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FORENAME(S): NABIL

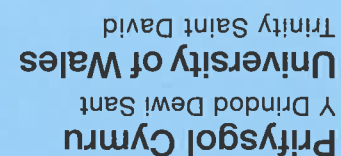
12 Pages

1. Please give the information requested in the boxes below.
2. Enter your name in the space provided to the right, fold over and seal down (using the label provided) to hide your name.
3. The answers must be legibly written. The Examiners can either read your answers in your own script or have it typed and the expense of typing charged to the candidate.
4. Write your answers in ink.
5. Begin each answer on a fresh page. Do all rough work in the answer book and cross it through.
6. No part of this book is to be torn out; it must be handed in complete.
7. If more books than one are used, fasten them together using the tags available from the invigilator(s).
8. **Every book must be handed in. In no circumstances may answer books, used or unused, be taken out of the examination venue.**

7	Number of Answer Books handed in	$\textcircled{Q} 1$ $\textcircled{Q} 2$ $\textcircled{Q} 4$
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[illegible]

(Gweler yr ochr arall am y fersiwn Cymraeg)



12 Tudalen

1. Rhwch yr holl wybodaeth y gofynnir amdani yn y blychau isod.
2. Rhwch eich enw yn lle a ddarparwyd ar y dde, plygwch et a'i seilio i lawr (gan ddefnyddio'r label a ddarparwyd) i guddio'ch enw.

3. Rhaid i'r atebion fod mewn llawysgriften ddarllenadwy. Gall yr Arholiwr naill ai anwyblyddu sgript annarllenadwy, neu drefnu iddi gael ei theipio a chael yr ymgeisydd i dalu.
4. Ysgrifennwch eich atebion mewn inc.
5. Dechreuwch bob ateb ar dudalen newydd. Gwnewch unrhyw fras nodiadau yn y llyfr atebion a thynnu llinell drwyddynt.
6. Ni ddylid rhwgo unrhyw ran o'r llyfr hwn; rhaid ei gyflwyno yn gyfan.
7. Os defnyddir mwy nag un llyfr, rhwymwch hwy gyda'i gilydd gan ddefnyddio'r tagiau sydd ar gael oddi wrth y gwyllwr/gwylywr.
8. Rhaid dychwelyd pob llyfr. Ni chaniateir mynd â llyfrau atebion, wedi eu defnyddio neu heb eu defnyddio, allan o'r lleoliad arholi o dan unrhyw amgylchiadau.

ENW(AU) CYNTAF:

CYFENW:

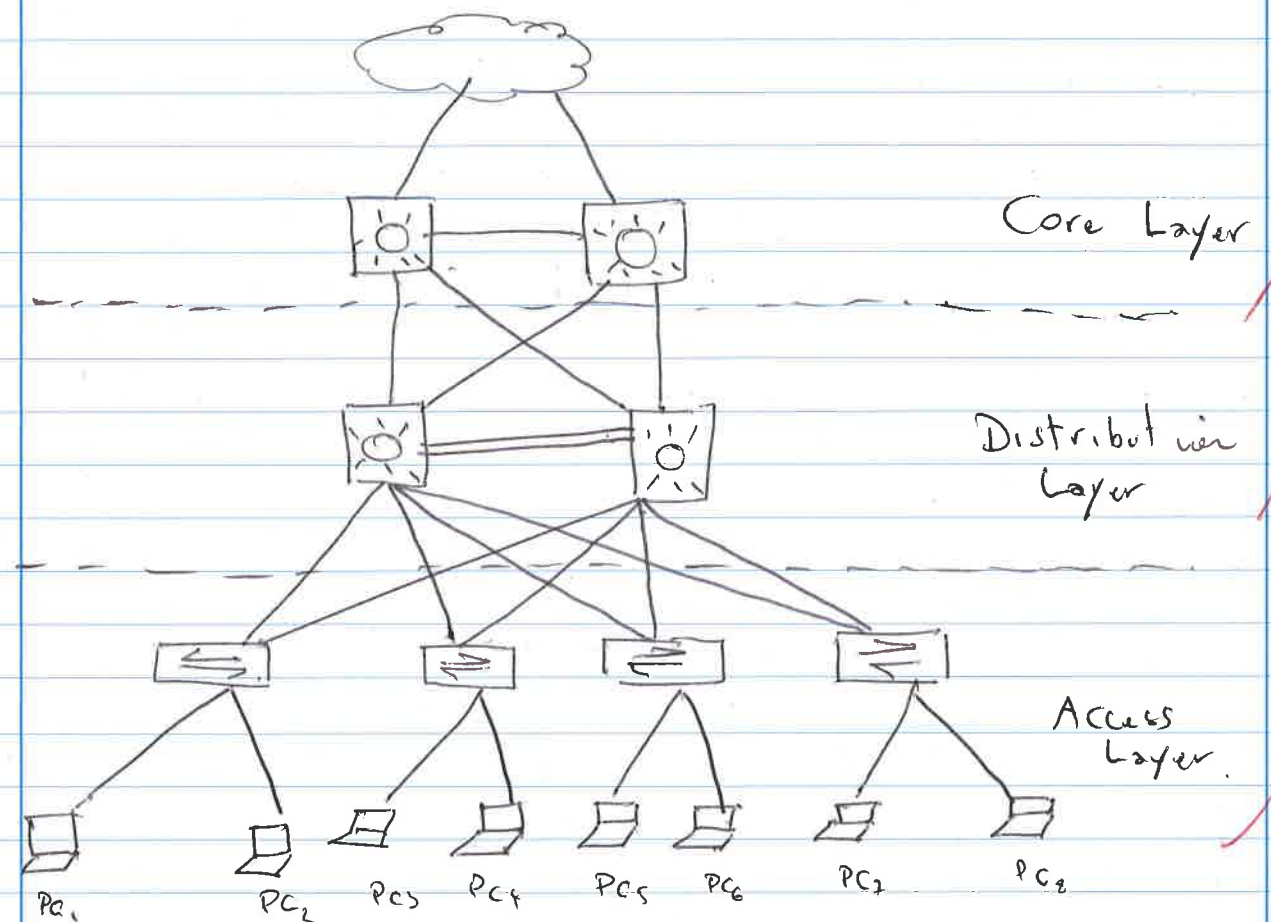
Llenwch, plygwh a seliwh
(gweler nodyn 2 isod)

[illegible]

7	Nifer y Llyfrau Atebion a gyllwynwyd	
6	Rhif Sedd	
5	Lleoliad yr Arholiad	
4	Dyddiad ac Amser yr Archoliad	
3	Cod y Modwl	
2	Tittl y Papur Arholiad	
1	Rhif Myfyrwr	

(See the other side for English version)

1. a. 3-tier Hierarchical Network diagram



* Core Layer: Consist of the Most expensive Models The fastest and The biggest Layer 3 switches or Routers, it is considered as the back bone of the network, Routers ensure that the Data is forwarded as fast as possible, Routers at this Layer mainly used to merge different geographical Network (Europe - America etc).

* Distribution Layer: This Layer is Link Between the Core Layer and Access Layer, it is considered as High processing Layer Because this is where normally we implement:

- * Routing
- * ACLs and Packet filtering
- * NAT and Firewalls
- * QoS
- * inter VLANs
- * Network and Security policies are implemented

1.A

Access Layer: mainly consist of Layer 2 switches connected to the end users (PCs, Printers, Servers)

this Layer ensure that Packets are forwarded to the correct end users.

* the 3-tier Hierarchical Network ensure good Network management, good redundancy and Scalability and also Better traffic filtering and Security.

1.B

Inbound ACL: Inbound Access Control List is set of rules given name or number that allow packet filtering ~~(filtering)~~ in the router, it can deny or permit specific packet to come inside the network (to control the traffic coming into the router) it can be simple standard ACL or more specific extended ACL.

Outbound ACL: Outbound Access List is the same as inbound Access List But for the traffic coming out of the network, to control or filter the packets coming out of the router.

1.C

Store-and-forward Switching Method: where the switch copies the entire frame into its memory and computes CRC (cyclic redundancy check) to check for error, if errors are detected the packet gets dropped, if packet is correct the switch matches the outgoing port with destination MAC address and forwards it. it is considered as slow switching method and cause latency.

1.C

Cut through Switching Method:

In this method the switch reads and copies only the first 6 bytes to determine the destination MAC address of the frame and forwards it. This method the switch also forwards bad frames or (runt frames).

This method has low latency because it's fast but it also sends errors.

4.1

Benefits of VLANs:

- Improve Network Security.
- Improve Quality of Service for network.
- Allow the co-existence of different VLANs on same network.
- Allow better management of the network.
- Separate different data traffic (voice, management, data etc.)

4.2

Data VLAN: is a VLAN that carries the user-generated data, voice data and management data can be carried on data VLAN but it cannot be part of DATA VLAN. it is also known as User VLAN.

Management VLAN:

is a VLAN that allows access to the management capability of switch. for Cisco switches VLAN 1 can be used as management VLAN if not unique VLAN has been created. for security reasons it is recommended that administrators of the network create unique VLAN for this important task.

4.2 Question No.

Default VLAN:

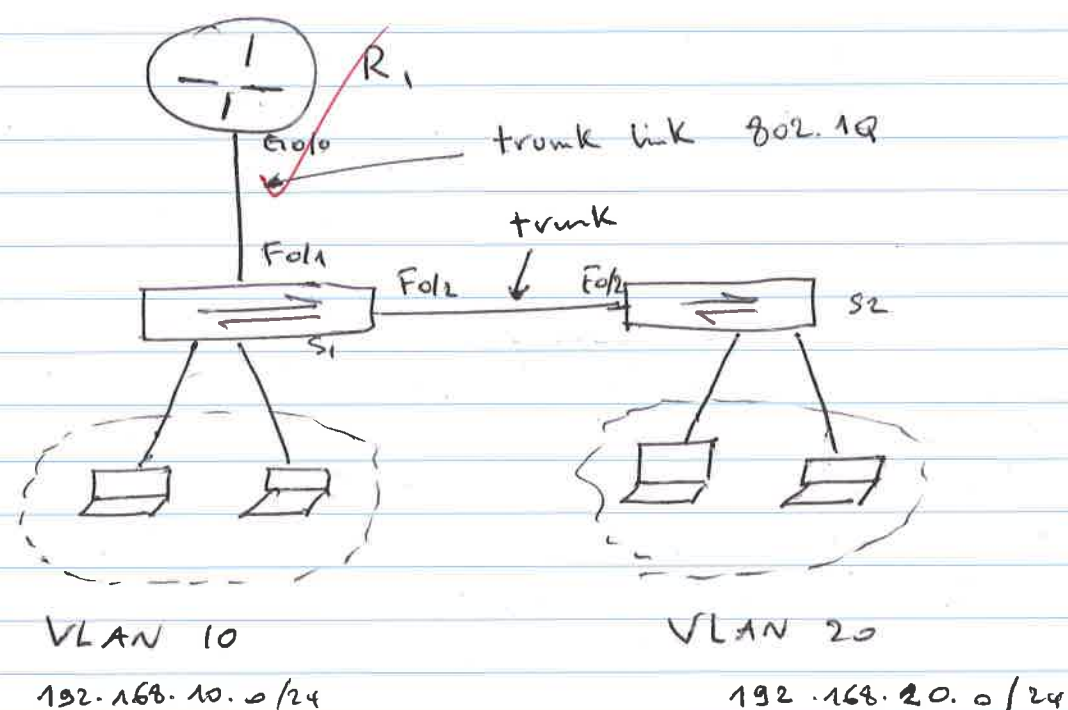
ALL the ports of Cisco Switches become Part of this VLAN AFTER The boot-up, in Cisco Switches Default VLAN is VLAN 1.

Examiner Only

Question No.

Examiner Only

4.3



Router on Stick inter-VLAN Routing User One Hardware interface where we create Virtual Sub-interfaces for each VLAN, then the Router uses the tagger on each Packet coming from this VLANs and forward it to the correct VLAN.

Down side it is considered as having one point failure it could cause traffic bottleneck.

4.4

The functionality of VLAN trunk

- VLAN trunk is VLAN to carry the traffic coming from ALL VLANs
- its point to point connection mainly between 2 Layer 2 Switches to Allow communication between Device in Same VLAN but Physically Separated

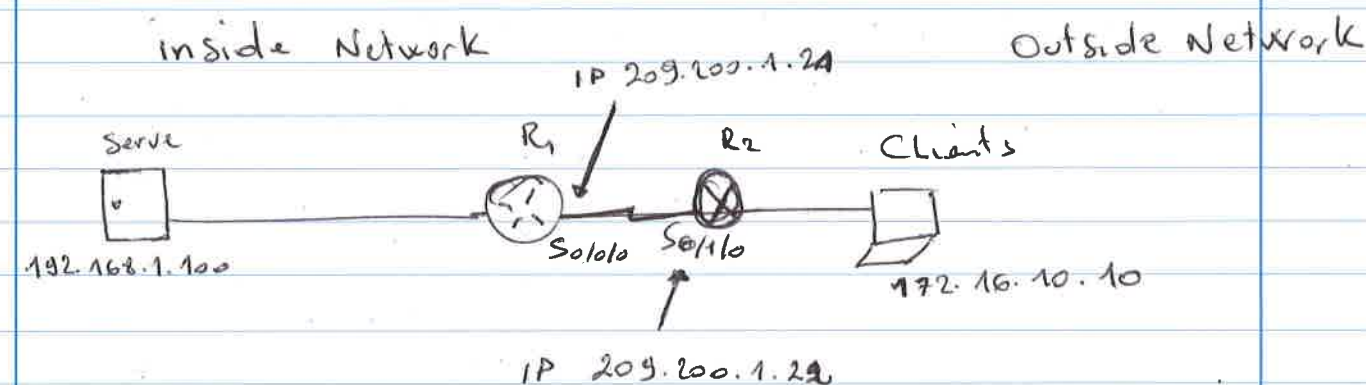
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The Key of How VLAN trunk function is by using trunking Protocol, ~~to~~ the use of Cisco IEEE 802.1Q trunking Protocol Allow the tagging of Frames and identify each Frame belong to which VLAN

VLAN trunk Allow ALL the traffic coming from ALL VLAN (tagged) and ALSO traffic not coming from VLANs (untagged)

2.A



following the Example Above we could identify inside Network for our Server (192.168.1.100)

So that:

inside Local Address would be The IP Address for our Server IP 192.168.1.100

inside Global Address is IP 209.200.1.21

The public IP Address that Private IP of Server get translated to.

outside Global Address is ALSO 209.200.1.21 The IP Address the client need to contact if he need to Access our Server

Outside Local Address is the Client IP Address that the server need to reply to IP 172.16.10.10.

Packet Forwarding

2.B

Process Switching: in this Method the Switch Process route every frame using Process Route and re-writing Software it is slow method.

Fast Switching: in this Method the Switch Process route and re-write using Software only the first Frame and Every Subsequent Frame follows get Forward using Hardware, it is Fast Method

Cisco Express forwarding: CEF Method uses mainly the Hardware forwarding table to forward packets. only some exceptions, the Processor is mainly doing other tasks.

2

2

2.C

Primary Uses of static route:

- it is mainly used to forward traffic between two ~~devices~~ Devices
- ~~it is configured by network administrator manually~~
- it identifies static Path for packets to be routed through.
- it could be used to configure ~~gateway of last resort~~ gateway of last resort 0.0.0.0/0

2.D

IP route 0.0.0.0 0.0.0.0 192.168.1.1 95

this is default ~~route~~ ^{floating static} route for ALL packet that doesn't have match on routing table to be sent to the interface with IP Address 192.168.1.1 via Port 95, this could be used to dump ALL unwanted traffic through the gateway 192.168.1.1.

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