THE INSTITUTE OF COST AND MANAGEMENT ACCOUNTANTS OF BANGLADESH

CMA APRIL, 2019 EXAMINATION (SPECIAL)

PROFESSIONAL LEVEL – II

SUBJECT: 202, MANAGEMENT ACCOUNTING

Model solution

Solution to the question No. 1

a) Absorption costing show higher net income due to differed in inventory value under absorption costing.

b)

Req. (i) (1) and (2)

	Absorption costing	Variable costing
Direct materials	$ 6	$ 6
Direct labor	12	12
Variable manufacturing overhead	4	4
Fixed manufacturing overhead ($240,000/ 30,000 units)	8	---
Unit product cost	$30	$22

Req. (ii)

	May	June
Sales	$1040,000	$1360,000
Less variable expenses:		
Variable production costs @ $22 per unit	572,000	748,000
Variable selling and administrative @ $3 per unit....	78,000	102,000
Total variable expenses................................	650,000	850,000
Contribution margin	390,000	510,000
Less Fixed expenses:		
Fixed manufacturing overhead	2 40,000	240,000
Fixed selling and administrative	180 000	180,000
'Total fixed expenses...................................	420 000	420 000
Net operating income (loss)	$ (30,000)	$90,000

Req.(iii)	May	June
Variable costing net operating income (loss) ...	$ (30,000)	$ 90,000
Add: Fixed manufacturing overhead cost deferred in inventory under absorption costing (4,000 units x $8 per unit)	32,000	
Deduct: Fixed manufacturing overhead cost released from inventory under absorption costing (4,000 units x $8 per unit)		(32,000)
Absorption costing net operating income........	$2,000	$58,000

Req. (iv) As shown in the reconciliation in part (iii) above, $32,000 of fixed manufacturing overhead cost was deferred in inventory under absorption costing at the end of May, since $8 of fixed manufacturing overhead cost "attached" to each of the 4,000 unsold units that went into inventory at the end of that month. This $32,000 was part of the $420,000 total fixed cost that has to be covered

each month in order for the company to break even. Since the $32,000 was added to the inventory account, and thus did not appear on the income statement for May as an expense, the company was able to report a small profit for the month even though it sold less than the break-even volume of sales.

In short, only $388,000 of fixed cost ($420,000 - $32,000) was expensed for May, rather than the full $420,000 as contemplated in the break-even analysis. As stated in the text, this is a major problem with the use of absorption costing internally for management purposes. The method does not harmonize well with the principles of cost-volume profit analysis, and can result in data that are unclear or confusing to management.

Solution to the question No. 2

Working-1 Before a cash budget can be prepared, the following supporting computations must be made: Cash payments for skate purchases from the manufacturer:

Purchases:

	February $	March $	April $	May $	June $	July $
Budgeted Sales	160,000	164,000	172,000	176,000	184,000	190,000
Cost of Sales (75%)…	120,000	123,000	129,000	132,000	138,000	142,500
Purchases (One moth in advance)………………….	123,000	129,000	132,000	138,000	142,500	

W-2 Payments for purchases:

	April	May	June	Quarter
February purchases: $ 123,000X 50%.........	$ 61,500			$61,500
March Purchases: $ 129,000 X 50%, 50%....	64,500	$ 64,500		129,000
April Purchases: $ 132,000 X 50%, 50%...		66,000	$ 66,000	132,000
May purchases: $ 138,000 X 50%..........			69,000	69,000
	$126,000	**$130,500**	**$135,000**	**$391,500**

W-3 Operating expenses:

	April	May	June	Quarter
Salaries and wages (1/12 of annual)……	$10,000	$10,000	$10,000	$30,000
Advertising and promotion (1/12 of annual)	1,000	1,000	1,000	3,000
Property taxes………………	0	0	4,500	4,500
Insurance (1/12 of annual)……………	400	400	400	1,200
Utilities (1/12 of annual)………	500	500	500	1,500
Depreciation (not a cash flow)………	-	-	-	-
Total disbursements for operating expenses	$11,900	$11,900	$16,400	$40,200

W-4 Cash receipts from sales:

	April	May	June	Quarter
February Sales: $160,000X 70%...............	$112,000			$112,000
March Sales: $ 164,000 X 30%, 70%...........	49,200	$114,800		164,000
April Sales: $172,000 X 30%, 70%..............		51,600	$120,400	172,000
May Sales: $ 176,000 X 30% ………			52,800	52,800

Total cash receipts…………………… $161,200 $166,400 $173,200 $500,800

Req. (a) Given the above data, the cash budget can be prepared as follows:

	April	May	June	Quarter
Cash balance, beginning……………………….	$20,000	$ 20,000	$ 20,000	$20,000
Add cash receipts (see above)………………….	161,200	166,400	173,200	500,800
Total cash available………………………………….	181,200	186,400	193,200	520,800
Less cash disbursements:				
Purchases (see above)……………………………	126,000	130,500	135,000	391,500
Operating expenses (see above)……………	11,900	11,900	16,400	40,200
Income taxes (given)……………………………….	16,000			16,000
Equipment and facilities (given)…………………	22,300	29,000	-----------	51,300
Total disbursements………………………………	176,200	171,400	151,400	499,000
Excess (deficiency) of cash available over				
disbursements…………………………………………	5,000	15,000	41,800	21,800
Financing:				
Borrowings………………………………………………	15,000	5,000	0	20,000
Repayments……………………………………………			(20,000)	(20,000)
Interest*…………………………………………………			(550)	(550)
Invested funds………………………………………	--------------	-------------	(1,250)	(1,250)
Total financing ……………………………………	15,000	5,000	(21,800)	(1,800)
Cash balance, ending……………	$ 20,000	$ 20,000	$ 20,000	$20,000

*($15,000 X 12% X 3/12) + ($5,000 X 12% X 2/12)

Req. (b) Cash budgeting is particularly important for a growing company like Roller, Ltd., because as sales grow, so do expenditures for inputs, These expenditures generally precede cash receipts, often by a considerable time period, and a growing company must be prepared to finance this gap between cash outflows and cash inflows. Thus, cash budgeting is essential because it will forewarn managers of impending cash problems. And, a cash budget will often be necessary documentation if it becomes necessary to arrange for financing.

Solution to the question No.3

Solution
Req. (i) Customer profitability, distribution.

The activity-based costing for each customer is:	Chemist Pharmacy	Patent Pharmacy
1. Order processing, Tk.400 x 12; Tk. 400 x 10	Tk. 4,800	Tk. 4,000
2. Line-item ordering, Tk. 30 x (12 x 10;10 x 18)	3,600	5,400
3. Store deliveries, Tk. 500 x 6; Tk. 500 x 10	3,000	5,000
4. Carton deliveries, Tk. 10 x (6 x 24; 10 x 20)	1,440	2,000
5. Shelf-stocking, Tk. 160 x (6 x 0; 10 x 0.5)	0	800
Operating costs	Tk. 12,840	Tk 17,200

The operating income of each customer is:

	Chemist Pharmacy	Patent Pharmacy
Revenues, Tk. 24,000 x 6; Tk. 18,000 x 10	Tk. 1,44,000	Tk. 1,80,000

Cast of goods sold, Tk. 21,000 x 6; Tk.16,500 x 10	1,26,000	1,65,000
Gross margin	18,000	15,000
Operating costs	12,840	17,200
Operating income	Tk. 5,160	Tk.(2,200)

Patent Pharmacy has a lower gross margin percentage than Chemist (8.33% vs. 12.50%) and consumes more resources to obtain this lower margin.

Req.-(ii) Ways RMS could use this information include:

a)Pay increased attention to the top 20% of the customers. This could entail asking them for ways to improve service. Alternatively, RMS may want to highlight to its own personnel the importance of these customers; e.g., it could entail stressing to delivery people the importance of never missing delivery dates for these customers.

b) Work out ways internally at RMS to reduce the rate per cost driver; e.g., reduce the cost per order by having better order placement linkages with customers. This cost reduction by RMS will improve the profitability of all customers.

c)Work with customers so that their behavior reduces the total "system-wide" costs. At a minimum, this approach could entail having customers, make fewer orders and fewer line items. The rationale is that a reduction in the number of line items (diversity of products) carried by Ma and Pa stores may reduce the diversity of products RMS carries.

There are several options here:
- Simple verbal persuasion by showing customers cost drivers at RMS.
- Explicitly pricing out activities like cartons delivered and shelf-stocking so that customers pay for the costs they cause.
- Restricting options available to certain customers, e.g., customers with low revenues couiece restricted to one free delivery per week.

An even more extreme example is working with customers so that deliveries are easier to make and shelf-stocking can be done faster.

d) Offer salespeople bonuses based on the operating income of each customer rather than the gross margin of each customer.

Solution to the question 4 (a).

(i) The contribution margin per direct labor-hour expended on each product

	Dolly	Tara	Sarah	Mike	Sewing Kit
Direct labor cost per unit	Tk. 3.20	Tk.2.00	Tk. 5.60	Tk. 4.00	Tk. 1.60
Direct labor hours per unit* (a)	0.40	0.25	0.70	0.50	0.20
Selling price	Tk. 13.50	Tk. 5.50	Tk. 21.00	Tk. 10.00	Tk. 8.00
Less: variable costs:					
Direct materials	4.30	1.10	6.44	2.00	3.20
Direct labor	3.20	2.00	5.60	4.00	1.60
Variable overhead (a × Tk. 2)	0.80	0.50	1.40	1.00	0.40
Total variable costs	8.30	3.60	13.44	7.00	5.20
Contribution margin (b)	Tk. 5.20	Tk.1.90	Tk. 7.56	Tk. 3.00	Tk. 2.80
Contribution margin per DLH (b) ÷ (a)	Tk. 13.00	Tk. 7.60	Tk. 10.80	Tk. 6.00	Tk. 14.00

* Direct labor cost per unit ÷ 8 direct labor hour.

(ii) Schedule of total direct labor-hours required to produce the units estimated to be sold

Product	DLH Per Unit	Estimated Sales (units)	Total Hours
Dolly	0.40 hours	50,000	20,000
Tara			
....			
.....	0.25 hours	42,000	10,500
Sarah..	0.70 hours	35,000	24,500
Mike..	0.50 hours	40,000	20,000
Sewing Kit	0.20 hours	325,000	65,000
Total hours required			140,000

(iii) Allocation of 130,000 direct labor hours of capacity to company's various products

Since the Mike doll has the lowest contribution margin per labor hour, its production should be reduced by 20,000 dolls (10,000 excess hours divided by 0.5 hours production time per doll = 20,000 dolls). Thus, production and sales of the Mike doll will be reduced to one-half of that planned, or 20,000 dolls for the year.

(iv) The highest price, in terms of a rate per hour for additional capacity

Since the additional capacity would be used to produce the Mike doll, the company should be willing to pay up to Tk. 14 per hour (Tk. 8 usual rate plus Tk. 6 contribution margin per hour) for added labor time. Thus, the company could employ workers for overtime at the usual time-and-a-half rate of Tk. 12 per hour (Tk. 8 × 1.5 = Tk. 12), and still improve overall profit.

(v) Ways of obtaining additional output without reducing sales of any product
Additional output could be obtained in a number of ways including
- working overtime,
- adding another shift,
- expanding the workforce,
- contracting out some work to outside suppliers, and
- eliminating wasted labor time in the production process.

The first four methods are costly, but the last method can add capacity at very low cost.

Note: Some would argue that direct labor is a fixed cost in this situation and should be excluded when computing the contribution margin per unit. However, when deciding which products to emphasize, no harm is done by misclassifying a fixed cost as a variable cost – providing that the fixed cost is the constraint. If direct labor were removed from the variable cost category, the net effect would be to bump up the contribution margin per direct labor-hour by Tk. 8 for each of the products. The products will be *ranked* exactly the same – in terms of the contribution margin per unit of the constrained resource – whether direct labor is considered variable or fixed. However, this only works when the fixed cost is the cost of the constraint itself.

Solution to the question. 4 (b)

(i) Profit per pound from processing

	Per 16-Ounce T-Bone Taka
Revenue from further processing:	
Sales price of one filet mignon [(6 ounces × Tk. 4.00 per pound) ÷ 16 ounces per pound]	1.50
Sales price of one Dhakaiya cut [(8 ounces × Tk. 2.80 per pound) ÷ 16 ounces per pound]	1.40
Total revenue from further processing	2.90
Less: sales revenue from one T-bone steak	(2.25)
Incremental revenue from further processing	0.65
Less: cost of further processing..	(0.25)
Profit per pound from further processing.....................................	0.40

(ii) Recommendation on processed further

The T-bone steaks should be processed further into the filet mignon and the Dhakaiya cut. This will yield Tk. 0.40 per pound in added profit for the company. The Tk. 0.45 profit per pound shown in the question is not relevant to the decision, since it contains allocated joint costs. The company will incur the joint costs regardless of whether the T-bone steaks are sold outright or processed further; thus, this cost should be ignored in the decision.

Solution to the question. No. 5

(i)

This problem can be solved by first computing the profitability index of each customer and then ranking the customers based on that profitability index:

Customer	Incremental Profit (A)	Zerin's Time Required (B)	Profitability Index (A) ÷ (B)
Aklima	Tk. 140	4	Tk. 35
Tithi................	Tk. 124	4	Tk. 31
Ayesha...........	Tk. 160	5	Tk. 32
Wasi..............	Tk. 96	3	Tk. 32
Jasia	Tk. 190	5	Tk. 38
Hussein.........	Tk. 288	8	Tk. 36
Ibrahim..........	Tk. 93	3	Tk. 31
Jerry..............	Tk. 136	4	Tk. 34
Kiran	Tk. 234	6	Tk. 39
Keya..............	Tk. 204	6	Tk. 34

Customer	Profitability Index	Zerin's Time Required	Cumulative Amount of Zerin's Time Required
Kiran	Tk. 39	6	6
Jasia	Tk. 38	5	11
Hussein.........	Tk. 36	8	19
Aklima...........	Tk. 35	4	23
Keya..............	Tk. 34	6	29
Jerry..............	Tk. 34	4	33
Ayesha..........	Tk. 32	5	38
Wasi..............	Tk. 32	3	41
Tithi...............	Tk. 31	4	45
Ibrahim..........	Tk. 31	3	48

Given that Zerin should not be asked to work more than 33 hours, the four customers below the line in the above table should be told that their reservations have to be cancelled.

(ii)

The total profit on wedding cakes for the weekend after canceling the four reservations would be:

Kiran	Tk.	234
Jasia		190
Hussein.........		288
Aklima...........		140
Keya		204
Jerry..............		136
Total		Tk. 1,192

Notes:
- Both Zerin's time and the cakes would have to be very carefully scheduled to make sure that all cakes are completed on time. We have assumed that the 33 hours of Zerin's time that are available for cake decorating do not include hours that have been set aside as a buffer to provide protection from inevitable disruptions in the schedule.
- If the cumulative amount of Zerin's time required did not exactly consume the total amount of time available, some adjustment might be required in which reservations are cancelled to ensure that the most profitable plan is selected.

(a)

To avoid disappointing customers, reservations should probably not be accepted for any particular weekend after 33 hours of Zerin's time have been committed for that weekend's cakes. To ensure that only the most profitable cake reservations are accepted, a reservation for any cake with a profitability index of less than Tk. 34 should probably not be accepted. This was the cutoff point for the cakes in the first weekend in June. This cutoff may need to be adjusted upward or downward over time – the cakes that were reserved for the first weekend in June may not be representative of the cakes that would be reserved for other weekends. If too many reservations are turned down and Zerin's time is not fully utilized, then the cutoff should be adjusted downward. If too few reservations are turned down and Zerin's time is once again overbooked or profitable cake orders are turned away, then the cutoff should be adjusted upward.

(b)

Ms. Jahan should consider changing the way prices are set so that they include a charge for Zerin's time. On average, the prices may be the same, but they should be based not only on the size of the cakes, but also on the amount of cake decorating that the customer desires. The charge for Zerin's time should be her hourly rate of pay (including any fringe benefits) plus the opportunity cost of at least Tk. 34 per hour. Because Zerin will not be working more than 33 hours per week, if another cake reservation is accepted, some other cake reservation will have to be cancelled. Ms. Jahan would have to give up at least Tk. 34 profit per hour to accept another cake reservation.

(c)

Making Zerin happy involves not asking her to work more than 33 hours per week decorating cakes. Making customers happy involves not canceling their reservations, not raising prices, and providing top quality wedding cakes.

Ms. Jahan can accomplish both of these objectives *and* increase her profits by clever management of the constraint – Zerin's time. The possibilities include:

o Ms. Jahan should make sure that none of Zerin's time is wasted on unnecessary tasks. For example, Zerin should not be asked to cream butter by hand for frostings if a machine could do the job as well with less labor time.

o Ms. Jahan should make sure that none of Zerin's time is wasted on tasks that can be done by other persons. For example, an assistant can be assigned to prepare frosting and to clean up, relieving Zerin of those tasks. As long as the cost of the assistant's time is less than Tk. 34 per hour, the result will be higher profits and more pleased customers.

    o Ms. Jahan should consider assigning an apprentice to Zerin. The apprentice could relieve Zerin of some of her workload while learning the skills to eventually expand the company's cake decorating capacity.

    o Ms. Jahan might consider subcontracting some of the less demanding cake decorating to another baker. This would be profitable as long as the charge is less than Tk. 34 per hour.

= THE END =