

List of possible examinations questions based on the course materials including lecture slides, Pricing communication networks (Courcoubetis, Weber), Telecommunication Regulation Handbook (Intven, Tetrault), and Seamless mobile IP service provision economics (ed. Loizillon).

Consumers

- Explain schematically the consumer's problem in terms of utility function, product price, and producer's product cost.
- Explain the mobile consumer segmentation according to MindStyle.
- Explain the impact of personality, location and time on mobile Internet usage as observed in Japan.
- How can you apply reversal theory (by Michael Apter) on classifying mobile entertainment services?
- Assume a market with positive network effects and N potential customers ($N=100$) indexed by $i = 1 \dots N$. Willingness to pay of customer i is $u_i(n) = n_i$ for a unit of good given that n other customers will be using it. Customers can always return the good and get refund if the price goes below utility. Assume price $p=900$ posted. Calculate the possible equilibrium points and define conditions for reaching them. Define the socially optimal point and conditions for reaching it.

Enterprises

- Describe a generic telecom purchase process of enterprises, based on request for proposals.
- Calculate the total cost of ownership for terminal types in an enterprise (a cellular handset, personal computer). Which is most expensive? Why?

Operators

- Describe the reference business model of 3GPP (3rd Generation Partnership Program) for mobile services value net.
- Identify different types of virtual mobile network operators in the Finnish market.

Pricing

- What is the price level that regulator aims at? Why?
- What is the price level that a monopolist aims at. Why.
- Under what conditions does tatonnement converge to a market equilibrium.
- How can the operator reduce the problems related to flat-rate pricing.
- Define the pros and cons of pricing based on Long-Run Incremental Cost.
- Why is it possible that the consumer and social surplus get maximized at the same Nash equilibrium point in congestion pricing. Demonstrate mathematically.

Charging and billing

- Explain schematically the on-line credit card transaction process for Internet electronic commerce payments.
- Explain schematically the payment transaction process for mobile digital content in superdistribution
- Explain schematically the charging and billing process and subsystems of a typical mobile operator.
- How can a mobile operator reduce the production cost of payment transactions based on operator's charging and billing machinery.

Investments

- Explain Net Present Value, Internal Rate of Return, and Payback time. Why are all the three meters needed to assess the value of an investment.
- How can a linear spreadsheet-based simulator such as the TONIC tool help in analysing network investments of operators. What are the inputs and outputs.
- Explain the results of the TONIC analysis of cellular (3G) and WLAN.

Interconnection

- Explain the prevailing types of pricing agreement for transit traffic in Internet.

Roaming

- Describe schematically the GRX-based charging model for roaming traffic between GPRS operators.

Regulation

- Explain different mechanisms for price regulation of monopolies
- What kind of reference costs can be used in dynamic price cap regulation
- Describe the EU regulatory process schematically.
- List the major regulatory milestones of the Finnish telecom market.

Competition

- Explain Porter's model for competition ("5 forces") and apply it for analyzing the market position of a virtual mobile network operator.
- What is the relevance of complementary assets in an innovator's market entry strategy.
- The present value of a customer to an operator equals her switching cost. Assume that operator has a variable monthly cost of 20 EUR per customer. Further, it costs a customer 80 EUR to switch from one operator to another. Supposing a monthly interest rate of 1%, what is the equilibrium price setting for a monthly subscription. At equilibrium, operators are profitable and customers don't have incentive to switch operators.

Auctions

- Explain the differences of UMTS spectrum auctions in the UK, the Netherlands, and Germany.
- What are the statistical indicators for predicting a government's desire for spectrum auctions.
- Explain the process of a simultaneous ascending auction.

- Using a numeric example explain the “free riding” problem of simultaneous ascending auctions.
- Using a numeric example explain the “incentive to delay bidding” problem of simultaneous ascending auctions.
- Using a numeric example explain the “inefficient allocation” problem of simultaneous ascending auctions.