Aalto University
Department of Communications and Networking

EXAMINATION
24.10.2014

S-38.3041 Operator Business

Each question is worth max 6 points. Answers must be short and concise. Note that you can take part in the exam only if you have already participated the obligatory mobile operator business game session.

1. Explain the following economic terms briefly (max 5 sentences per term).
   a. Network externality
   b. Natural monopoly
   c. Long-run incremental cost
   d. Reed's Law
   e. Two-sided markets: size rule
   f. Utility function

2. The present value of a customer to an operator equals her switching cost. Assume that operator has a variable monthly cost of 10 EUR per customer. Further, it costs a customer 80 EUR to switch from one operator to another. Supposing a monthly interest rate of 3%, what is the equilibrium price setting for a monthly subscription. At equilibrium, operators are profitable and customers don't have incentive to switch operators.

3. Consider a simultaneous ascending auction with combinatorial bidding where three bidders 1, 2 and 3 bid for spectrum licenses A and B (bids must be integers). The valuations of each individual license per bidder are v_A and v_B, and the combined valuations are v_{AB} (see table below). At the end, the winning bids are chosen to optimize seller's result. What are the likely outcomes of the auction? What would be a socially optimal outcome? Assuming a randomizing equilibrium strategy, what is the probability of inefficient allocation?

Bidder	v_A	v_B	v_{AB}	Budget
1	4	0	0	3
2	0	4	0	3
3	1+ε	1+ε	2+ε	2

4. Define briefly the motivations of an Internet Service Provider to pursue or not pursue peering contracts in Internet. How can one calculate the peering break-even point?

5. Explain the current regulatory status of international mobile roaming in the European Union. What are the regulatory options to solve the problem of high roaming prices of mobile Internet access within European Union?