

ELEC-E7820 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 logic of following economics terms briefly (max 5 sentences per term, the rest is not graded).

- a. Nash equilibrium
- b. Economic efficiency
- c. Two-sided markets: size rule
- d. Winner's curse (in auctions)
- e. Switching cost
- f. Consumer utility

2. Define schematically the economic nature of digital goods. Based on the schema, how can one solve the profitability problem of digital goods?

3. 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 5%, what is the equilibrium price setting for a monthly subscription. At equilibrium, operators are profitable and customers don't have incentive to switch operators.

4. Assume a 5-year network investment project with the following annual figures:

Year	0	1	2	3	4	5
Revenues	0	5	7	9	10	12
Operating costs	0	-2	-3	-3	-2	-2
Depreciation	0	-3	-3	-2	-2	-1
Interests and taxes	0	0	-0.3	-0.6	-0.9	-1.3
Investments	-12	0	0	0	0	0

Calculate the annual profit&loss statements of the project including EBITDA, EBIT and net income. Make a cash flow analysis of the project including the discounted payback period, NPV (using 5% discount rate), and IRR. Would you invest in this project? why?

5. Consider a monopoly two-sided platform that mediates interactions in a market with 6 *buyers* and 6 *sellers*. Buyers and sellers derive positive surplus from each buyer-seller interaction, i.e. each buyer is willing to buy a product from each of six sellers. What transaction fees for buyers P_b and sellers P_s should a platform manager set to maximize its profits, if the utility of a buyer from using the platform is 6, and the utility of sellers from using the platform is $(i - 3)$ for each interaction for seller $i = 1, 2, 3, 4, 5, 6$? Note that sellers' utility indicates that *sellers 1 and 2* will not use the platform even if $P_s = 0$.