

## YLIOPISTOTENTTI - UNIVERSITY EXAM

<b>Opiskelijan nimi / Student name:</b>	<b>Opiskelijanumero / Student number:</b>
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**Opettaja täyttää / Lecturer fills in:**

<b>Opintojakson koodi and nimi / The code and the name of the course:</b> <b>Koodi / Code 721134A</b> <b>Tentin nimi / Exam name Cost Management Systems</b>	
<b>Tiedekunta / Faculty:</b> OyKKK	
<b>Tentin pvm / Date of exam:</b> 3.4.2019	<b>Tentin kesto tunteina / Exam in hours:</b> 3 h
<b>Tentaattori(t) / Examiner(s):</b> Hannele Kantola, Erkki Lassila	<b>Opintopistemäärä / Credit units:</b> 6
	<b>Sisäinen postios. / Internal address:</b> 6 OyKKK
<b>Sallitut apuvälineet / The devices allowed in the exam:</b> <input checked="" type="checkbox"/> Funktiolaskin / Scientific calculator <input type="checkbox"/> Ohjelmoitava laskin / Programmable calculator <input type="checkbox"/> Muu materiaali, tarkennettu alla / Other material, specified below:	
<b>Tenttiin vastaaminen / Please answer the questions:</b> <input checked="" type="checkbox"/> Suomeksi / in Finnish <input checked="" type="checkbox"/> Englanniksi / in English <p>Suomenkielisessä tutkinto-ohjelmassa olevalla opiskelijalla on oikeus käyttää arvioitavassa opintosuorituksessa suomen kieltä, vaikka opintojakson opetuskieli olisi englanti. Tämä ei koske vieraan kielen opintoja. (Kts. <u>Koulutuksen johtosääntö</u> 18 §)</p> <p>In a Finnish degree programme a student has a right to use Finnish language for their study attainment, even though the language of instruction is English, (excluding language studies) even when the language of instruction is other than Finnish. (See <u>the Education Regulations</u> 18 §)</p>	
<b>Kysymyspaperi on palautettava / Paper with exam questions must be returned:</b> <input checked="" type="checkbox"/> Kyllä / Yes <input type="checkbox"/> Ei / No	

This test has three questions and a maximum of 90 points. Please use complete sentences when answering the essay questions (no bullets, lists etc.)! Do not write on this exam paper, but provide your answers in the answer sheet.

- 1) **Key concepts of Life-cycle costing and its role in cost-based decision making.** (Kaplan and Atkinson) (30 p.)
- 2) **Explain the Theory of Constraints (TOC) in optimizing the use of short-term resources and criticism for the theory.** (Kaplan and Atkinson) (30 p.)
- 3) **ABC profitability analysis**

A healthcare company specializes in hip, knee and shoulder replacement operations, known as surgical procedures. As well as providing these surgical procedures the company offers pre operation and post operation in-patient care, in a fully equipped hospital, for those patients who will be undergoing the surgical procedures.

Surgeons are paid a fixed fee for each surgical procedure they perform and an additional amount for any follow-up consultations. Post procedure follow-up consultations are only undertaken if there are any complications in relation to the surgical procedure. There is no additional fee charged to patients for any follow up consultations. All other staff are paid annual salaries.

The company's existing costing system uses a single overhead rate, based on revenue, to charge the costs of support activities to the procedures. Concern has been raised about the inaccuracy of procedure costs and the company's accountant has initiated a project to implement an activity-based costing (ABC) system.

The project team has collected the following data on each of the procedures.

<b>Procedure information</b>	<b>Hip</b>	<b>Knee</b>	<b>Shoulder</b>
Fee charged to patients per procedure	\$8000	\$9000	\$6000
Number of procedures per annum	500	1000	500
Average time per procedure	2.0 hours	1.0 hours	2.0 hours
Number of procedures per theatre session	1	2	2
In-patient days per procedure	3	2	1
Surgeon's fee per procedure	\$1250	\$1100	\$1500
% of procedures with complications	6%	4%	5%
Surgeon's fee per follow up consultation	\$400	\$300	\$400
Cost of medical supplies per procedure	\$500	\$300	\$400

The project team has obtained the following information about the support activities.

<b>Activity</b>	<b>Cost driver</b>	<b>Overheads</b>
Theatre preparation for each session	Number of theatre preparations	800 000
Operating theatre usage	Procedure time	1 200 000
Nursing and ancillary services	In-patient days	6 000 000
Administration	Sales revenue	1 200 000
Other overheads	Number of procedures	1 000 000

**Required:**

- (a) Calculate the profit per procedure for each of the three procedures, using the current basis for charging the costs of support activities to procedures (single overhead rate). (10p)

**(b) Calculate the profit per procedure for each of the three procedures using activity-based costing (ABC). (20p)**

Copy following tables to your answering paper if needed and fill in there: Please remember to show all the calculations.

(a) Profitability analysis using the current system:

	Hip \$	Knee \$	Shoulder \$
Fee charged to patient			
Surgeon's fee			
Fee for follow-up consultations			
Medical supplies			
Overhead cost			
<b>Profit per procedure</b>			

(b) Calculation of cost drivers (ABC):

Activity	Cost Driver	Overheads \$	No. of cost drivers	Cost per driver \$
Theatre preparation for each session				
Operating theatre usage				
Nursing and ancillary services				
Administration				
Other overheads				

(b) ABC overhead cost per procedure:

Activity	Hip \$	Knee \$	Shoulder \$
Theatre preparation for each session			
Operating theatre usage			
Nursing and ancillary services			
Administration			
Other overheads			
<b>Total overhead cost per procedure</b>			

(b) Profit per procedure (ABC):

	Hip \$	Knee \$	Shoulder \$
Fees charged to patients			
Surgeon's fee			
Fee for follow-up consultations			
Medical supplies			
Overhead cost			
<b>Profit per procedure</b>			