EXAMINATION

Aalto University
School of Science
Department of Industrial Engineering and Management
TU-C2020 Operations Management

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

I. *Short Essays:* (total 10 p.)

a) Describe briefly what is meant by technical quality (small quality), process quality and Big Quality. (2 p)
b) Explain what is meant by different production layouts and discuss of each layout types advantages and disadvantages (4 p)
c) Discuss briefly, why service operations management is different from traditional (physical product) operations management. (4 p)

II. *Essay: Facility location decision.* Explain, what causes organizations to change locations or add new locations. Discuss the objectives of the location decisions. Describe factors influencing the location decision and explain, how you would proceed in making such a decision. (10 pts)

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

A Scandinavian toys manufacturer ACME corporation has a factory in China. The company intends to introduce a new series of pedal cars for children use. The prototype of the pedal car is shown in Picture 1.

The pedal car is built of three main subassemblies: the plastic frame, wheels and steering module and its system. Each subassembly consists of several other components. The pedal car has also two other main components such as steering wheel and chair. Additionally, a pedal car is being packed to a carbon box with a user and safety manual.

The subassemblies are assembled to each other as follows in four phases: one frame is first assembled with steering system. Secondly the wheels are being assembled to steering systems and frame. Thirdly the two variating components steering wheel and chair are assembled. Fourthly the pedal car is packed. The pedal car has five sister products where steering wheel and the chair are of different colour.

You have been involved in the product launch of this pedal car product, 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 pedal car. (1 p)

c. Would your production be make-to-stock, assembly-to-order, make-to-order, or engineer-to-order? Explain why (2 p).

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. 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. (1 p)

f. If you sell spare parts (e.g. steering wheel, wheels, motor hood) that customer can replace in the pedal car. How would your production be? Why? (2p)

Picture 1: