



**Aalto University**

School of Science

Department of Industrial Engineering and Management

TU-C2020 Operations Management

# EXAMINATION

Dear participant!

## This examination has 4 parts

- I. (a-d) Explanation of terminology (4 parts 2-3 points each = 10 points)
- II. Long essay (max 10points)
- III. (a-g) Practical part combining the different topics of the course (6 parts 1-2 points each = 10 points)

## Instructions

- Question I - III to one answering file. Please copy the table below to your answering file.
- You may answer in English, Finnish and/or Swedish.
- You may use all materials available to answer the questions.
- If you write better text in Finnish than in English, then preferably answer in Finnish!
- Please turn in all the question and answer file(s).
- Please be concise: the length of an answer does not compensate for quality. And do not copy text directly from your course book and/or Internet.
- Your answers will be checked against plagiarism when returned in Turn It In.

Exam participant fills in	Name:					Student number:
	Study Program:					Year of studies:
	Year when course assignment was / will be made:					
Examiner fills in	Question	1	2	3		Total
	Points received					
	Out of maximum of	10	10	10		30

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I. *Short Essays: Supply and Quality Management.* (10p.)

- a) Describe, what are the four key reasons (decision areas) to consider when discussing supply networks (4p)
  - b) Describe, what are the key performance objectives in supply networks. (2 p)
  - c) Describe, what is total quality management (2 p)
  - d) Describe, what are the four costs (drivers) of quality for management to consider? Provide examples of each cost (driver). (2 p)
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II. *Essay: Demand Management.* Explain, what are the key reasons to consider when discussing with new potential suppliers and existing suppliers of long term demand management, medium term demand management and short term demand management perspectives (10 pts).

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III. Designing production system for a new product – practical assignment (10 pts.)

A Scandinavian household cleaning utensils manufacturer VectorStock has a factory in China. The company intends to introduce a new series of cleaning utensils for non-professional use. Five of the key products are different swabs shown in in Picture 1.

The swab is built of three main parts: the plastic top and handlebar and the actual swab. Additionally, a swab is being packed to a carbon box with a user guide.

The three parts are attached to each other: one metal part having a larger end goes into the other handlebar, and a swab is inserted at the end. The swab consists of plastic cover part, plastic inlay and one “cloth” (cut from one piece of cloth) that are inserted into its position. The swab part can be detached from the handlebar by the customer. The product has five sister products where the swab part is different, but the plastic top and handlebar is the same.

You have been involved in the product launch of these five products, and your initial job is to discuss following questions. Please answer on a separate paper and limit the total length of your answer to max three pages!

- a. If you were asked use Quality Function Deployment (QFD) for this product, what input information would you need and how would you obtain it (the “whats”)? Give examples of possible outcomes of the QFD for this product (for the “hows”). (2 p)
  - b. Explain or draw a component structure -diagram (bill of material) for the basic variant of the swab. (1 p)
  - c. Would your production be make-to-stock, assembly-to-order, make-to-order, or engineer-to-order? Explain why (2 p).
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- d. Define what kind of basic process type your production would be and what type of layout you would use (graphical presentation of layout). Explain why. (2 p)
- e. How could the concept of Mass customization be used for this product? Define Mass Customization shortly, give examples on how it could be used for this product and discuss how this would benefit the production and the customer. (2 p)
- f. If you sold different heads that customer can replace the swab with (window cleaner, floor brush etc) separately from the basic swab as after-sales-service, would their demand be dependent or independent? Why? (1p)

**Picture 1:**

