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**Guidelines for the examination paper in Telecommunications Economics. Winter 2010/2011, date 15.12.2010.**

**Criteria for top performance in assessments of examination in 'Telecommunications Economics'.**

*To obtain the highest grades in the assessments of examination in 'Telecommunications Economics' the following general criteria shall be met:*

*The student shall*

- *demonstrate knowledge of all the relevant concepts and factual items regarding the questions raised and of the relationships between these*
- *be able to design an analysis to give a thoroughly description of the problem and find possible solutions to the questions raised*
- *give a survey of the relevant economic issues regarding the questions raised*
- *explain constraints and uncertainties in the presented solutions, often in the form of trade-offs between different objectives.*

*As more concrete criteria - depending on the actual questions raised in the examination - the following shall be demonstrated:*

*Knowledge of*

- *the main trends and relationships in the ICT sectors (ICT=Information and Communication Technology) regarding demand, supply, prices, market players, technical solutions, regulation etc.*
- *the main economic and technical concepts and items used in the ICT sectors, especially for telecommunication, the Internet and supply of radio and TV channels.*

**The minimum criteria for passing the examination.**

*The student shall demonstrate knowledge of*

- *the most important concepts and factual items that are relevant for answering the questions raised*
- *the most relevant trends and relationships in the ICT sectors*
- *the possibilities and limitations of the use of relevant economic analyses.*

*Acceptance of a limited amount of small and medium failures in the analysis presented, but normally no major failures can be accepted.*

### Question A.

There are different ways to answer the question. It is important to show an understanding and overview of different relevant concepts and to organise the presentation in a well-structured way.

The answer should include several of the following issues:

- The history of the Internet and the global scope. Explain why the Internet is mainly unregulated.
- The definition of peering and "peers". The peers need to be equal regarding characteristics like the number of subscribers, geographical coverage etc.
- An illustration of the value chain for ISPs and IBPs and an explanation of the use of peering and transit agreements.
- The possibilities for ISPs to change between transit agreements and peering agreements.
- The problem in relation to guarantees for Quality of Service (QoS).
- The problem with "hot potato" behaviour.
- A game theoretical approach to understand the market for peering and transit, especially the possibilities to punish potential degradation of QoS made by an ISP or IBP.

### Question B.

There are different ways to answer the question. It is important to show an understanding and overview of different relevant concepts and to organise the presentation in a well-structured way.

The answer should include several of the following issues:

- Discuss how competition was established after liberalization and privatization in late 1990'ies in Europe on the market for telecommunication and present the characteristics of the competition of today.
- Present the concept of "Ladder of investments" and explain the rationale behind it.
- Present the concept of replicability and of "critical mass".
- Present the different relevant wholesale products and thereby the rungs of the ladder for PSTN (fixed voice telephony), for XDSL broadband access and for FTTN/FTTH access.
- Present and discuss how the sector specific regulation can be designed to support the "Ladder of Investments" on the telecommunications market.
- Present and discuss in parallel with that how the idea of the "Ladder of Investments" can be used in business strategy planning for the incumbents and for the entrants on the market.