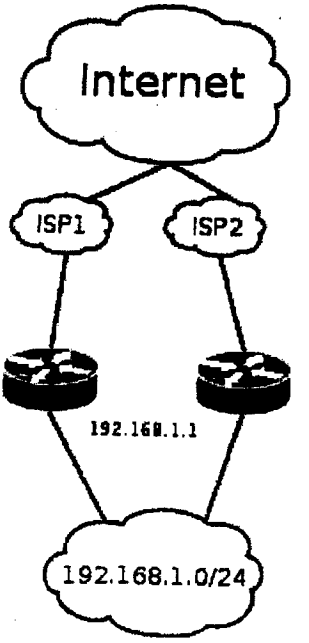

Figure 1

(b) Explain Routing Information Protocol (RIP) with the help of the following frame format. *15*

command (1)	version (1)	must be zero (2)
address family identifier (2)		must be zero (2)
IP address (4)		
must be zero (4)		
must be zero (4)		
metric (4)		

SECTION II

*Solve any **five** questions from this section :*

2. Explain in brief the Shortest Path First (SPF) Dijkstra's algorithm with a suitable example. *14*

3. Give the comparative features analysis between RIP, IGRP, EIGRP, OSPF protocols. *14*

4. Explain the following Access Control List (ACL). *14*

```
access-list 10 permit 192.168.146.0 0.0.1.255

access-list 102 permit icmp host 10.1.1.1 host
172.16.1.1 timestamp-reply
permit tcp host 1.1.1.1 host 5.5.5.5 eq www
permit icmp any any
permit udp host 6.6.6.6 10.10.10.0  0.0.0.255 eq
domain
access-list 101 dynamic testlist timeout 15 permit
ip 10.1.1.0  0.0.0.255 172.16.1.0  0.0.0.255
```

5. (a) Explain in brief EIGRP protocol with the help of a network diagram. *7*

(b) Explain in brief the benefits of using EGRP instead of RIP. *7*

6. Case Study :

Administrator Ram has used switches to segment the network, the network performance has noticeably improved. However, some of the servers are having some CPU utilization issues. After some research by the vendor who installed the servers, it has been determined that the problem is the amount of broadcast traffic. It

seems that one of the servers runs an application that uses broadcasts to locate and poll all of its clients on the network. These broadcasts are affecting both servers and clients throughout the network, but it is more noticeable on the servers. Because of this, Ram has decided to implement VLANs. Based on the following requirements, what steps should Ram take in creating the VLANs ? Below figure 2 shows the layout of the switched network and location of the server.

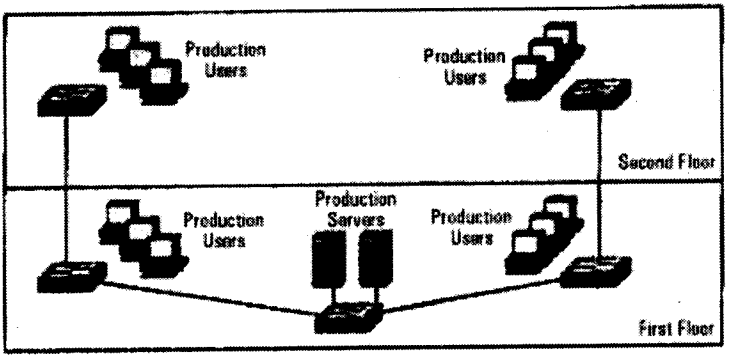

Figure 2

Ram has five servers. One server for production uses an all network broadcast to communicate with its clients. Those clients are located on both floors of the building, as shown above. Of the other four servers all use TCP/IP to communicate with various departments all over the company. It has been decided that for clients not using the production server, PCs and servers will be placed in VLAN base at the location.

(a) How many VLANs will Ram need and where will they need to be located in relation to the switches ? *4*

(b) Do any of the switches have multiple VLANs on them ? If so, what will the admin need to configure to ensure that multiple VLANs can pass between the switches ? 5

(c) In the future, the Admin might need to create VLANs that will need to be used on some or all of the switches. To ensure that all VLANs exist on all trunked switches, what should admin do ? 5

7. Explain the following router loop solutions with the help of suitable examples :

(a) Split horizon 4

(b) Route poisoning 5

(c) Hold-down timers 5