



Examination Answer Book

12 Pages

Instructions to candidates

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2. Enter you name in the space provided to the right and seal to hide your name.
3. The answers must be **legibly** written. The Examiners can either ignore illegible script or have it typed and the expense of typing charged to the candidate.
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1	Student Number	1204458
2	Title of Examination Paper	LAN
3	Module Code	ACC C5002
4	Date and Time of Examination	9/05/16
5	Examination Venue	LH2
6	Seat Number	5
7	Number of Answer Books handed in	

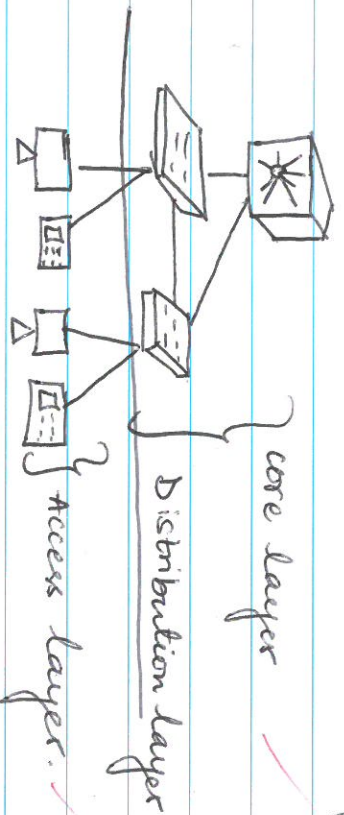
List the numbers of the questions you have attempted	Office Use
1	16
2	7
3	12
Total	35/45

44%.

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1a
ans)

Hierarchical network is network designed in order to show the ~~all~~ layers of the communication build ~~to~~ up in the network. It shows ^{how} the packets or the information given by the end user or the client being is transferred, backed up, processed. Hierarchical network design depends upon the size of the industry. Small industry uses two layers which are access layer and the combined distribution and core layer. In the small industry the distribution layer which where the data manipulation is done, and the core layer with which the speeding of the data processing is done is combined together to form or act as a single layer. The 3-tier hierarchical network design for LANs in small scale ^{industry} is shown in the diagram below:-



~~There are~~ Fig- Diagram of 3-tier hierarchical network design for LANs in small industry.

The three layers of the hierarchical network are interconnected with each other. It is a converged network where the transmission of data and information is carried out with less cables as compared to the past years when vico ~~and~~ was not discovered or brought into practise. This enabled user to exchange data within the same network internally & globally.

The three layers of 3-tier hierarchical network design for LANs are:-

Access layer
Distribution layer
Core layer.

a) Access layer.

→ Access layer is the layer in the design which ~~are~~ consists of the end devices. It is the layer which takes or gives the information from and to the user. The end devices like computer, VOIP etc are the ones in the access layer. Access layer is connected to the distribution layer and then to the core layer. The data is send or received by the user in this layer.

b) Distribution layer.

should also mention aggregation of data + Policy implementation

→ Distribution layer is the second layer in the hierarchical network design. In this layer the data manipulation is carried out. The routing & switching processes are carried out in this layer. This layer is the main layer which connects the end devices and establishes the network for the data processing.

c) Core layer.

→ The top most layer of hierarchical network design is the core layer. This layer is responsible for speeding the process of the system. It is ~~connect~~ connected to the server farm. As shown in fig 8.

Should mention:

- High speed Backbone

- Aggregation of traffic from Dist (end-s)

- Connect the network to

Third party network (internet)

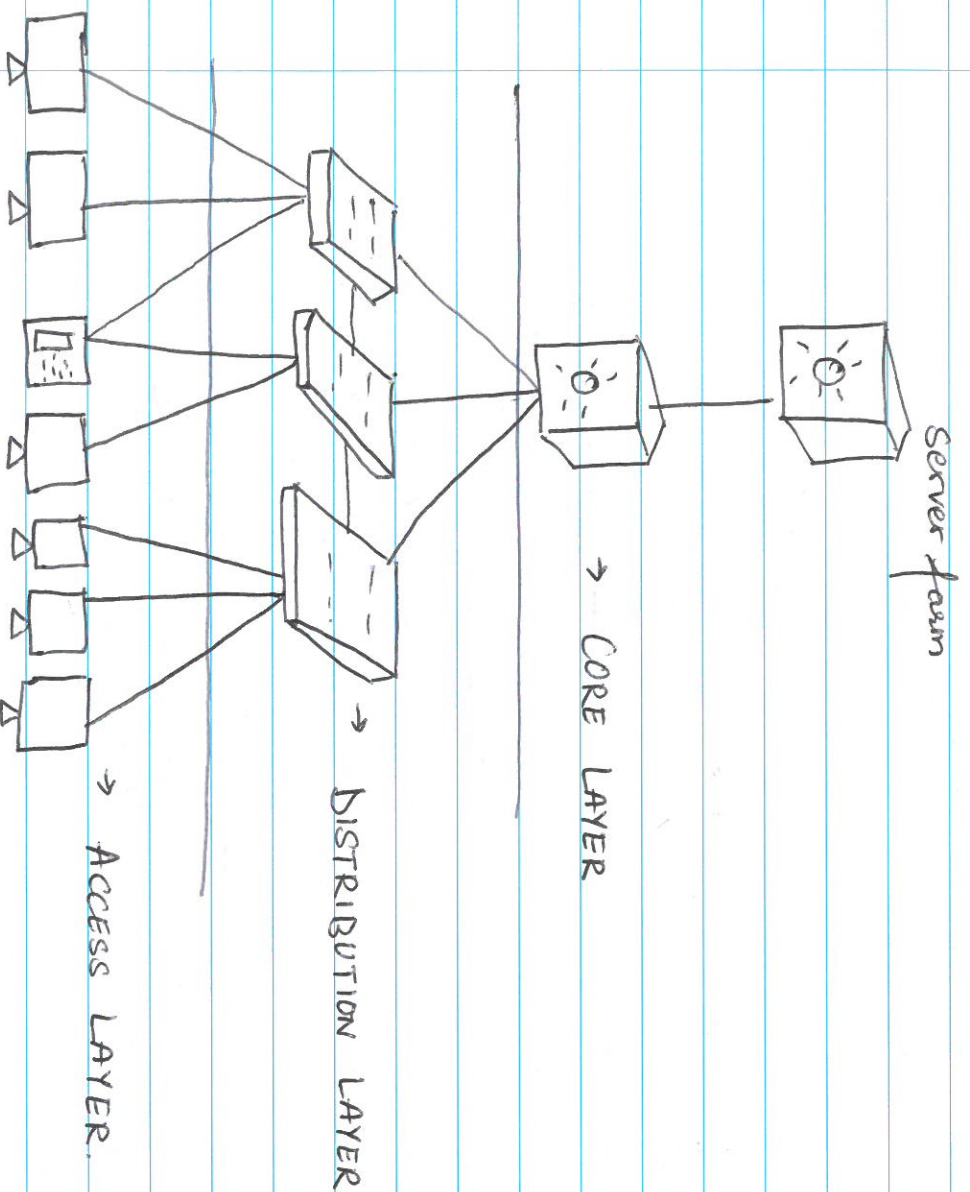


Fig 2:- 3-tier hierarchical network design for LANs.

In the big scale industry the above diagram design is used. Where the after receiving the information from the user through the end devices. It sends for the data manipulation to the distribution layer. The data is backed up internally or gets locally and globally. The ~~ISP~~ ^{ISP} also belongs or is connected within the distribution layer.

16 ans.

VLANs.

→ VLAN stands for Virtual Local Area Network.

It extends beyond a single traditional LAN group of LAN segments, given specific configurations. Since a VLAN is a log logical entity its creation & configuration is done completely in software. ~~There~~ There are two types of VLANs, cell based VLANs & frame based VLANs. ~~There are 4~~ Cell based VLANs are used in ATM switched networks with LAN emulation (or LANE). Frame based VLANs are used in Ethernet networks with frame tagging. There are three different modes ~~of~~ in which a VLAN can be configured.

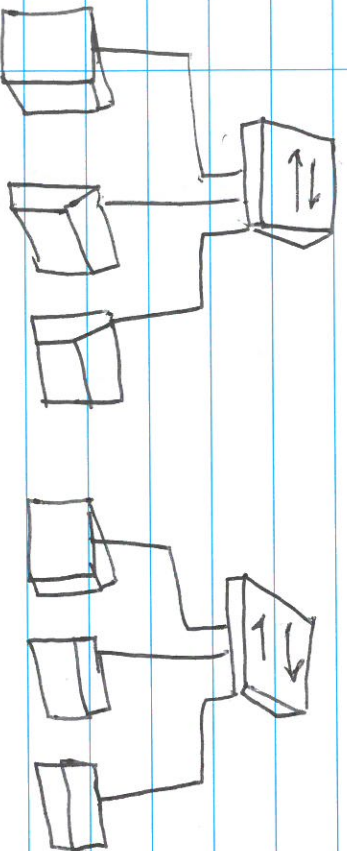
→ VLAN switching mode.

- With its own IP net.

→ VLAN transition mode.

→ VLAN Routing Mode.

Diagram



The ben

The benefits of using VLANs are

* VLANs enable logical grouping of end stations that are physically dispersed on a ~~VLAN~~ network.

Performance

Manageability

- * VLANs ~~reduce~~ the helps in increased performance over shared devices by reducing collision.
- * VLANs provide an easy, flexible less costly way to modify logical groups in changing enviroment.
- * VLANs will allow LAN admin's admin's administration to fine tune their network by grouping user i.e. simplification of software configuration.
- Increased security. ✓
- * VLANs have the ability to provide additional security not available in shared network enviroment.

- Broadcast storm mitigation.

(4)

2 b) VTP components.

1) ~~VTP domain.~~

2) ~~VTP server~~

→ VLAN Trunking Protocol (VTP) reduces administration in switched network. When while configuring a new VLAN on one VTP server, the ~~VLAN~~ VLAN is distributed through all switches in the domain. This reduces the need ~~of~~ to configure the same VLAN everywhere. (2)

1) VTP domain.

→ VLAN Trunking Protocol (VTP) is a Cisco proprietary protocol that ~~gives~~ gives the definition of the ~~per~~ Virtual ^{local} Area Network (VLAN) on the whole local area network. To do this, VTP carries VLAN information to all the switches in VTP domain. (1)

Should mention more specifically how adv flows through domains

3) VTP client.

→ VTP client behaves the same as VTP servers. But VTP client cannot create, change or delete VLANs. (2)

4) VTP transparent.

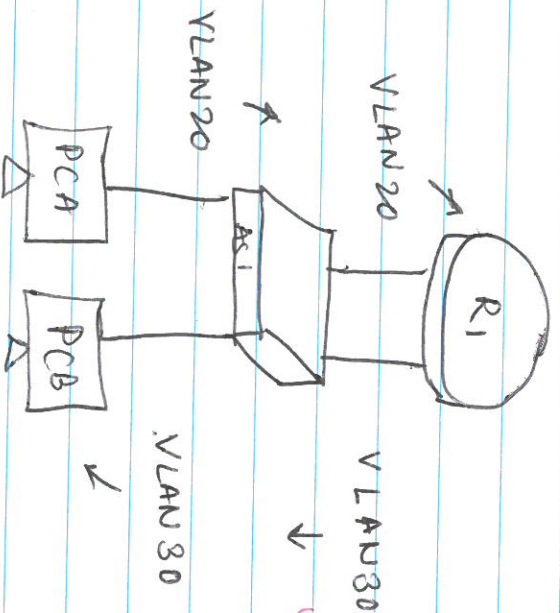
→ VTP transparent switches do not participate in VTP. VLANs on a switch in VTP transparent mode, ~~per~~ VLANs can be created, modified & ~~per~~ deleted. VLAN configuration is saved in ~~the~~ NVRAM, but they are not advertised to other switches. All switches by default are configured as VTP servers but without a domain. *Should mention they will forward VTP adv.* (1)

5. VTP Pruning

→ VTP Pruning is however responsible for the traffic from VLANs. It decides if flooded traffic from a VLAN should be forwarded to the switch via the trunk port or not.

Decreasing net. R/N.

Isaacs: Inter VLAN routing can be defined as a way to forward traffic between different VLANs by implementing a router in the network. VLANs logically segment the switch into different subnets, when a router is connected to the switch, an administrator can configure the router to forward the traffic between the various VLANs configured on the switch. The user needs in the VLANs forwards traffic to the router which then forwards traffic to the destination network regardless of the VLANs configured on the switch.



Information destined for PC B leaves PC A with the VLAN 20 when it gets to R1, the router changes the format to this message from VLAN 20 to VLAN 30, it then sends it back

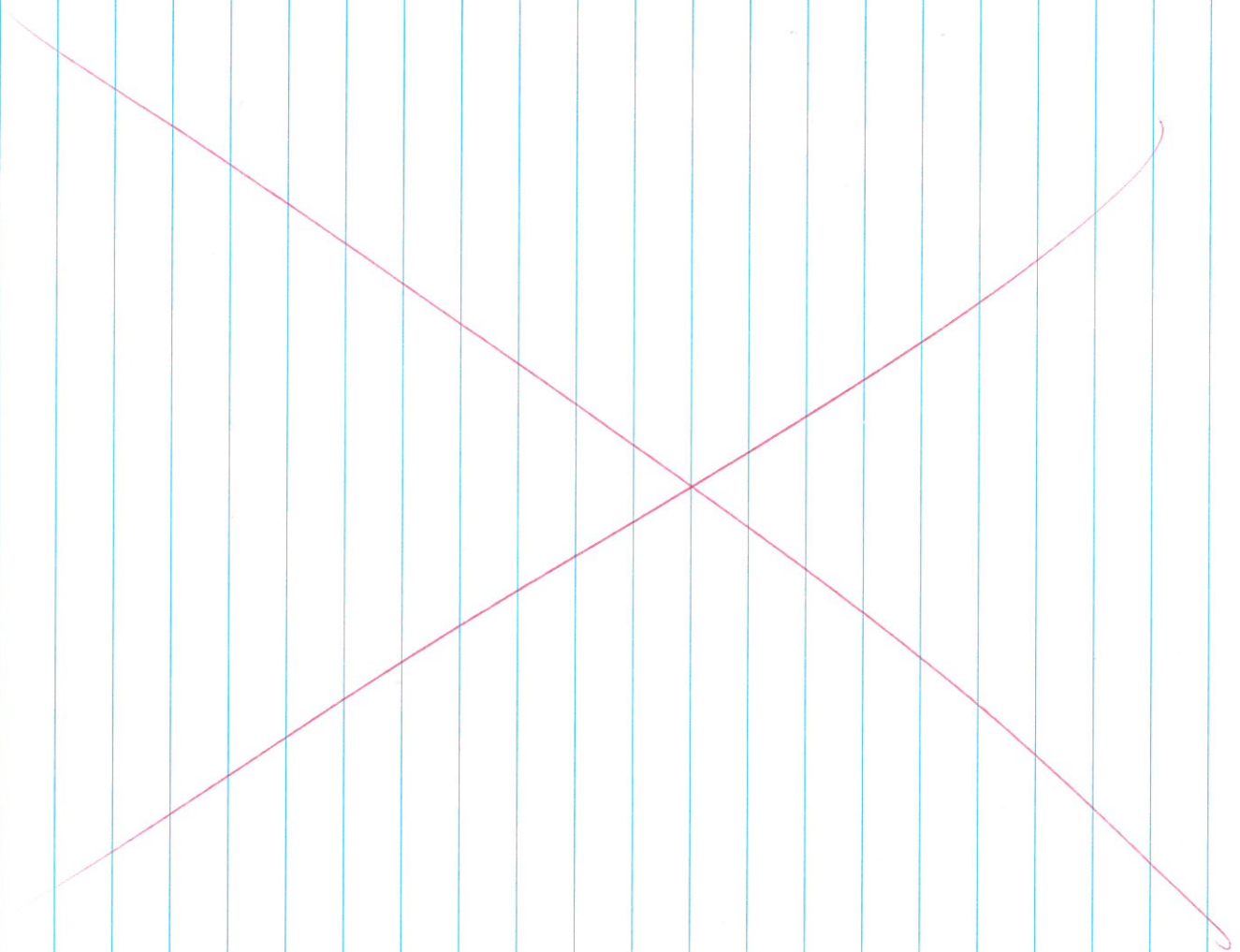
to the switch and the switch finally sends the message to its intended ~~new~~ receiver PCB. There are two ways in which inter-vlan routing can be done.

(3)

- 1) Traditional inter-vlan routing.
- 2) Router-on-a-stick.

44

Labels diagram for the other method



- 3bans. Etherchannel is a Cisco term for bundling two or more physical ethernet. Ethernet links for the purposes of aggregating available bandwidth and to a lesser extent, providing measure of physical redundancy.
- An etherchannel ~~redundancy~~ can be established using three process
- PAgP
 - LACP
 - Static Persistence.

↓
Didn't cut
for definition.

- Speed match
- VLAN range
- MTU match
- Duplex match

3bans.

3 cans.

Port Aggregation Protocol (PAgP) is a Cisco Systems networking protocol, which is used for the automated, logical aggregation of ethernet switch ports known as ether channel.

PAgP can be configured on a Cisco switch to operate in three different modes

- a) Auto
- b) Desirable
- c) On

In auto mode is passive negotiation of the channel.

In desirable mode is active negotiation of the channel

In On mode is no protocols are used. It assumes the other side has enabled link link aggregation.