

CHALMERS

Exam of Management of Physical Distribution, TEK620

Date: 20 March 2019

Time: Afternoon

Location: SB

Allowed aids: Chalmers calculator, English – Swedish (or any other language) dictionary.

Presentation: Do not answer more than one question on each page.

Credits: 6 main questions with a total of 63 points.

Examiner: Dan Andersson (772 1339)

All the answers should be in English

Read each question carefully before answering

Just one answer on each page!

Question 1. Purchasing of distribution services 6 points

- a) Both in the literature and in the presentation made by Volvo, the transport purchasing process is divided into a number of steps. Describe the process step before “Negotiate&Award”/”Negotiations and contracting”. Give examples of actions taken in this step and the logic behind these. (2p)
- b) Explain how buyers of transport and distribution services can contribute to the reduction of the environmental impact of transport by changing their service demands. (2p)
- c) When comparing the purchasing process for different kinds of logistics services, it has been observed that the purchases of advanced logistics services has some distinct needs in three of the steps in purchasing process. Mention what the specific needs are in the first of these steps in the purchasing process. (2p)

Question 2. Urban freight transport 10 points

- a) Off-hour deliveries will result in several positive effects. However, despite this, there has been an unwillingness to implement this type of city deliveries. Describe three different types of solutions that have been suggested to support the implementation of off-hour deliveries. (3p)
- b) An initiative with important local urban impact is parking and loading areas management. This is one of several different practices of urban freight management, which have been presented in the course. Explain why parking and loading area management is important for urban freight and mention a couple of different solutions related to this. (3p)
- c) Developments in society have enabled us to demand more goods and request more rapid deliveries. In combination this has led to an increase in residential and commercial deliveries with high service demands, which is a challenge for the movement of goods in cities. A range of strategies has been identified for both new technologies and behavioural shifts, which can be applied to manage the changing expectations of consumers and businesses. You should mention two of these strategies, related to people and technology, and explain how they work. (4p)

Question 3. Pricing and capacity utilisation 17 points

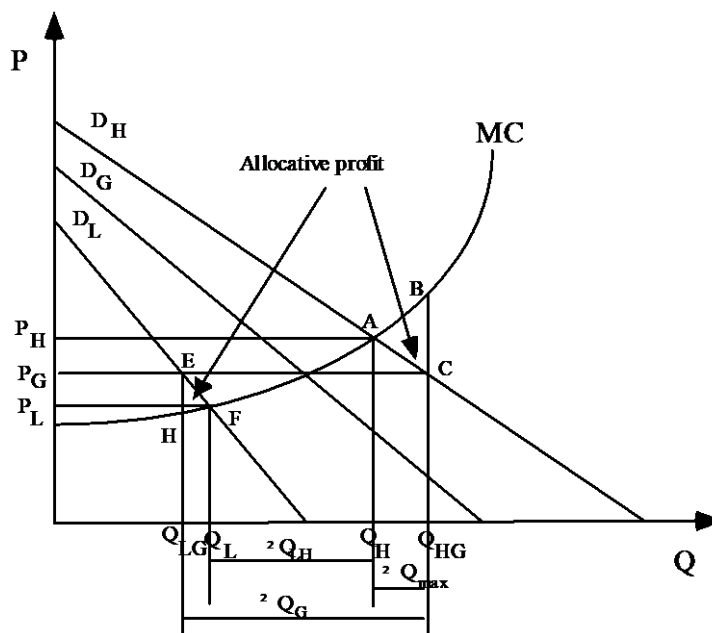
- a) What factors influence the price of a distribution/transport service and what are the challenges when determining the “right” price? (4p)
- b) A transport company has been told that there is something called consumer surplus and loss of consumer surplus that might offer a possibility to increase their revenues. Explain how they might do this and what this requires in order to be successful. (4p)

- c) A carrier, D-Transport AB, provides a distribution service in a region outside Gothenburg and uses an old terminal to support this business (they own the terminal). They handle 5 680 shipments annually in this terminal, which represent ca 71% capacity utilization. The average price for the service is 790 SEK per shipment and this price generates a yearly profit of 150 000 SEK for this business. The marginal cost for handling a shipment is 190 SEK. Based on the assumption of a linear demand curve (DA) the demand stops if the price reaches 1700 SEK per shipment.

Based on a market study the company DTAB assumes that the number of shipments going through the terminal will increase to 9000 shipments annually if they keep the current average price. This development leads to a need for a 40% increase in capacity of the terminal. It is assumed that there will be no demand for the service when the price is 2000 SEK per shipment (a new linear demand curve, DB, is assumed). The fixed cost for increasing the capacity is estimated to 2 million SEK annually and the marginal cost will be the same as it was in the original case.

- What would a new market price be if the demand increase, i.e. a shift from demand curve DA to DB, but there is no increase in capacity (2p).
- Calculate the profit after expansion if the company must keep the original price and comment on whether or not it is a good idea to expand the capacity (3p).

- d) What is peak load pricing and what are the main benefits of using this type of price mechanism? You may use the figure below to explain your answer. (4p)



Question 4. Evaluation of distribution systems and cost 10p

- a) There are several different reasons for measuring and evaluating a physical distribution system and there are also a number of challenges related to this. Mention the most important reasons for measuring physical distribution and give examples of challenges related to measuring the load factor? (3p)
- b) When analysing the load factor, one could compare the capacity required by the products in an order and the available capacity in a truck. This could be called the overall load factor. However, in order to better understand what influences this measure it is necessary to divide it into a number of other measures. The question is what are they and on what system levels can they be found? (3p)
- c) Explain two ways to improve the balance between the required and available load capacity in the previous question. (2p)
- d) A company may have a need to internalize intangible effects of decisions into a total cost. Give two different examples of intangible effects that need to be internalized if a total cost analysis should be performed. (2p)

Question 5. Information 10 points

- a) The Smart Transportation Management framework consists of three cornerstones. Give concrete example of how this framework can be applied in the access management at a port terminal and what positive effects the interplay between the three cornerstones may have on transport operations. (6p)
- b) Explain how Internet of Things (IoT) and Big data be combined in order to improve the performance of distribution systems? (4p)

Question 6. Division of roles and collaboration 10 points

- a) There are several factors that favours the establishment of horizontal collaborations. However, in order to actually implement a horizontal collaboration, there are a number of barriers that have to be overcome. Mention two of these barriers and as well as two facilitators that could support the implementation. (4p)
- b) Explain how transaction costs may influence the decisions to outsource and organise a distribution system. (4p)
- c) A high asset specificity is not in isolation a reason not to outsource. Give two examples of other factors that interact with asset specificity when selecting governance structure (i.e. whether or not to outsource). (2p)