Institute of Certified Public Accountants of Pakistan

Stage	Professional	Course Code	P-503
Examination	Winter-2012	Course Name	Advanced Management Accounting (Solution)
Time Allowed	03 Hours	Maximum Marks	100

NOTES:

1) All questions are to be attempted.
2) Answers are expected to the precise, to the point and well written.
3) Neatness and style will be taken into account in marking the papers.

Question No 1:-

1. Woody Company, which manufactures sneakers, has enough idle capacity available to accept a special order of 20,000 pairs of sneakers at $6.00 a pair. The normal selling price is $10.00 a pair. Variable manufacturing costs are $4.50 a pair, and fixed manufacturing costs are $1.50 a pair. Woody will not incur any selling expenses as a result of the special order. What would the effect on operating income be if the special order could be accepted without affecting normal sales?
2. Dixon Company manufactures part 347 for use in one of its main products. Normal annual production for part 347 is 100,000 units. The cost per 100 units is as follows:

Direct material	$260
Direct labor	100
Manufacturing overhead:	
Variable	120
Fixed	160
Total cost per 100 units	$640

Cext Company has offered to sell Dixon all 100,000 units it will need during the coming year for $600 per 100 units. If Dixon accepts the offer from Cext, the facilities used to manufacture part 347 could be used in the production of part 483. This change would save Dixon $90,000 in relevant costs. Also, a $100,000 cost item included in the fixed factory overhead that is specifically related to part 347 would be eliminated. Should Dixon Company accept the offer from Cext Company?

3. Rice Corporation currently operates two divisions which had operating results for the year ended December 31, 19X2, as follows:

	West Division	Troy Division
Sales	$600,000	$300,000
Variable costs	310,000	200,000
Contribution margin	$290,000	$100,000
Fixed costs for the division	110,000	70,000
Margin over direct costs	$180,000	$30,000
Allocated corporate costs	90,000	45,000
Operating income (loss)	$90,000	$(15,000)

Since the Troy Division also sustained an operating loss during 19X1, Rice's president is considering the elimination of this division. Assume that the Troy Division's fixed costs would be avoided if the division were eliminated. If the Troy Division had been eliminated on January 1, 19X2, Rice Corporation's 19X2 operating would have been equal to what amount?

4. The production department of Cronin Manufacturing Company must make a product mix decision in light of a shortage of pounds of direct materials. The following data are available for products X and Y:

	Product X		Product Y	
Selling price per unit		$12		$10
Direct materials	$4		$2	
Direct labor	1		3	
Variable factory overhead	3	8	2	7
Contribution margin per unit		$4		$3
Contribution margin ratio (CM ÷ sales)		33⅓%		30%
Number of pounds of direct materials required per unit		2		1
Maximum sales (in units)		2,000		5,000

Determine the number of units of product X and product Y to be produced if only 8,000 pounds of direct materials are available.

5. The Mighty Meat Company produces three joint products-hamburgers, steak, and roast beef-from a joint process. Total joint costs are equal to $43,000. Each of the three joint products can be (1) sold at the split-off point to a competing meat company (who will complete the necessary processing) or (2) finished by The Mighty Meat Company and sold to retailers. Relevant costs and revenues appear below:

PRODUCT	TOTAL SALES VALUE AT SPLIT-OFF	TOTAL ADDITIONAL PROCESSING COSTS	TOTAL FINAL SALES VALUE
Hamburger	$10,000	$2,000	$14,000
Steak	14,000	3,000	20,000
Roast beef	13,000	6,000	17,000

a) Which products should be sold at the split-off point and which products should be processed further?
b) Should The Mighty Meat Company even be in the meat processing business?

(4+4+4+4+4=20 Marks)

Solution:-

1. Woody Company Accept or Reject a Special Order

Incremental revenue (20,000@ $6.00)	$120,000
Incremental costs (20,000 @ $4.50)	90,000
Incremental income	$30,000

2. Dixon Company Make or Buy

	Make	Buy
Purchase price (10,000 units × $600 per 100 units)		$(600,000)
Relevant cost savings from released facilities		90,000
Relevant costs to make:		
Variable production costs (10,000 × $480 per 100 units*)	$(480,000)	
Fixed production costs†	(100,000)	
	$(580,000)	$(510,000)
Advantage to buying	70,000	
	$(510,000)	$(510,000)

*Direct materials	$260
Direct labor	100
Variable factory overhead	120
	$480

†The only relevant fixed factory overhead cost is the $100,000 that the problem specifically tells us will be eliminated if part 347 is no longer manufactured.

3. Rice Corporation: Elimination of Troy Division

Forgone revenue		$300,000
Cost savings:		
Variable costs	$200,000	
Fixed costs	70,000	270,000
Decrease in Rice Corporation's operating income if the Troy Division is eliminated		$30,000

4. Cronin Manufacturing Company: Product Mix-Single Constraint

	Product X	Product Y
Contribution margin per unit	$4	$3
Divide by pounds of direct material required per unit	÷2	÷1
Contribution margin per pound of direct materials	$2	$3
Maximum sales for product Y	5,000 units	
Multiply by required pounds of direct materials per unit	×1 lb/unit	
Total pounds needed to produce product Y	5,000 lb	
Total pounds available for product X (8,000 lb – 5,000 lb)	3,000 lb	
Divide by required pounds per unit of product X	÷2 lb/unit	
Total production of product X	1,500 units	
Optimum product mix: 5,000 units of product Y 1,500 units of product X		

5. The Mighty Meat Company: Sell or Process Further in Joint Costing

a)

	Joint product		
	Hamburger	Steak	Roast Beef
Incremental revenue	$4,000 (1)	$6,000 (2)	$4,000 (3)
Incremental cost	2,000	3,000	6,000
Incremental income	$2,000	$3,000	
Decremental income			$(2,000)

Computations		
(1) $14,000	(2) $20,000	(3) $17,000
-10,000	-14,000	-13,000
$4,000	$6,000	$4,000

Hamburger and steak should be processed further while roast beef should be sold at the split-off point.

b) From part a, The Mighty Meat Company will earn revenue equal to $14,000 from hamburger and $20,000 from steak, both of which will be subject to additional processing, and $13,000 from roast beef, which will be sold at the split-off point. The total revenue equals $47,000. The additional processing costs equal $2,000 for hamburger and $3,000 for steak for a total of $5,000. However, when the $5,000 of additional processing costs are added to the $43,000 of joint cost, the total manufacturing costs of $48,000 exceed the total revenues by $1,000. If

The Mighty Meat Company cannot either increase its revenues or decrease its costs, it should no longer be nit he meat processing business.

Question No 2:-

EEZ Limited produces a variety of electronic items including flat screen television sets. All the components are imported and are assembled by a team of highly skilled technicians. There are 10 employees working in this team, who work 5 days per week and 8 hours per day. Overtime is paid at double the normal rate.

A new model is produced each year. The production is carried out in batches. The efficiency of the technicians improves with each batch but a study has not been carried out yet to determine the extent of learning curve effect. Each batch consists of 40 units. So far, 4 batches have been completed. The first batch required 800 direct labour hours including overtime of 200 hours. A total of 2,312 hours have been recorded so far.

The company uses standard absorption costing. The following costs were recorded for the initial batch:

	Rupees
Direct materials	400,000
Direct labour including overtime	800,000
Special tools (Re-usable) costing	50,000
Variable overheads (per labour hour)	500
Fixed overheads (per week)	25,000

The company has been asked to bid for an order of 480 units. The order is required to be completed in 10 weeks. Due to strong competition prevailing in the market, the marketing director believes that the quotation is unlikely to be accepted if it exceeds Rs. 25,000 per unit. Moreover, if the order is not accepted, only 8 of the employees will be employed elsewhere whereas 2 employees will remain idle for the next 6 weeks.

Required:

Recommend whether it is worth accepting this order at Rs. 25,000 per unit.

(10 Marks)

Solution:-

Computation of labour hours required

Assuming that the learning curve rate is x:

$800 \times 4 \times x \times x = 2312$

$x2 = 2312 / 3,200$

$x = 0.85$

Batches	Cumulative quantity	Cumulative average hours per unit	Cumulative hours
1	40	20	800
2	80	17	1,360
4	160	14.45	2,312
8	320	12.28	3,930
16	640	10.44	6,682

Hence, additional hours for 480 units = 6,682 – 2,312 = 4,370 hours

Labour hour rate:

	Rupees
600 normal hours + 200 overtime hours	800,000
600 + 200 x 2	800,000
1,000 hours	800,000
Hourly rate	800

Direct labour:

	Hours		Direct labour cost Rupees
8 workers for 10 weeks for 40 hours	3,200	@ Rs. 800 per hour	2,560,000
2 workers for 4 weeks for 40 hours	800	@ Rs. 800 per hour	256,000
Overtime	370	@ Rs. 1,600 per hour	592,000
	4,370		3,408,000

Incremental cost of producing 480 units:

	Amount in Rs
Direct materials (480 × 10,000)	4,800,000
Direct labour	3,408,000
Variable overhead (4,370 × 500)	2,185,000
	10,393,000
Cost per unit (10,393,000/480)	21,652

Hence, quotation can be accepted at Rs 25,000 per unit.

Question No 3:-

Adnan Limited is a manufacturer of specialized furniture and has recently introduced a new product. The production will commence on January 1, 2010. 200 workers have been trained to carry out the production. The complete unit will be produced by a single worker and it would take 40 hours to produce the first unit. The company expects a learning curve of 95% that will continue till the production of 64 units. Thereafter, average time taken for each unit will be 28 hours.

Each worker would work for an average of 174 hours each month. They will be paid @ Rs. 100 per hour. In addition, they will be paid a bonus equivalent to 10% of their earnings provided they work for at least three months during the year. The cost of material and overhead per unit has been budgeted at Rs. 10,000 and Rs. 4,000 per unit, respectively.

The company's workers are in high demand and it is estimated that 20% of the workers would leave by the end of March 2010 whereas a further 7 workers would retire on June 21, 2010. The management is confident that all the units produced would be sold.

Required:

Calculate the minimum price that the company should charge if it wants to earn gross profit margin of 20% on selling price during the year 2010.

(10 Marks)

Solution:-

Units	Average time	Cumulative time
1	40.00	40
2	38.00	76
4	36.10	144
8	34.30	274
16	32.58	521
32	30.95	990
64	29.40	1,882

No. of workers	Available hours*	Average time per unit	Production per worker	Total production	No. of Hours
40	522	32.58	16	640	20,880
7	992	30.95	32	224	6,944
153	1,882	29.40	64	9,792	287,946
153	206	28.00	7	1,071	31,518
				11,727	347,288

Available hours: Up to March 31	174 x 3	522

Up to June 21	174 x 5.7	992
Up to December 31	174 x 12	[1,882+206] 2,088

Cost of production

	Units	**Rate**	**Total cost**
Materials	11,727	10,000	117,270,000
Labour	347,288	110	38,201,680
Overheads	11,727	4,000	46,908,000
			202,379,680
Production (units)			11,727
Average cost per unit			17,258
Selling price per unit			21,573

Labour cost includes 10% bonus

Question No 4:-

Akbar & Anthoney Ltd., a small engineering company, has so far been catering the local market. Their plant capacity is 15000 units. Operations are at 90% capacity.

The company has a flexible budgeting system. Labor and material costs are constant Rs. 60 per unit in the present conditions. The profit margin is 10%.

The company is looking at the possibility of entering the export market. Export orders can be procured which will raise the operations to 100% capacity level. The export orders with execution of the export orders are projected at Rs. 10,000.

Prices overseas for the product being manufactured are lower than the existing unit cost of the company. The company would not like to disturb the existing local sales arrangements, as future export orders are considered uncertain. Following data is available:

Fixed expenses	Rs. 600,000
Variable expenses	Rs. 135,000
Semi-fixed expenses (at existing level of operations)	Rs. 100,000
(To increase by Rs. 15,000 if export orders is executed)	

Required:-

1. Statement showing: (a) existing cost (b) cost when export orders are executed (c) differential cost of the export orders.
2. Computation of (a) existing unit cost (b) unit cost when export orders are executed (c) differential cost of the export orders.
3. Statement showing: (a) existing profitability, on local sales basis (b) total profitability when export orders are executed (c) contribution to profitability by the export orders.
   Assume that a margin of Rs. 20 per unit would be available on export sales.
4. A one sentence summation, not exceeding four lines, on the export order execution covering existing unit cost, total unit cost and addition to the profit of the company by the export orders in monetary units and percentage.

(5+5+5+5=20 Marks)

Answer:-

1. .

	Existing Cost	**Total cost when Export orders are Executed**	**Differential cost of the export orders**
Production (units)	13,500	15,000	1,500
	Rs.	Rs.	Rs.
Material & labour cost @ Rs. 60 per unit	810,000	900,000	90,000
Variable expenses	135,000	150,000	15,000
Fixed expenses	600,000	600,000	
Semi fixed expenses	100,000	115,000	15,000
Expenses associated with exports	-	10,000	10,000
Credit for duty drawback	-	(25,000)	(25,000)
Total Cost	1,645,000	1,750,000	105,000

2. .

Existing Unit cost	**Unit cost with export cost**	**Per unit differential cost**
= Rs. 1,645,000 / 13,5000 **= Rs. 121.85**	= Rs. 1,750,000 / 15,000 **=Rs. 116.67**	= Rs. 1,645,000 / 1,500 **Rs. 70**

3. **Profitability:-**

	Existing profitability	Total profitability with export orders	Export Orders
Local sales @ 10% of cost (1,645,000 × 10%)	164,500	1645,00	-
On export order @ Rs 20/unit (1500 ×Rs. 20)	-	30,000	30,000
	164,500	194,500	30,000

4. By acceptance of export order, per unit cost of Rs 121.85 will be reduced to Rs. 116.67 by which company earn incremental profit of Rs. 30,000 i.e. 18.23% of existing profit.

Question No 5:-

ABC & Co. produce product P in two successive processes. The output of process is passed on to process II where additional material is added. The process costs for quarter 3 of 1993 were as follows:

Process I	
Material	2500 Kg. at Rs. 7.20 per Kg.
Labour	Rs. 3,600
Process Plant Time	16 Hours at Rs. 150 per hour
Process II	
Material	1800 Kg. at Rs. 6 per Kg.
Labour	Rs. 2,700
Process Plant Time	40 Hours at Rs. 124.60 per hour.

General overhead for the quarter amounted to Rs. 4,200 and is absorbed into process cost on process labour basis at an actual retrospective rate rather than at a predetermined rate.

There is a normal loss of 10% of input in process I and 12% in process II. Waste matter from Process I is sold at Rs. 6.60 per Kg. and that of process II at Rs. 5.40 per Kg. The output in the quarter was:

Process I	2,200 Kg.
Process II	3,550 Kg.

There was no opening and closing work-in-process. All waste material has been sold at the price indicated.

Prepare the following:

a) Process Accounts for both processes.
b) Scrap Account.
c) Abnormal Loss and Gain Account.

(7+6+7=20 Marks)

Solution:-

Process 1 Account

Particulars	Units	Per unit	Rs.	Particulars	Unit	Per unit	Rs.
Material	2,500	7.20	18,000	Process 1	2,200	11.00	24,200
Labour			3,600	Normal Loss	250	6.60	1,650
FOH			2,400	Abnormal loss	50	11.00	550
Gen. Overheads absorbed 3,600 × 2/3			2,400				
	2,500		26,400		2,500		26,400

Unit cost = $\frac{\text{Rs. 26,400 – Rs. 1,650}}{\text{2,500-250}}$ = Rs. 11.00

Process II Account

Particulars	Units	Per unit	Rs.	Particulars	Unit	Per unit	Rs.
Input-Process	2,200	11.00	24,200	Finished goods	3,550	11.901	41,249
Material added	1,800	6.0	10,800	Normal Loss	480	5.4	2,593
Labour			2,700				
FOH			4,984				
Gen. Overheads absorbed 3,600 × 2/3			1,800				
Abnormal Gain	30		357				
	4,030		44,841		4,030		44,841

Unit cost = $\frac{\text{Rs. 44,841 – Rs. 2,592-Rs.357}}{\text{4,030-480-30}}$ = Rs. 11.9011

Scrap Account

Particulars	Units	Per unit	Rs.	Particulars	Unit	Per unit	Rs.
Process I	250	6.60	1,650	Cash	250	6.60	1,650
Process II	480	5.40	2,592	Abnormal Gain	30	5.40	162
				Cash	450	5.40	2,430
	730		4,242		730		4,242

Abnormal Loss/Gain Account

Particulars	Units	Per unit	Rs.	Particulars	Unit	Per unit	Rs.
Process I	50	11.0	550	Cash	50	6.60	330
Scrap	30	5.4	162	Process II	30	11.901	357
				P & L			25
	80		712		80		712

General Overhead Rate:

Rs. 4,200/Rs. 6,300 = 2/3 of Labour Cost = 66.67%

	Rs.
Abnormal loss in Process I Rs. 550 – Rs. 330	= 220
Abnormal gain in Process II Rs. 357 – Rs. 1.62	= 195
	25

Question No 6:-

a) Shah Company produced a product on special order of 1,000 units. Following are the related information during the month of April, 2009.

Particulars	**Hours**	**Rs.**
Standard price per kg of raw-material/std qty per unit 4kg		30
Actual total direct material cost		100,000
Actual direct labour hours	1,800	
Standard direct labour hours	1,600	
Total standard direct labour cost		80,000
Standard variable overhead per direct labour hours		10
Standard variable overhead cost per unit		16
Standard total variable overhead		16,000
Actual total variable overhead		16,200
Unfavourable material usage variance		6,000
Unfavourable overall cost variance per unit		0.70
Standard cost per unit		210.00

Required:

Calculate

i. Total standard cost of raw material used.
ii. Standard direct material cost per unit.
iii. Standard quantity of raw material per finished unit.
iv. Total material cost variance.
v. Material price variance
vi. Actual hourly rate of variable overhead.

b) Maria Company compares the gross profit with budgeted targets. The accountant of the company has compiled the data of its two (2) products, A & B as shown below:

Particular	**Sales**			**Cost of Goods Sold**		**Gross Profit**	
	Units	Unit Price	Amount	Unit Cost	Amount	Per unit	Amount
Budget – A	800	200	160,000	160	128,000	40	32,000
B	420	140	58,800	120	50,400	20	8,400
Total Budget	1,220	179.35	218,800	146.23	178,400	33.12	40,400
Actual – A	750	210	157,500	165	123,750	45	33,750
B	450	135	60,750	115	51,750	20	9,000
Total Actual	1,200	181,88	218,250	146.25	175,500	35.63	42,750

Required:-

Calculated the following:

i. The price and volume variances for sales.
ii. The price and cost variances for cost.
iii. Impact of the variances at Rs. # (i)& (ii) above on gross profit.
iv. The saels mix and final sales volume variances.

(12+8=20 Marks)

Answer:-

a) .

(i) Total standard cost of raw material used

= Standard quantity x Standard rate

= 3,800 kg x Rs.30

= Rs.114,000

(ii) Standard Direct Material Cost Per Unit

$$= \frac{\text{Total Standard Cost}}{\text{No. of units}}$$

$$= \frac{\text{Rs. 114,000}}{\text{1,000 units}} = \text{Rs. 114 per unit}$$

(iii) Standard Quantity of Raw Material Per Finished Unit

$$= \frac{\text{Total Sandard Quanity}}{\text{No. of units}}$$

$$= \frac{\text{3,800 kg}}{\text{1,000 units}} = \text{3.8 kg per unit}$$

(iv) Total Material Cost Variance

= Standard cost – Actual cost

= Rs.114,000 – Rs.100.000

= Rs.14,000 favourable.

(v) Material Price Variance

= (Standard Rate – Actual Rate) x Actual Quantity

= (Rs.30 – Rs.25)x 4000 kg

= Rs.20,000 favourable

(vi) Actual Hourly Rate of Variable Overheads

$$= \frac{\text{Total Actual FOH}}{\text{Total Actual D.L Hours}}$$

$$= \frac{\text{Rs. 16,200}}{\text{1,800 hours}} = \text{Rs. 9 per direct labour hours.}$$

b)

(i) The price and volume variance of sales

(a) Price variance

= (actual price – budgeted price) x actual quantity

A = (Rs.210 – Rs.200) x 750 units

= Rs7500 favourable

B = (Rs.135 – Rs.140) x 450 units

= 2,250 unfavourable

(b) Volume variance

= (Actual quantity – budgeted quantity) x sales price

A = (750 units – 800 units) x Rs.200

= Rs.10,000 unfavourable

B = (450 units – 420 units) x Rs.140

= Rs.4,200 favourable

(ii) The price and volume variance of cost

(a) Price variance

= (standard price – actual price) x actual quantity

A = (Rs.160 – Rs.115) x 750 units

= Rs.3,750 unfavourable

B = (Rs.120 – Rs.115) x 450 units

= Rs.2,250 favourable

(b) Volume variance

= (Actual quantity – budgeted quantity) x cost price

A = (750 units – 800 units) x Rs.160

= Rs.8,000 favourable

B = (450 units – 420 units) x Rs.120

= Rs.3,600 unfavourable

(iii)(a) Sales Mix Variance

	A Rs.	B Rs.
Actual sales at budgeted prices:		
(750 units x Rs.200)	150,000	
(450 units x Rs.140)		63,000
Budgeted cost of actual unit sold		
(750 units x Rs.160)	120,000	
(450 units x Rs.120)		54,000
	30,000	9,000
		39,000
Less budgeted GP at actual units sold (33.12 x 12000)		(39,744)
Unfavourable sales mix variance		744

(iii)(b) Final Volume Variance

Budgeted G.P. at actual units sold		39,744
Less budgeted sales	218,800	
Less cost of goods sold	198,400	(40,400)
Unfavourable final volume variance		656

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