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Helsinki University of Technology
Networking Laboratory

EXAMINATION
10.05.2006

S-38.3041 Operator Business

Each question is worth max 6 points. Answers are preferably written in English but Finnish and Swedish are also accepted. Answers must be short and concise. Note that you can participate to the exam only if you have already participated to the obligatory mobile operator business game session.

1. Explain schematically the consumer's problem in terms of utility function, product price, and producer's product cost.

2. Assume a market with positive network effects and N potential customers (N=100) indexed by i = 1...N. Willingness to pay of customer i is $u_i(n) = ni$ for a unit of good given that n other customers will be using it. Customers can always return the good and get a refund if the price goes below utility. Assume price p=700 posted. Calculate the possible equilibrium points and define conditions for reaching them. Define the socially optimal point and conditions for reaching it.

3. Consider WiMAX technology on the 3.5GHz band as a fixed broadband operator's investment problem. Define schematically a techno-economic model for analyzing the WiMAX business case. What are the critical success factors of WiMAX in this model?

4. Describe the EU regulatory process schematically.

5. Suppose a multi-object simultaneous ascending auction where two bidders, called 1 and 2, bid for licenses A and B. The valuations of each individual license per bidder are v_A and v_B, and the combined valuation is v_{AB}. Assume that the prices of licenses are raised continuously with an increment of ε. What are the likely outcomes of the auction? What kind of rules would secure that the outcome is socially optimal?

Bidder	v_A	v_B	v_{AB}
1	1	2	6
2	3	4	5