Försättsblad Prov Original

Kurskod	Provkod	Tentamensdatum
I G 0 1 8 G	T 1 0 1	2 0 1 8 - 0 4 - 0 3
Kursnamn	Industriell organisation och ekonomi GR (C), Logistik	
Provnamn	Tentamen	
Ort	Sundsvall	
Termin	V18	
Ämne	Industriell organisation och ekonomi	

Exam in Logistics IG018G, 3hp

Date: 2018-04-03, Time: 3 hours

Every exercise is 5 points except the last exercise In Part B that is 10 points. So in total 40p divided equally on Part A and B. The Grading is as follows.

Fx >=16p; A,B>=6p
E >=18p; A,B>=8p
D >=23p; A,B>=10p
C >=27p; A,B>=12p
B >=31p; A,B>=14p
A >=35p

Example: If you have 20p+7p =27p this is an Fx but if you have 14p+13p =27p this is a C etc. If you have Fx you can decide together with the examiner to make a small test (orally or written) for an E or to write the whole exam again giving you the opportunity to get any grade.

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You are only allowed to use pen and paper and answers must be given in English or Swedish.

Part A:

1. Describe the concept of core competencies and outsourcing. Give an example of outsourcing in logistics and exemplify how this can give value for all involved parties.

2. Reverse logistics and its connections to sustainable development of especially global intermodal transports have been a well-debated area recently. Describe the concept of reverse logistics and intermodal transports.

3. Risk and Uncertainty usually has it origin from many sources in logistics depending of the actual supply chain. However, demand uncertainty usually exist and give escalating problems upstream most supply chains. What is this effect called, how do it relate to another more general concept? Describe this effect by a small example.

4. In production logistics we usually talk about lean, push, pull, muda, kaizen and JIT. Describe the meaning of these terms and its origin.

Part B:

1. Exponential weighted average is a common forecasting method that can be used to estimate future demand based on a mean value $u(t)$ using the actual demand in the periods $d(1)...d(t)$. Derive mathematically the recursive formula for this forecasting model for $t>=1$. In this forecast model there is a constant a, what is the interpretation of a?

2. A friend has a company with an inventory consisting of several thousands of products. He feels that there exist products that have been stored for a long time occupying unnecessary space, and that there are actually only a few of all this thousands of products that are important. Since your friend heard that, you have read logistics at the University he asks you what to do about it. You say, use ABC analyses. Make a clear description for your friend how ABC analyses works through a small example

3. An oil company has three different processes used to manufacture various types of gasoline. Each process involves blending oils in a catalytic tracker as defined below

- Running process 1 for an hour costs $5 and requires 2 barrels of crude oil 1 and 3 barrels of crude oil 2. The output from running process 1 for an hour is 2 barrel of gas 1 and 1 barrel of gas 2

- Running process 2 for an hour costs $4 and requires 1 barrel of crude oil 1 and 3 barrels of crude oil 2. The output from running process 2 for an hour is 3 barrels of gas 2.

- Running process 3 for an hour costs $1 and requires 2 barrels of crude oil 2 and 3 barrels of gas 2. The output is 2 barrels of gas 3.

- Each week, 200 barrels of crude 1, at $2/barrel, and 300 barrels of crude 2, at $3/barrel, may be purchased.

- All gas produced can be sold at the following per-barrel prices: gas 1, $9; gas 2, $10; gas 3, $24.

- Its only 100 hours of time on the catalytic cracker available each week

Formulate a general LP model in mathematical terms that will maximize the profit

Good Luck/Leif