

Assignment 2

Due Monday, November 13. Show your work. Submit your assignment using the appropriate dropbox on the course web site. Assignments submitted after the solutions are made available will be given a mark of zero.

Question 1

Which BORSCHT functions are implemented by the Silvertel Ag1171 Ringing SLIC?

Question 2

What speech codec provides the best MOS at a rate of 8 kb/s? Justify your answer.

Question 3

What is the maximum downstream data rate offered by the ITU G.993.2 VDSL2 standard? How does this compare to the maximum data rate available from DOCSIS 3.1 (with bonding)?

Question 4

Telus provides the public the following pamphlet:

http://static.telus.com/common/cms/files/internet/PureFibre_Step_by_Step_and_FAQs.pdf

to answer questions about the deployment of their PON FTTH network.

- (a) Name two issues that customers appear to have with deployment of FTTH. How is Telus addressing these?
- (b) Which do you think would be more likely to be used in an urban deployment for deploying fiber underground: trenching with a plow or horizontal drilling? Which might be more common in a rural area?

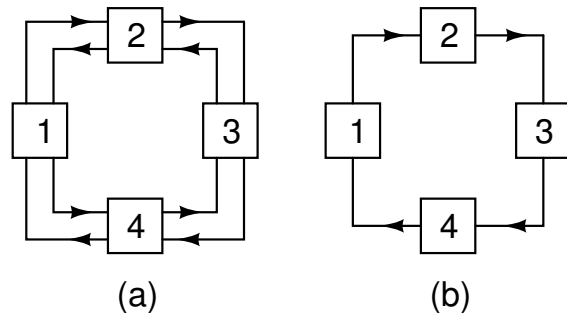
Question 5

An STS-3c (c for concatenated) SONET frame contains the Section and Line overhead and the payload

from three STS-1 frames but only one Path overhead section. How many path overhead bytes are there: (a) per STS-1 frame? (b) Per STS-3 frame? (c) Per STS-3c frame?

Question 6

Consider the ring networks below with (a) two or (b) one unidirectional link(s) between the nodes. The traffic destinations are uniformly distributed among each of the other three nodes, the shortest path is always followed and if multiple paths are the same length then the traffic is equally divided between them.



- (a) What is the average number of links traversed for each network? *Hint: Use symmetry.*
- (b) Assume each node generates traffic intensity G (b/s), what is the data rate on each link for each network?
- (c) If each link is an OC-192 and is fully loaded, what is the throughput (the total traffic received at one node) for each network?