ADM 3346
COST ACCOUNTING
Fall 2011

Solution **Midterm Examination**

STUDENT NAME: _____

STUDENT NUMBER: _____

80 minutes

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	**/10**
Question 2	**/15**
Question 3	**/15**
Question 4	**/10**
Question 5	**/15**
Question 6	**/15**
Question 7	**/5**
Total	**/85**

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

Number in brackets is the grade for the question

(#) indicates the points for the answer

Question 1(10) Job costing.

Richmond Company worked on only two jobs during May. Information on the jobs is given below:

	Job A701	Job A702
Direct materials	$80,000	$92,000
Direct labour	287,000	219,000
Direct manufacturing labour-hours (DMLH)	20,500	14,600

At the beginning of the year, annual manufacturing overhead (MOH) was budgeted at $3,780,000 and Richmond budgeted 420,000 DMLH. There were no Work-in-Process beginning inventories in May. Job A701 was completed in May.

REQUIRED

1. Compute the total cost of Job A701.
2. Calculate per unit cost for Job A701 assuming it has 2,500 units.
3. Make the journal entry transferring Job A701 to Finished Goods.
4. Determine the ending balance in the Work-in-Process account.

1. Budgeted MOH = Budgeted annual MOH
Budgeted annual DL hours
*= $3,780,000/[35,000*12]*
= $3,780,000/420,000
= $9 per direct labour-hour 2

Cost of Job A701:
Direct materials $ 80,000
Direct manufacturing labour 287,000
*Manufacturing overhead allocated 184,500** 2
Total cost $551,500 1
**Budgeted rate $9 × 20,500 direct manufacturing labour-hours = $216,000*

2. Per-unit cost = Total cost of the job
Number of units in the job
= $551,500/2,500 = $220.60 per unit 2

3. Finished Goods Control 551,500
Work-in-Process Control 551,500 1

4. The work in process consists of Job A702 only:
Direct materials $ 92,000
Direct manufacturing labour 219,000
Manufacturing overhead allocated 131,400†
Work in process May 31 $442,400 2
†Budgeted rate of $9 × 14,600 direct manufacturing labour-

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Question 2(15) Proration of overhead.

The Ride-On-Water (ROW) Company produces a line of non-motorized boats. ROW uses a normal job costing system and allocates manufacturing overhead costs using direct manufacturing labour costs. The following data are available for 2009:

Budgeted manufacturing overhead costs	$100,000
Budgeted direct manufacturing labour costs	$200,000
Actual manufacturing overhead costs	$106,000
Actual direct manufacturing labour costs	$220,000

Inventory balances on December 31, 2009 were:

Account	Ending Balance	2009 Direct Manufacturing Labour Cost in Ending Balance
Work-in-process	$ 50,000	$ 20,000
Finished goods	$240,000	$ 60,000
Cost of goods sold	$560,000	$140,000

REQUIRED

1. Calculate the budgeted manufacturing overhead rate.
2. Calculate the amount of underallocated or overallocated manufacturing overhead.
3. Calculate the ending balances in work-in-process, finished goods, and cost of goods sold if underallocated or overallocated overhead is **prorated** based on ending balances (before proration) in each of the three accounts.
4. Does this disposition method(part 3) seem appropriate? Give one pro and one con.

1.Budgeted manufacturing overhead rate =
Budgeted manufacturing overhead cost/Budgeted direct manufacturing labour cost
$100,000/$200,000 = 50% of direct manufacturing labour cost 2

2. Overhead allocated = 50%×Actual direct manufacturing labour cost
= 50%×$220,000 =$110,000
Overallocated plant overhead = Actual plant overhead costs – Allocated plant overhead costs = $106,000 – $110,000 = –$4,000 2
***Over**allocated plant overhead = $4,000* 2

3.

Account	*Dec. 31 Balance (Before Proration) (1)*	Balance as a Percent of Total (2) = (1) ÷ $850,000	Proration of $4,000 Overallocated Manuf. Overhead (3) = (2)× $4,000	Dec. 31, 2009 Balance (After Proration) (4) = (1) – (3)
WIP	*$50,000*	*.0588*	*$235*	*$49,675*
FG	*240,000*	*.2824*	*1,130*	*238,870*
COGS	*560,000*	*.6588*	*2,635*	*557365*
Total	*$850.000*	3 *1.000*	2 *$4,000*	2 *$846,000*

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4. No? – The overallocation is less than 1% of COGS 4/850 = .5% of COGS?
Yes? - The overallocation is 4% of OH = 4/100?
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Question 3(15) National Fabricators(NF)uses a costing system that currently charges its engineering change costs to products using direct labour hours as the application base. An engineering change requires that production be stopped temporarily; machines are reset incurring engineer time costs and costs for equipment. They are considering a change to their costing method. The following data were collected during activity analysis:

Engineering change costs:
Production based: per direct labour hour, $3.00 per direct labour hour
Acitivity based: Per engineering change, $1,000 per change

Production data for products produced this period

	GEES	AICHES
Production Volume	1,000 units	500 units
Number of engineering changes	2	10
Direct labour hours per unit	3	2

Required:

Calculate the overhead cost of engineering changes per unit of output of Gees and Aiches using
1) The volume based approach(direct labour hours) and
2) The activity based approach.
3) Briefly explain the reasons for the differences in the cost per unit of output. Be specific.
4) What might be the consequences of using the labour based approach – state **two?**

1. Overhead cost per unit based on DL hour (volume based approach):

Product Gee: 2 *$3.00 per DL hour x 3 DL hours = **$9.00** per unit*

Product Aich: 2 *$3.00 per DL hour x 2 DL hours = **$6.00** per unit*

2. Overhead cost per unit based on engineering change cost activity (activity based approach):

*Product Gee: $2,000(2 *1,000) ÷ 1,000 units = **$2.00** per unit* 3
*Product Aich $10,000(10*1,000) ÷ 500 units = **$20.00** per unit* 3

3. Aiches are a much heavier user of engineering orders requiring an order for every 50 units on average compared to Gees that require one order for every 500 units on average. Aiches use 10 times, or 1000% more orders as Gees, relatively.
*Comparatively, Aiches require 2 direct labour hours for every unit while Gees require 3 direct labour hour for every unit. Aiches use 33% **fewer** labour hours than Gees.* 3 .....

4. If the DL based cost approached is used the Aich product may be underpriced, if cost plus is used, or profit per unit appears too high based on market prices. Competitors may concede sales to NF, consumers will like the low price and buy more of AICH. The reverse is true for Gee. Costs may climb. .
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Question 4(10) Spoilage and job costing

COOP Foods produces a variety of items in accordance with special job orders from hospitals, plant cafeterias, and university dormitories. A job order for 5,000 cases of peas cost $12.00 per case: direct materials, $7.00; direct manufacturing labour, $3.00; and manufacturing overhead allocated, $2.00. The manufacturing overhead rate includes a provision for normal spoilage. Consider each requirement independently.

REQUIRED

1. Tasters at the company reject 200 of the 5,000 cases from Job 666 . Assume that this rejection rate is considered normal. Prepare a journal entry(if required) to record this event, and calculate the per case cost if
   - **a.** The rejection is attributable to exacting specifications of this particular job. Explain briefly – in one line.
   - **b.** The rejection is characteristic of the production process and is not attributable to this specific job. Explain briefly – in one line.

1. a. No entry, *2*
Cost per unit = (5000*$12)/(2,500 - 200) = 60,000/4,800= $12.50 per unit. *2*

The cost of the spoiled units is a normal part of this type of job so the cost stays with the job. *1*

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1.b. Entry: Cr WIP(Job666) $2,400 (200 * $12) *1*
Dr FOH- Control $2,400 *1*

Cost per unit = (5000*$12 - $2,400)/(2,500 - 200) = 57,600/4,800= $12.00 per unit. *2*

Cost is allocated to all jobs via FOH Applied, so a**ctual** cost of spoiled units comes out of the job. *1*

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Question 5(15) Process Costing

Windsor Company is a food-processing company. It has two departments, Cleaning and Packaging. For the Cleaning Department, conversion costs are added uniformly throughout the processes, and direct materials are added at the beginning of the process. Spoiled units are detected upon inspection at the end of the process and are disposed of at zero net disposal value. All completed work is transferred to the Packaging Department. Summary data for May follow:

	Physical Units	Direct Materials	Conversion Costs
Work in process, beginning inventory(80%)*	2,500	$ 2,500	$2,000
Started during May	22,500		
Good units completed and transferred out in May	18,500		
Work in process, ending inventory (25%)*	4,000		
Total costs added during May		$22,500	$20,000
Normal spoilage	1,800		

* Degree of conversion cost completion

REQUIRED

1. Cost per equivalent unit using FIFO costing

2. Give one pro and one con for the FIFO method in part 1 and refer **to the data** for this problem. Cost **application** is **not** required and will not be graded.

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a.

BB 2,500 (100%, 80%) *Started 22,500*	*Cand O* *18,500: 2,500 from BB* *16,000 from started* *Spoiled 2,500(NS: 1,800, AS: 700*)*
EB 4,000(100%, 25%)	**2,500 + 22,500 – 18,500 - 4,000 – 1,800*

	DM	*CC*
FIFO		
CandTO from BB 2,500 (2)	*0*	*(2,500*20%)= 500*
From Started 16,000 (1)	*16,000*	*16,000*
NS 1,800 (1)	*1,800*	*1,800*
EB 4,000(25%) (2)	*4,000*	*1,000*
AS 700 (1)	*700*	*700*
Total 25,000	*22,500*	*20,000*
Costs This period (1)	*$22,500*	*$20,000*
Cost per EU (2)	*$1.00*	*$1,00*

2.

(2)

FIF0 Pro Cost more accurate. Con: More difficult to use. (1)

This example:

The cost per EU of the BB(DM) was $2,500/2,500 units = $1.00 per unit, no change .....(1)

*The cost per EU of the BB(CC) was $2,000/2,500*80%) $2,000//2,000 = $1.00 per unit, no change . (1)*

So no need for FIFO? .....

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Question 6(15) Regression; choosing among models (Note: this is not a long question!)

Tibert Toys (TT) makes the popular Floppin'Freddy Frog and Jumpin' Jill Junebug dolls in batches. TT has recently adopted activity-based costing. TT incurs setup costs for each batch of dolls that it produces. TT uses ''number of setups'' as the cost driver for setup costs.

TT has just hired Bebe Williams, an accountant. Bebe thinks that ''number of setup hours'' might be a better cost driver because the setup time for each product is different. Bebe collects the following data.

Month	Number of setups	Number of setup hours	Setup costs
1	195	920	$52,300
2	240	1,340	63,850
3	100	580	28,740
4	220	1,900	118,420
5	140	1,840	89,440
6	230	1,950	106,880
7	210	1,490	104,810
8	150	600	45,040
9	185	1,640	110,520

REQUIRED

She estimated regression equations for (a) setup costs to number of setups and (b) setup costs to number of setup hours and c) setup costs to setup hours **and** number of setups. See the results and plots in Exhibit 1, next page.

1. Evaluate the three regression models.
2. Which cost driver(s) should Tilbert Toys use for setup costs, and why? Be brief.

a) setup costs to number of setups
Adj R^2 is 24%, below 30% guideline (1)
"t" value for B(VC) is 1.89, below rough guideline of 2.00, indicating lack of significance (1)
"t" value for A(FC) is .09 well below rough guideline of 2.00, indicating lack of significance or FC = 0 (1)
Plot appears random, so little indication of significance, or linearity. (1)
Reject (1)

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(b) setup costs to number of setup hours
Adj R^2 is 83 %, well above 30% guideline (1)
"t" value for B(VC) is 6.36, well above the rough guideline of 2.00, indicating significance(1)
"t" value for A(FC) is .26, well below the rough guideline of 2.00, indicating setup costs are pure variable with setup hours(ie FC = 0) (1)
Plot appears to around a line so indication of significance and linearity. (1)
Accept (1)

*c) setup costs to setup hours **and** number of setups*.....
R^2 is up slightly as will always happen with an additional variable but
Adj R2 is 81 % drops slightly (1)
Same comments as parts a and b re significance and plot.
Correlation between the Xs is a not a problem .57 < .70 (1)
Reject – additional variable does not add to explanation or prediction power (1)

2. Pick setup hours *(2)*
Excellent t and R^2
Plausible, Graphs good, NO improvement with setups .....

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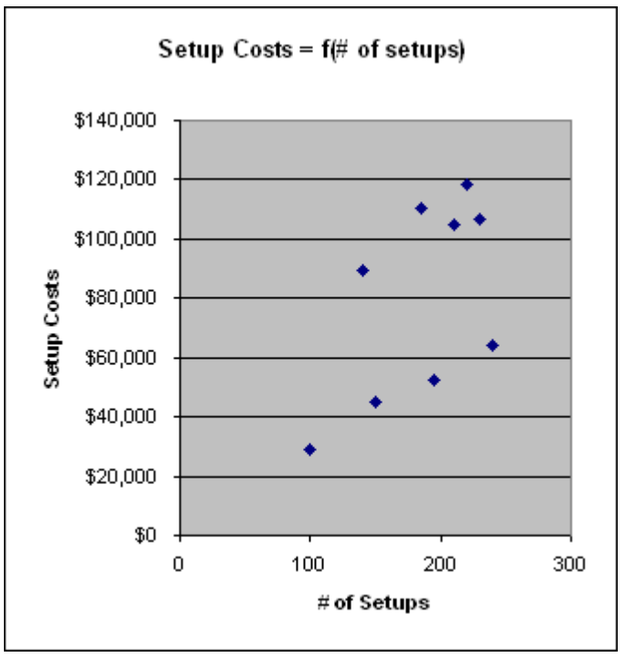
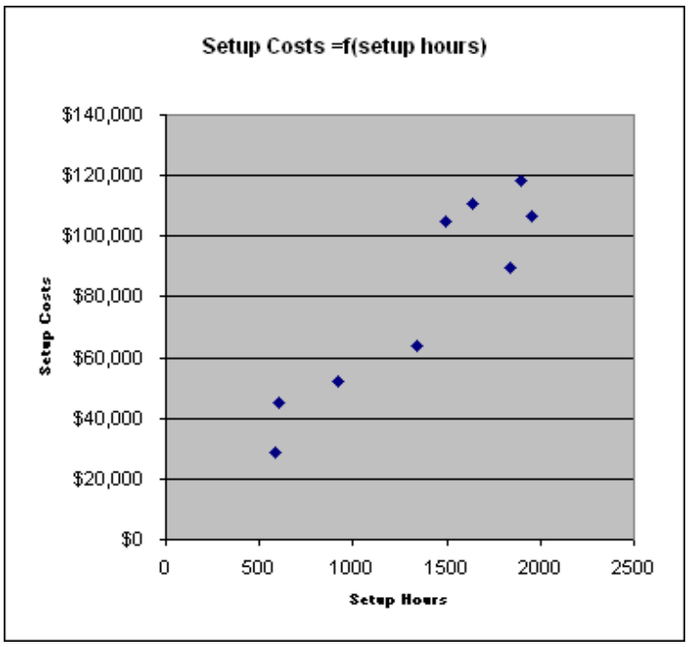
Exhibit 1





SUMMARY OUTPUT

a)Setup Cost as a function of # of Setups

Regression Statistics

R Square	0.34
Adjusted R Square	0.24
Standard Error	28721.00
Observations	9.00

	Coefficients	*Standard Error*	*t Stat*
Intercept	3905.35	41439.10	0.09
Setups	410.09	217.28	1.89

SUMMARY OUTPUT

b)Setup Cost as a function of Setup Hours

Regression Statistics

R Square	0.85
Adjusted R Square	0.83
Standard Error	13557.86
Observations	9.00

	Coefficients	*Standard Error*	*t Stat*
Intercept	3348.72	12878.63	0.26
Hours	56.27	8.85	6.36

SUMMARY OUTPUT

c)Setup Cost as a function of # of Setups and Setup Hours

Regression Statistics

R Square	0.86
Adjusted R Square	0.81
Standard Error	14391.68
Observations	9.00

	Coefficients	*Standard Error*	*t Stat*
Intercept	-3894.83	20831.40	-0.19
Setups	60.84	132.02	0.46
Hours	53.30	11.39	4.68

Correlation Coefficient: between # of Setup Hours and # of setups is .57

Question 7(5) Target Cost

Hogan Ltd is introducing a new product to market. Hogan has an established target of 66.7% on Full Cost. The costs per unit of the new product are as follows:

Direct Material	$16
Direct Labor	12
Variable Overhead	18
Fixed Overhead	15

Hogan has received an order for 15,000 units of this product at $70 per unit.

Required:

1. How much cost savings must be achieved if they must meet the competitive price of $70 and achieve the target profit of 66.7% on full cost?
2. What additional information might be useful if they are to assess the potential cost savings? Be very brief

1. Total costs of the order:

Direct materials per unit	*$16.00*
Direct labour per unit	*$12.00*
Variable overhead per unit	*$18.00*
Fixed overhead per unit	*$15.00*
Total product cost	*$61.00*

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*Target Full Cost(TFC) = Selling Price(SP) - .667 * TFC or*

*TFC = $70 - .667*TFC (1)*
*1.667*TFC = $70 (1)*
TFC = $42
Target Savings Required = $61 = 42 = $19 (1)

OR Same format as the text
*Selling Price(SP) = Target Full Cost(TFC) + .667 * TFC*
*$70 = TFC + .667*TFC*
*1.667*TFC = $70*
TFC = $42
Target Savings Required = $61 = 42 = $19

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2. Identify relevant/differential cost esp for the short term (1)
Investigate ABC/ABM costing for the Fixed overhead (1)

Space for notes