



Försättsblad Prov Original

Kurskod	Provkod	Tentamensdatum
I G 0 1 8 G	T 1 0 1	2 0 1 8 - 1 2 - 1 7
Kursnamn	Industriell organisation och ekonomi GR (C), Logistik	
Provnamn	Skriftlig salstentamen	
Ort	Sundsvall	
Termin		
Ämne		

Exam in Logistics IG018G, 3hp

Date: 2018-12-17, Time: 3 hours

Every exercise is 5 points in part A and 10 points in part B. So in total 40p divided equally on Part A and B. The Grading is as follows.

Fx \geq 16p; A,B \geq 6p

E \geq 18p; A,B \geq 8p

D \geq 23p; A,B \geq 10p

C \geq 27p; A,B \geq 12p

B \geq 31p; A,B \geq 14p

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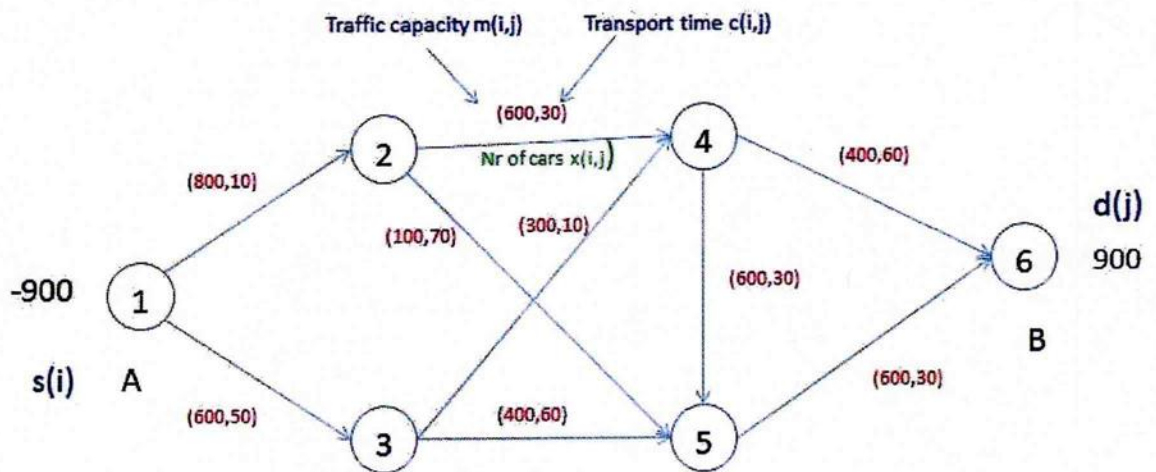
You are only allowed to use pen and paper and answers must be given in English or Swedish.

Part A:

1. Describe and depict the value chain model introduced by Porter (1985), also describe what he meant with a value system.
2. According to Rother & Shook (1999). Why is Value Stream Mapping an essential tool? What is the takt time, and how is it calculated?
3. Demand uncertainty is usually regarded as one of the most risky aspects since it usually give escalating problems upstream most supply chains. What is this effect called? Describe this effect using a small example.
4. In intermodal logistics the decision problem today usually involves several conflicting criteria. Give an example that exemplifies this problem. What is the meaning of intermodal logistics and reverse logistics?

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 $d(1) \dots d(t)$. Derive and explain the recursive formula for this forecasting model for $t \geq 1$. Also derive the error term $e(t)$ the APE and the MAPE measures. What is the rule of thumbs for the MAPE?
2. For the traffic management problem described in the network below, calculate the most time efficient solution with respect to that 900 trucks should be sent from node 1 to node 6 in this network. You have to state correct defined sets, parameters, variables and data. Furthermore, the objective function and every constraints has to be formulated by mathematics but also described by words. In the network both the traffic capacity and the transport time is defined on every road (link) as (traffic capacity, transport time)



Good Luck/Leif and Annika