

Test 1: NET3011 – Advanced Switching

Winter 2015

Time: 50 minutes; Test scored out of: 40 Total Marks available: 42
(Allocation of marks is shown beside each question)

Instructions:

1. **BEFORE** answering any questions, please check that your copy of the test has all pages (as indicated in the footer at the bottom of each page). Please **read all instructions and all questions** carefully, then answer question 0 first!
2. This is a **closed book** test. No textbooks, notes, electronic devices, or any other aids are permitted.
3. For a laugh, check out the screen capture on the last page.
4. If you are uncertain what a question is asking, make reasonable assumptions, write those assumptions down on this test paper, and continue answering the question.

0. What is your:

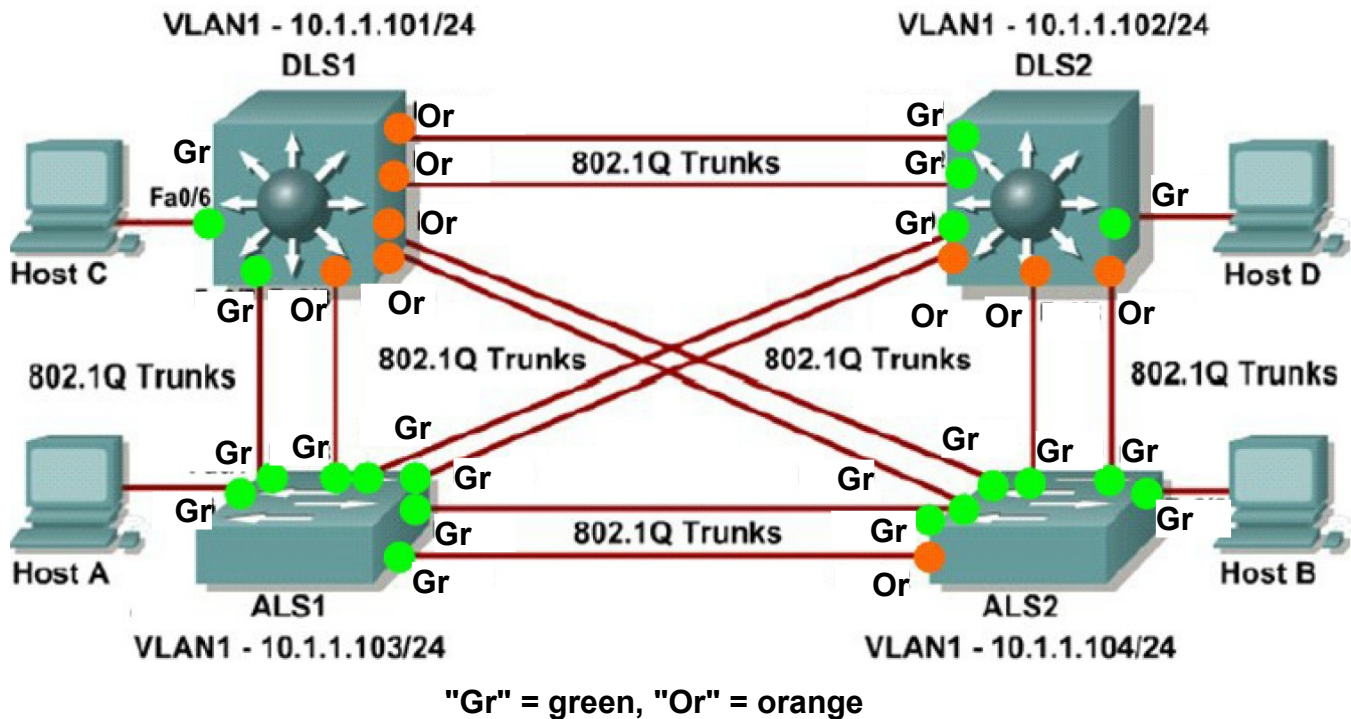
NAME? _____

(Continued on next page)

1. [2 marks] Some best practices for VLAN design are given in the textbook and slide deck. What are the recommendations for the following protocols? (One mark per pair.)

	Enabled	Disabled
DTP	_____	_____
VTP	_____	_____
ISL	_____	_____
Telnet	_____	_____

2. A. [1 mark] **Circle** the root bridge in the diagram below.



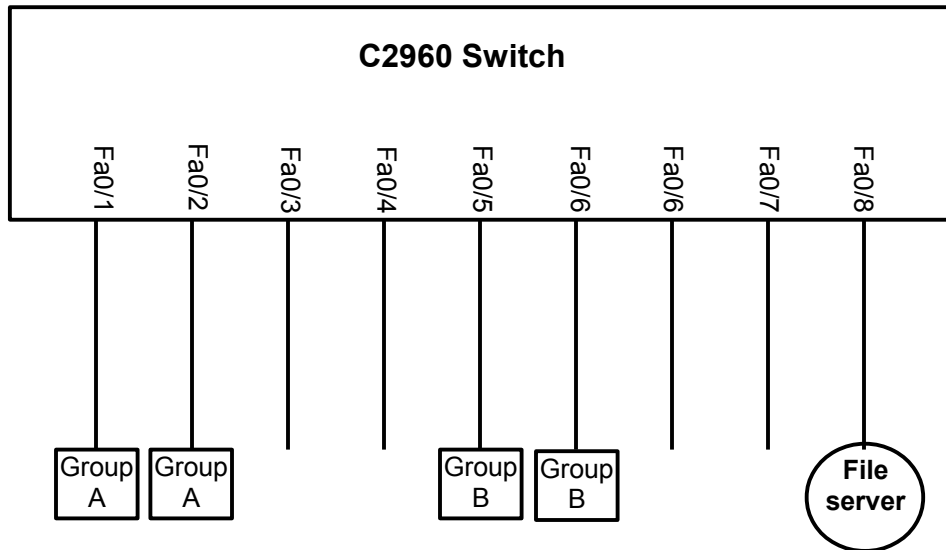
- B. [4 marks] Identify the state of all ports in the diagram using the symbols:
R = Root port; **D** = Designated port; **B** = Blocking

3. [2 marks] **Clearly** explain the two ways that DTP and VTP are inter-dependent on Cisco switches.

4. [1 mark] What is the best discount you can get on the cost of Ethernet frames?

5. [2 marks] One day, Anderson and Smith are working together in T108. Anderson connects a pair of 29XX switches and immediately gets a trunk link. Smith connects his pair of 35XX switches but does **not** get a trunk link. **All** switches are completely in their default state. Based on your own lab work and extra study, **clearly** explain the reason for these results.
6. [2 marks] We have covered two different models or architectures for VLAN design. Identify them and provide a **clear** explanation of whether or not VTP should be used in each design.
7. [2 marks] Again referring to the two models of VLAN design: **clearly** explain what method or OSI networking layer is used to connect switches far apart (different buildings) in each case.
8. [2 marks] For link aggregation, **clearly** identify the two general types of load balancing algorithms. **Clearly** state when (ie. under what conditions) each one is used. [Ref: slide 5]
9. A. [1 mark] Name 4 different LACP modes that can be configured for a channel-group.
Off, _____
- B. [2 marks] **Clearly** identify all the different possible combinations of LACP modes and indicate whether each combination will or will not successfully form a channel. [Ref slide 26]

10. [4 marks] Show your mastery of pVLAN concepts by implementing a simplified version on a 2960 switch which only supports protected ports. Draw on the diagram below and label ports to **clearly** indicate how to create the equivalent of two different communities which both access a file server. (Note: Different hints are available, costing 1, 2, or 3 marks.)



[1 mark] Which sub-interfaces, if any, need to be configured on the server for the pVLAN?

11. [2 marks] Provide a convincing example to illustrate why the choice of input for the load balancing algorithm might be, and possibly *must* be, different at the two ends of a link aggregation channel. A diagram may be helpful in your explanation.

12. [3 marks] Draw **clear** diagrams of an Ethernet II frame with and without a Q-tag. Be sure to correctly label all fields including the payload.

13. [1 mark] In terms of campus network design, **clearly** explain what is meant by "converged network traffic mix"? [Ref: Ch 1, slide 13]
14. [2 marks] During lab work, we saw how configured values for port cost and port priority affected active links in STP. A major learning objective was to determine which switch is affected by each of these two settings. **Clearly** explain a rule for each setting's effect.
15. [1 mark] A small-sized campus network might combine which two layers in Cisco's "Heirarchical Campus Model"? [Ref: Lab 1 post-lab quiz]
16. [1 mark] Name the six phases of Cisco's Lifecycle approach to network design (in the correct order).
17. [1 mark] Switches may be configured to be members of VTP domains. What is the maximum number of simultaneous VTP domain memberships that a switch can have?
18. [1 mark] We have named and defined 5 different VLAN categories or types. Over which of these VLAN(s) do L2 control protocols (DTP, VTP, PAgP, LACP, CDP, etc) always send their frames?
19. A. [2 marks] **Clearly** define the difference between the VLAN commands "shutdown" and "suspend".
- B. [1 mark] For each of these commands, what VTP mode must be configured in order to successfully execute the command? Consider everything we have covered in class!

Extra Work

