

Systematic Studies for Professionals
(Where your quest for quality education ends)

Time 75 min

Marginal costing

Max. Marks:40

Q.1 If Break even sales is 60% of sales, **find** fixed costs when profit is ₹ 1,50,000. Evaluate the required sales for desired profit of 40% of sales [3]

Q.2 Anuradha Enterprises manufactures and sells black phenyl worth ₹20,000, white phenyl worth ₹25,000; scented phenyl worth ₹10,000 and naphthalene balls worth ₹5,000 every month. The firm's total fixed costs per month are ₹14,700. The variable costs are: on black phenyl 60%, on white phenyl 68%, on scented phenyl 80%, and on naphthalene balls 40%.

The proprietrix, Ms. Anuradha shah, being basically a science graduate, wonders at what combined sales volume does she really start earning profit. Please help her in arriving at such a sales volume. [4]

Q.3 A company makes 1,500 units of a product for which the profitability statement is given below:

Sales	1,20,000
Direct materials	30,000
Direct labour	36,000
Variable OH	15,000
Subtotal variable cost	81,000
Fixed cost	16,800
Total cost	97,800
Profit	22,200

After the first 500 units of production, the company has to pay a premium of ₹ 6 per unit towards overtime labour. The premium so paid has been included in the direct labour cost of ₹ 36,000 given above.

You are required to compute the Break -even point. [6]

Q.4 The following information of a company is available for the year 2006:

Sales	40,000
Raw materials	20,000
Direct wages	6,000
Variable and fixed OH	10,000
Profit	4,000
Units sold	200 Nos.

In the year 2007, wages rate will increase by 50% and fixed cost will decrease by ₹ 600. If 300 units are sold in 2007, the total fixed and variable O/H will be ₹ 11,400. **How many** units should be sold in 2007, so that the same amount of profit per unit as in year 2006 may be earned? [6]

Q.5 Navbharat Commerce College, Bombay has six sections of B.Com, and two sections of M. Com with 40 and 30 student per section respectively. The college plans one day pleasure trip around the city for the students once in an academic session during winter break to visit park, Zoo, planetarium and aquarium.

A Transporter used to provide the required number of buses at a flat rate of ₹ 700 per bus for the aforesaid purpose. In addition, a special permit fee of ₹ 50 per bus is required to be deposited with city municipal corporation. Each bus is 52 seater.Two seats are reserved for teachers who accompany in each bus. Each teachers is paid allowance of ₹ 100 for the day. No other costs in respect of teachers are relevant to the trip.

The approved caterers of the collage supply breakfast, lunch and afternoon tea respectively at ₹ 7, ₹ 30 and ₹ 3 per student.

No entrance fee is charged at the park. Entrance fees come to ₹ 5 per student both for the zoo and the aquarium. As regards planetarium the authorities charge block entrance fee as under for group of students of educational institutions depending upon the number of students in a group:

Number of Students in a Group	Block Entrance Fee
Upto 100	200
101-200	300
201 & above	450

Cost of prizes to be awarded to the winners in different games being arranged in the park depends upon the strength of students in a trip. Cost of prizes to be distributed is:

Number of Students In a Trip	Cost of Prizes
Upto 50	900
51-125	1,050
126-150	1,200

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151-200	1,300
201-250	1,400
251 & above	1,500

To meet the above costs the college collects ₹ 65 from each student who wish to join the trip. The college releases subsidy of ₹ 10 per student in the trip towards it.

You are required to:

- Prepare a tabulated statement showing total costs at the levels of 60, 120, 180, 240 and 300 students indicating each item of cost.
- Compute average cost per student at each of the above levels.
- Calculate the number of students to break even for the trip as the college suffered loss during the previous year despite 72% of the student having joined the trip. [10]

Q.6 Paramount food products is a new entrant in the market for chocolates. It has introduced a new product-Sweetee. This is a small rectangular chocolate bar. The bars are wrapped in aluminium foil and packed in attractive cartons containing 50 bars. A carton, is therefore, considered the basic sales unit. Although management had made detailed estimates of costs and volumes prior to undertaking this venture, new projections based on actual cost experience are now required.

Income statements for the last two quarters are each thought to be representative of the costs and productive efficiency we can expect in the next few quarters. There were virtually no inventories on hand at the each quarter. The income statement reveals the following:-

	First Quarter	Second Quarter
Sales:		
50,000 x ₹ 24	12,00,000	-
70,000 x ₹ 24	-	16,80,000
Cost of Goods Sold	<u>7,00,000</u>	<u>8,80,000</u>
Gross Margin	5,00,000	8,00,000
Selling And Administration	<u>6,50,000</u>	<u>6,90,000</u>
Net Income (Loss) Before Taxes	(1,50,000)	1,10,000
Tax (Negative)	<u>60,000</u>	<u>44,000</u>
Net Income (Loss)	(90,000)	66,000

The firm's overall marginal and average income-tax rate is 40%. This 40% figure has been used to estimate the tax liability arising from the chocolate operations.

Required:

Management would like to know the break-even point in terms of quarterly carton sales for the chocolates. Management estimates that there is an investment of ₹ 30,00,000 in this product line. What quarterly carton sales and total revenue are required in each quarter to earn an after-tax return of 20% per annum on investment? The firm's marketing people predict that if the selling price is reduced by ₹ 1.50 per carton (Re. 0.03 off per chocolate bar) and a ₹ 1,50,000 advertising campaign among school children is mounted sales will increase by 20% over the second quarter sales. Should the plan be implemented? [8]
Draw and explain the angle of incidence in a break - even chart. What is its significance to the management? [3]

Q.7 The relevant data of X Ltd. for its three products A,B,and C are as under:-

	A	B	C
Direct Material (₹ / Unit)	260	300	250
Direct Labour (₹ /Unit)	130	270	260
Variable Overheads (₹ /Unit)	110	230	180
Selling Price (₹ / Unit)	860	1,140	930
Machine Hours Required (Per Unit)	12	6	3

The estimated fixed overheads at four different levels at 3,600; 6,000; 8,400 and 10,800 machine hours are ₹ 1,00,000; ₹ 1,50,000; ₹ 2,20,000 and ₹ 3,00,000 respectively. The maximum demand of A, B, and C in a cost period are 500; 300 and 1,800 units respectively.

You are required to find out (i) the most profitable product-mix at each level and (ii) the level of activity where the profit would be maximum. [6]

Q.8 When volume is 6,000 units, average cost is ₹ 4 per unit, When volume is 8,000 units, average cost is ₹ 3.75. The break-even point is 40%. Margin of Safety 3,000 units. **Find** the profit-volume ratio. **Calculate** Sales if desired profit is 20% of sales. [4]