ACCT2121
2009/2010 2nd Semester
Suggested Solution

Problem 1

1.

Variable Costing Income Statement

		$	$
Sales	($100*54,800)		5,480,000
Direct Materials	($6*60,000)	(360,000)	
Direct Labour	($36*60,000)	(2,160,000)	
Variable Production Overhead(VMOH)	($10*60,000)	(600,000)	
Standard Cost of Production		(3,120,000)	
Closing Inventory	(5,200 units)	270,400	
		(2,849,600)	
Under-applied VMOH		(10,000)	
		(2,859,600)	
Variable Selling & Administrative Expenses	($5,480,000*15%)	(822,000)	(3,681,600)
Contribution			1,798,400
Actual Fixed Manufacturing Overhead	($13*60,000+$20,000)	(800,000)	
Actual Fixed Selling & Administrative Expenses		(460,000)	(1,260,000)
			538,400

2.

Reconciliation of net income under variable costing and absorption costing

		$
Net Income under Variable Costing		538,400
Fixed Manufacturing Overhead absorbed in closing inventory	($13*5,200 units)	67,600
Net Income under Absorption Costing		606,000

Problem 2

1(a) Predetermined manufacturing overhead rate
= $119,000 / (400 * 1.2) + (3,000 *1.3)
= $ 27.19 / direct labour hour (correct to 2 d.p.)

1(b) Unit product cost for product A and product B

	Product A	Product B
	$	$
Direct material cost	3	20
Direct labour cost	10	11
Manufacturing overhead	32.63	35.35
Unit product cost	**45.63**	**66.35**

2(a) Machine setups = $10,440 / (60 + 120) = **$58 / unit of activity**

Purchase orders = $78,000 / (820 + 1,180) = **$39 / unit of activity**

General factory = $30,660 / (480 + 3,900) = **$7 / unit of activity**

2(b) Unit product cost for product A and product B

	Product A	Product B
	$	$
Direct material cost	3	20
Direct labour cost	10	11
Machine set ups	8.7	2.32
Purchase orders	79.95	15.34
General factory	8.4	9.1
Unit product cost	**100.05**	**57.76**

3. No.
Under activity-based costing approach, manufacturing overhead is allocated according to the activity usage in different activity cost pools. For product A, the activity usage is larger than the proportional usage based on the product produced. As a result, the cost generated under activity-based costing is larger than that under traditional costing system.

Problem 3

1. Budgeted Variable Manufacturing Overhead / Budgeted Labour Hour

   = ($672,000 - $384000) / 96000

   =$3 per labour hour

2. Actual unit produced can be derived from material quantity variance.

   Material quantity variance = standard price * (actual quantity – standard quantity)

   $18000 = $9 * (actual quantity – standard quantity)

   (actual quantity – standard quantity) = 2000 pounds

   Per unit quantity variance = 14 pounds – 12 pounds = 2 pounds

   No. of units produced = 2000 pounds / 2 pounds = **1000 units**

3. Actual labour hour = 50 workers * 160 hours per month

   = 8000 labour hours

   It is because the company guarantees minimum labour hour of 8000, and there is no overtime in the month.

   Actual labour hours per unit = 8000 labour hours / 1000 units

   = 8 labour hours per unit

4. Total variance of variable manufacturing overhead(VMOH)

   = Actual VMOH – Standard VMOH

   = $28,000 - $3 * (6 * 1000 units)

   = $28,000 - $18,000

   =$10,000 (U)

   Quantity variance of VMOH = standard rate * (actual quantity – standard quantity)

   = $3 * (8,000 – 6,000)

   = $6,000 (U)

   Price variance of VMOH = total variance – quantity variance

   = $10,000 (U) - $6,000 (U)

   = $4,000 (U)

5. Material price variance = (actual price – standard price) * standard quantity

= ($8 - $9) * 13000 pounds

= ($13,000) (F)

Note that the standard quantity is the quantity *purchased*, not quantity used.

6. Labour efficiency variance = standard rate * (actual labour hour – standard labour hour)

= $15 * (8,000 – 6,000)

= $30,000 (U)

7. Actual average labour wage

= (standard total labour wage + efficiency variance + rate variance) / actual labour hours spent

= ($15 * 6,000 + $30,000 (U) - $21,000 (F)) / 8000 labour hours

= $99,000 / 8000

= $12.375

8(a). **$99,000**

8(b). $15 * 6000 = **$90,000**

One of the difference is that actual average labour wage is lower than the standard rate, leading to favourable labour rate variance.

Another difference is that due to minimum working hours guaranteed, actual labour hours spent is greater than standard labour hours, leading to unfavourable labour efficiency variance.

Problem 4

1.

ABC Company
Contributed segmented income statement for the month ended 30 Jun

	Apparel	**Accessories**	**Total**
	$	$	$
Sales	700,000	710,000	1,410,000
Variable expenses	(406,000)	(312,000)	(718,000)
Contribution	294,000	398,000	692,000
Fixed expenses	(244,000)	(253,000)	(497,000)
Net operating income	**50,000**	**145,000**	**195,000**

2.

ABC Company
Contributed segmented income statement for Apparel for the month ended 30 Jun

	Sport Apparel(SA)	**Down Jacket(DJ)**	**Appeal**
	$	$	$
Sales	200,000	500,000	700,000
Variable expenses	(144,000)	(262,000)	(406,000)
Contribution	56,000	238,000	294,000
Fixed expenses	(136,000)	(108,000)	(244,000)
Net operating income	**(80,000)**	**130,000**	**50,000**

3. – Sport Apparel (SA) is not profitable

4. Residual income = net profit – required return
= ($26,000,000 * 7.5%) – ($14,000,000 * 12%)
= $1,950,000 – $1,680,000
= $270,000

Problem 5

Part A

1. Unit production cost produced by itself:

	$
Direct labour	40.8
Direct materials	21
Variable manufacturing overheads ($5*1.7 hours)[1]	8.5[2]
Unit production cost	**70.3**

According to the above calculation, the unit production cost is $70,3, which is lower than the price offered by the supplier, i.e. $78. Thus, the offer from the outside supplier is not financially attractive.

2.

	Product F	Product G	Product H
Selling price	$50	$80	$70
Variable cost	40	50	55
Contribution	10	30	15
Contribution per minute of milling time	10/4 = $2.5 / minute	30/2 = $15 / minute	15/5 = $3 / minute
Ranking	3	1	2

Product G should be emphasised as the contribution per minute of milling time is the largest.

3. Amount the company willing to pay = $15 * 60
= **$ 900**

[1] Variable manufacturing overhead = 225,000 / 45,000 = $5 / unit

Direct labour hour per unit of component P0 : $32.3 / 19 = 1.7 direct labour hour / unit

[2] As fixed manufacturing overhead would not affect this decision, hence the amount should not be included in the above production cost.