ADM 3346 A and B Professor Ron Eden
COST ACCOUNTING Fall 2008
Solution Final Examination

STUDENT NAME: _____ _____

STUDENT NUMBER: _____

Check Section: A: Monday/Thursday ¦ B: Thursday ¦

INSTRUCTIONS

1. Books and notes **are not** permitted, except language dictionaries.
2. Non programmable calculators **are** permitted.
3. Put all answers in the question booklet
4. Questions concerning possible errors in the exam **only** will be answered.

Questions	Max Points
Question 1	/5
Question 2	/5
Question 3	/8
Question 4	/8
Question 5	/6
Question 6	/6
Question 7	/8
Question 8	/10
Question 9	/16
Question 10	/18
Total	/90

1**Statement of Academic Integrity**
The School of Management does not condone academic fraud, an act by a student that may result in a false academic evaluation of that student or of another student. Without limiting the generality of this definition, academic fraud occurs when a student commits any of the following offences: plagiarism or cheating of any kind, use of books, notes, mathematical tables, dictionaries or other study aid unless an explicit written note to the contrary appears on the exam, to have in his/her possession cameras, radios (radios with head sets), tape recorders, pagers, cell phones, or any other communication device which has not been previously authorized in writing.

Statement to be signed by the student:
I have read the text on academic integrity and I pledge not to have committed or attempted to commit academic fraud in this examination.

Signed:_____
Note: an examination without this signed statement will not be graded and will receive an exam grade of zero.

Q.1 (5 points) Starnes Supply, Inc., produces hydraulic hoists that are used by hospitals to move bedridden patients. The costs of manufacturing and marketing hydraulic hoists at the company's normal volume of 3,000 units per month are shown in Exhibit A. Domestic price = $740.

EXHIBIT A
Cost per Unit for Hydraulic Hoists

Unit manufacturing costs:		
Variable materials	$100	
Variable labor	150	
Variable overhead	50	
Fixed overhead	120	
Total unit manufacturing costs		$420
Unit marketing costs:		
Variable	50	
Fixed	140	
Total unit marketing costs		190
Total unit costs		610

An inventory of 300 units of an obsolete model of the hoist remains in the stockroom. These can be re-worked for $100 per unit in variable manufacturing cost and sold through regular channels at reduced prices. Otherwise, the inventory will soon be valueless.

Required: What is the minimum price that would be acceptable in selling these units? Explain briefly

Min Price = $100 Rework plus VSA of $50 = $150

Both are incremental, all others are sunk.....

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Q.2 (5 points) Normal spoilage is 10% of the good units passing inspection in a molding process. In March, a total of 220,000 units were completed. Other data include : Units started during March, 240,000; Work in Process, beginning, 28,000 units (80% complete for conversion); Work in Process, ending , 22,000 units (70% completed for conversion costs).

Required:
How many units are considered to be 1) normal spoiled and 2)abnormally spoiled in March if the inspection point is at 60% completion?

		Inspected at 60%
Completed :from BB	28,000(80%)	--
;from started	192,000 (220,000-28,000)	192,000
WIP-EB	22,000(70%)	22,000
Spoiled	26,000	--
Total	268,000	214,000
NS @ 10%	10% * 214,000	21,400
AS	26,000 – 21,400	4,600

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Q. 3 (8 points) Gatineau Clothing is a manufacturer of designer suits. Variable manufacturing overhead cost is allocated to each suit based on budgeted direct manufacturing labour-hours per suit. For the Year 2007, each suit is budgeted to take 4 labour-hours. Budgeted variable manufacturing overhead costs per labour-hour are $14.40. The budgeted number of suits to be manufactured in The Year 2007 is 10,400. Actual variable manufacturing overhead costs in the Year 2007 were $625,970 for 10,800 suits started and completed. Actual direct manufacturing labour-hours for the Year were 45,360.Gatineau Clothing allocates fixed manufacturing overhead to each suit using budgeted direct manufacturing labour-hours per suit. Data pertaining to fixed manufacturing overhead costs for the Year 2007 are $748,800, budgeted; and $767,000, actual.

Required

2.1 Compute the variances for variable manufacturing overhead. Comment on the results.
2,.2 Compute the variances for fixed manufacturing overhead. Comment on these results.
Provide the entries to close the Fixed Overhead Control accounts at year end 2007. Explain.
VOH:

Actual		**AQ*SP**		**Applied = SQA*SP**
$625,970	*Spending Variance = $27,214 F** 1 point*	*45,360*$14.40 $653,184*	*Efficiency Variance $31,104 U* 1 point*	*10,800*4dlhs* $14.40 43,200*$14.40 = $622,080*

*** spent less than allowed for 45,260 dlhs ½ point*

** unfavourable because the actual dlhs was for 45,360 hours and the dlhs allowed was 40,320 ½ point*

FOH Actual **$767,000**	Spending Variance = $18,200 U** 1 point	Budget $748,800 So: POR = $748,800/(10,400*4) $748,800/(41,600) $18	Volume Variance $28,800 F* 1 point	Applied 10,800*4* $18 43,200*$18 = $777,600

** Spent more than the budget ½ point

* favourable because the actual activity level was for 43,200 hours and the budgeted was for 41,600 ½ point

Entries to close

FOH Applied Control Acct	*$777,600 ½ point*	
FOH Actual Control Acct		*767,000 ½ point*
COGS – Spending variance	*18,200 ½ point*	
COGS – Volume Variance		*28,800 ½ point*

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Q. 4 (8 points) John Secord is the managing partner of a partnership that has just finished building a 120-room hotel. Secord anticipates that he will rent these rooms for 32,000 nights next year (or 32,000 room-nights). All rooms are similar and will rent for the same price. Secord estimates the following operating costs for next year:

Variable operating costs	$36.00 per	Room-night
Fixed costs:		
Salaries and wages	$4,200,000	
Maintenance of building and pool	888,000	
Other operating and administration costs	3,360,000	
Total fixed costs	$8,448,000	

The capital invested in the motel is $11,520,000. The partnership's target return on investment is 25%. Secord expects demand for rooms to be about uniform throughout the year. He plans to price the rooms at full cost plus a markup on full costs to earn the target return on investment. Ignore any income tax effects.

Required

1. What price should Secord charge for a room-night? What is the markup as a percentage of the full cost of a room-night?
2. Secord's market research indicates that if the price of a room-night determined in requirement 1 were reduced by 10%, the expected number of room-nights Secord could rent would increase by 10%. Should Secord reduce prices by 10%?

1. 32,000 room nights

	Per room	*Total*	
VC	*$36*	*$1,152,000*	*32,000*$36 = $1,152,000*
FC	*264*	*$8,448,000*	*$8,448,000/32,000 = $264*
Full cost	*300*	*9,600,000*	
*Mark up *(Income)*	*90*	*$2,880,000*	*25%*$11,520,000= $2,880,000*
Price/Revenue	*$390*	*$12,480,000*	

** 30% of FC (90/300)*

4 points

2. Price reduced by 10%, volume increased by 10%

35,200 room nights			*32,000 *1.10*
Revenue	*$351*	*$12,355,200*	*$390 *90% *35,200*
VC	*36*	*1,267,200*	*36 * 35,200*
FC- same as above	*240*	*8,448,000*	*8,448,000/35,200 = $240*
Income	*$75*	*$2,640,000*	*2,640,000/35,200 = $75*

Worse off at reduced price, increased volume by $2,880,000 - $2,640,000 = $240,000

4 points

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OR

CM(old) = ($390 -36)*32,000 = $354*32,000 = $11,328,000

CM(New) = ($351 -36)*35,200 = $315*35,200 = $11,088,000

Difference = $11,328,000 – 11,088,000 = $240,000 worse off

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Q. 5 (6 points) The Ontario Company has a power plant designed and built to serve its three factories. Data for 2007 are as follows:

	Use in Kilowatt-Hours	
Factory	**Budget**	**Actual**
Renfrew	100,000	80,000
Pembroke	60,000	120,000
Carleton Place	40,000	40,000
	200,000	**240,000**

Actual fixed costs of the power plant were $11 million in 2007; actual variable costs, $22 million. Both the actual fixed cost in total and the variable cost per KH were essentially the same as budgeted.

Required

1. Compute the amount of power costs that would be allocated to users using a single-rate method for actual usage.
2. Compute the amount of power costs that would be allocated to users using a dual-rate method for both budgeted and actual usage.
3. Comment on the results.

Single rate = Total cost /kwhs = *VC= $22,000,000/240,000kwhs = $91.67,* *FC = $11,000,000/240,000 = 45.83;* *TC = $137.50*			
Allocation:		*VC and FC(not required for single rate method)*	*Total*
Renfrew	*80,000 * $91.67*	*7,333,333*	
	*80,000 * $45.83*	*3,666,667*	*$11,000,000*
Pembroke	*120,000 * $91.67*	*11,000,000*	
	*120,000 * $45.83*	*5,500,000*	*$16,500,000*
Carleton Place	*40,000 * $91.67*	*3,666,667*	
	*40,000 * $45.83*	*1,833,333*	*$5,500,000*
2. Dual Rate: VC = $22,000,000/240,000 = $91.67: FC = $11,000,000/200,000 = $55			
Renfrew: VC	*80,000 * $91.67*	*$7,333,600*	
FC	*100,000 *$55*	*5,500,000*	*$12,833,600*
Pembroke VC	*120,000 * $91.67*	*$11,000,400*	
FC	*60,000 *$55*	*3,300,000*	*$14,300,400*
Carleton Place VC	*40,000 * $91.67*	*$3,666,800*	
FC	*40,000 *$55*	*2,200,000*	*$5,866,800*
	4 points		
3. Comments:	*Under the **single rate** method:*		
	The VC allocations are the same as the dual of course.		
	But for the FC allocations: *Renfrew benefits from its lower use of power compared to plan* *Pembroke is overallocated FC (or is "game playing" if the dual method is used)* *Carleton Place benefits from the additional kwh usage overall by the other two users.*		
	2 points		

Q. 6 (6 points) Van Gogh Hotel and Casino is situated in Ontario. The complex includes a 300-room hotel, a casino, and a restaurant. As Van Gogh's new controller, you are asked to recommend the basis used for allocating fixed overhead costs to the three divisions in 2007. You are presented with the following income statement for the year 2007:

	Hotel	Restaurant	Casino
Revenue	$16,600,000	$5,500,000	$12,500,000
Direct costs	10,000,000	3,900,000	4,500,000
Segment margin	$ 6,600,000	$1,600,000	$ 8,000,000

You are also given the following data on the three segments:

	Hotel	Restaurant	Casino
Square meters	80,000	16,000	64,000

You may choose to allocate costs based on direct costs, or floor space (in square meters). Total fixed overhead for 2007 was $15,000,000.

Required

1. Allocate indirect costs to the three divisions using each of the two allocation bases suggested. Calculate operating income for each division.
2. Discuss the results. What is your preferred basis for allocating indirect costs to the divisions?

1.

	Hotel	*Restaurant*	*Casino*	*Total*
Revenue	*$16,600,000*	*$5,500,000*	*$12,500,000*	*34,600,000*
Direct costs	*10,000,000(54.3%)*	*3,900,000(21.2%)*	*4,500,000(24.4%)*	*18,400,000(100%)*
Segment margin	*$ 6,600,000*	*$1,600,000*	*$ 8,000,000*	*16,200,000*
*Indirect cost**	*8,152,000*	*3,179,000*	*3,668,000*	*$15,000,000*
Income	*(1,552,000)*	*(1,579,000)*	*4,332,000*	*1,200,000*

** direct cost % times $15,000,000*

2 points

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	Hotel	*Restaurant*	*Casino*	*Total*
Revenue	*$16,600,000*	*$5,500,000*	*$12,500,000*	*34,600,000*
Direct costs	*10,000,000*	*3,900,000*	*4,500,000*	*18,400,000*
Segment margin	*$ 6,600,000*	*$1,600,000*	*$ 8,000,000*	*16,200,000*
*Indirect cost **	*7,500,000*	*1,500,000*	*6,000,000*	*$15,000,000*
Income	*(900,000)*	*100,000*	*2,000,000*	*1,200,000*
SQ mts	*80,000*	*16,000*	*64,000*	*160,000*
** %*	*50%*	*10%*	*40%*	*100%*

2 points

2, Using SQ meters there is a significant reallocation of profit out of the casino into the other two making the restaurant profitable – apparently. If the costs are truly indirect, then any method of allocation can be reasonable.....

2 points

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Q. 7 (8 points) E-books is an online book retailer. The company has four departments. The two revenue-producing departments are corporate sales and consumer sales. The two support departments are administrative (human resources, accounting, and so on) and information systems (IS). Each of the sales departments conducts merchandising and marketing operations independently.

The following data for September 2007 will assist you in allocating costs to the different departments:

	# of Employees		Processing Time Used	
Corporate Sales	42		1,920	
Consumer Sales	28		1,600	
Administrative(AS)	~~14~~		320	
IS	21	23%	~~1,120~~	$8^{1/3}$%
Total	91		3,840	

Costs incurred in the support departments for September 2007 are as follows:

Administrative	$730,000
Information Systems	2,350,000

The administrative support percentages are based on head count. The information systems support percentages are based on processing time used.

Required:

1. What would be the recommended order of allocation using the step-down method? **Allocations are not required.**.....

2. What would be the cost of the two support departments if the reciprocal method were used?. **Allocations are not required**.....

1. *Allocation of IS to AS = 320/3,840 * $2,350,000 = .0833 * $2,350,000 = $195,833*
   *Allocation of AS to IS = 21/91 * $730,000 = .23 *$730,000 = $168,462*

So IS first as the highest $ amount, even though higher % of AS is to IS.
4 points

2. *AS = $730,000 + .0833*IS*
   *IS = $2,350,000 + .2308*AS*

   *AS = $730,000 + .0833($2,350,000 + .2308*AS)*
   AS = $730,000 + $195,833 + .01923AS
   AS = $925,833/.98077 = $943,986
   *IS = $2,350,000 + .2308 *$943,986 = $2,350,000 + $217,872 = $2,567,872*
4 points

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Q. 8 (10 points) Chicken Little raises and processes chickens. Each chicken is disassembled into three main parts. Information pertaining to production in July 2007 is as follows:

Parts	Kilograms of Product	Selling Price Per kg	Further Processing cost per kg
Breasts	100,000	$1.32	.12
Wings	20,000	.84	.14
Thighs	40,000	0.48	.08

Joint costs of production in July 2007 were $100,000.

A special shipment of 30,000 kilograms of breasts and 15,000 kilograms of wings has been destroyed in a fire. Chicken Little's insurance policy provides for reimbursement for the costs of the items destroyed. The insurance company permits Chicken Little to use a joint cost allocation method. The split-off point is assumed to be at the end of the production line.

Required

1. Compute the joint cost of the special shipment destroyed using (a) net realizable value at split-off method and (b) the physical measure method using kilograms of finished product.
2. Which joint cost allocation method would you recommend that Chicken Little use?

Joint costs = $100,000				
	Breast	*Wings*	*Thighs*	*Total*
NRV method:				
Sales value	*@.32 $132,000*	*@ .84 16,800*	*@.48 19,200*	
Processing	*@.12 - 12,000*	*@.14 - 2,800*	*@.08 - 3,200*	
NRV	*= 120,000*	*= 14,000*	*= 16,000*	*150,000*
NRV %	*80*	*9.33*	*10.67*	*100*
Joint cost allocation	*$80,000*	*9,333*	*10,667*	*$100,000*
Units method:				
kgs	*100,000*	*20,000*	*40,000*	*160,000*
Kgs %	*62.5*	*12.5*	*25*	*100*
Joint cost allocation	*$62,500*	*12,500*	*25,000*	*$100,000*

6 points

Cost allocation to shipment:
*NRV method: Breast = (30/100 * $80,000) + (30,000 *$.12) = $24,000 + $3,600 = $27,600*
*Wings = (15/20 * 9,333) + (15,000 *$.14) = $7,000 + $2,100 = 9,100*
Total $36,700

2 points

Cost allocation to shipment:
*KGS method: Breast = (30/100 * $62,500) + (30,000 *$.12) = $18,750 + $3,600 = $22,350*
*Wings = (15/20 * 12,500) + (15,000 *$.14) = $9,375 + $2,100 = 11 ,475*
Total $33,825

They are better off to use the NRV method as it maximizes the claim and is probably the most defensible. (They might have problems defending the claim if their normal method is kgs.)

2 points

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Q. 9 (16 points) The Centurions play in the North American Hockey League. The Centurions play in the BooniesArena, which has a capacity of 30,000 seats (10,000 lower-tier seats and 20,000 upper-tier seats). The Boonies Arena charges the Centurions a per-ticket charge for use of their facility. All tickets are sold by the Reservation Network, which charges the Centurions a reservation fee per ticket. The Centurions' budgeted net revenue for each type of ticket in 2007 is computed as follows:

	Lower-Tier Tickets	Upper-Tier Tickets
Selling price	$70.00	$28.00
BooniesArena fee	11.00	7.00
Reservation Network fee	6.00	3.00
Contribution margin	$53.00	$ 18.00

The budgeted and actual average attendance figures per game in the 2007 season are

	Budgeted Seats Sold	Actual Seats Sold
Lower-tier	8,000	6,000
Upper-tier	12,000	16,000
Total	20,000	22,000

There was no difference between the budgeted and actual contribution margin per ticket for lower-tier or upper-tier seats.

The manager of the Centurions was delighted that actual attendance was 10% above budgeted attendance per game, especially given the depressed state of the local economy in the past six months. The Centurions had expected to capture 5% of the related overall market* sales in their budget projections. The actual overall related market sales dropped by 10% in 2007.
* related market means the market for similar entertainment dollars.

Required

1. Compute the appropriate variances for the Centurions in 2007.
2. Write a brief analysis of the variances. Comment on the results.

	*AQ*BCM*	*V mix*	*B%*AQt*BCM*	*V Quantity*	*BQ*BCM*
Lower tier	*6,000*$53= $318,000*		*40%*22,000*$53 8,800*$53 $466,400*		*8,000*$53= $424,000*
		$ 148,400 U		*$42,400 F*	
V sv = $106,000 U					
Upper tier	*16,000*$18= $288,000*		*60%*22,000*$18 = 13,200*$18 = $237,600*		*12,000*$18= $216,000*
		$50,400 F		*$21,600 F*	
V sv = $72,000					
Total	*$606,000*		*$704,000*		*$640,000*
		$98,000 U		*$64,000 F*	
V sv $ 34,000 U					

9 points

Size and share variances (BACM = $640,000 / 20,000 = $32 per ticket)

*AQt*BACM*	*V share*	*BMS%*AM*BACM*	*V size*	*BQt*BACM*
*22,000*$32= $704,,000*		*5%*360,000*$32 18,000*$32 $576,000*		*20,000*$32= $640,000*
	$128,000 F		*$64,000 U*	
		V quantity 64,000 F		

BMS% = 5%, Budget sales = 20,000; So the market size = 20,000/.05 = 400,000.....
*Actual market down 10%, so AM = 400,000 * .90 = 360,000*

4 points

The Centurions sales were up overall by 10% as reflected in the quantity variance(64,000F), but the sales mix shift out of lower tier into the lower CM upper tier more than offset those gains, as reflected in the mix variance($98,000U). The result is the overall unfavourable volume variance of $34,000 U.
The Centurions did well to gain market share in a tough market up to 6.1%(22,000/360,000) from 5% projected. ($128,000). This was partly offset by the shrinking marke;t from 400,000 to 360,000 average.

3 points

Q. 10 (18 points) Organic Apples, Inc., manufactures apple products such as apple jelly and applesauce. It makes applesauce by blending Empire, Granny Smith, and Macintosh apples.

Budgeted costs to produce 100,000 kilograms of applesauce in November 2007 were as follows:

45,000 kilograms of Empire apples at $0.32 per kilogram	$14,400
180,000 kilograms of Granny Smith apples at $0.28 per kilogram	50,400
75,000 kilograms of Macintosh apples at $0.24 per kilogram	18,000

Actual costs in November 2007 for 90,000 kilograms of applesauce were

62,000 kilograms of Empire apples at $0.28 per kilogram	$17,360
155,000 kilograms of Granny Smith apples at $0.32 per kilogram	49,600
93,000 kilograms of Macintosh apples at $0.20 per kilogram	18,600

Required

1. Compute the appropriate variances
2. Comment on your results.

1.

	Empire	*Granny Smith*	*Macintosh*	*Total*
Budget - kgs	*45,000*	*180,000*	*75,000*	*300,000*
- %	*15%*	*60%*	*25%*	*100%*
SQA - per kg of sauce	*.45*	*1.80*	*.75*	*3.00*
Actual - kgs	*62,000*	*155,000*	*93,000*	*310,000*
- %	*20%*	*50%*	*30%*	*100%*

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AQ*AP	***Vprice***	***AQ*SP***	***V mix***	***B%*AQt*SP***	***V yield***	***SQA* SP***
Empire						
62,000$.28 =$17,360*		*62,000*$.32 = $19,840*		*.15*310,000*$.32 46,500 *$.32 = $14,880*		*.45*90,000*$.32 40,500*$.32 = $12,960*
	$2,480F		*$4,960 U*		*$1,920U*	
			V Eff $6,880U			
Granny Smith						
155,000$.32 =$49,600*		*155,000*$.28 = $43,400*		*.60*310,000*$.28 186,000 *$.28 = $52,080*		*1.80*90,000*$.28 162,000*$.28 = $45,360*
	$6,200 U		*$8,680F*		*$6,720U*	
			V Eff $1,960F			
Macintosh						
93,000$.20 =$18,600*		*93,000*$.24 = $22,320*		*.25*310,000*$.24 77,500 *$.24 = $18,600*		*.75*90,000*$.24 67,500*$.24 = $16,200*
	$3,720F		*$3,720 U*		*$2,400U*	
			V Eff $6,120U			
Total						
$85,560	*0*	*$85,560*	*0*	*$85,560*	*$11,040 U*	*$74,520*
			V Eff $11,040U			
	V FB $11,040U					

14 points

2. 4 points

Major problem is the yield variance - they used 310,000 kgs of apples but were allowed just 270,000 kgs for 90,000 kgs of applesauce.(90,000 *3 kgs)

The price variances were offsetting – they paid more for Granny Smith but less than planned for Empire and Macintosh.

The mix variances were offsetting as well. Note that Organic may have changed the mix to offset price changes – they used proportionally more of the apples that went down in price – Empire and Macs and proportionally less of the apples that were more expensive – the Granny Smiths.....

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