**Illustration 1: (Accepting Export Order)**

Mikado Engineering Company has received an export order for its sole product that would require half of the factory's total capacity which is estimated at 4,00,000 units per annum. The factory is currently operating at 60% level to meet the demand of its domestic customers only. As against the current price of Rs 6.00 per unit, the export offer is Rs4.50 per unit which is less than the total cost of current production, the breakdown of which is given below:

| | |
|---|---|
| Variable Cost | Rs4.00 per unit |
| Fixed Overheads | Rs1.00 per unit |
| Total Cost | Rs5.00 per unit |

The condition of the export is that the offer has to be either accepted in full or totally rejected.

The following alternatives are available for decision making:

**(a)** Accept the order and keep domestic sales unfulfilled to the extent of excess demand for the same.

**(b)** Increase factory capacity by installing a few balancing machines and equipment and also by making overtime to meet the balance of the required capacity. This will increase fixed overheads by Rs. 15,000 annually and the additional cost for overtime work will be Rs 40,000 per annum.

**(c)** Reject the export offer and remain with the domestic market only.

Prepare statements indicating the alternatives and suggesting the proposal which would be most convenient to the company.

**Illustration 2: (Allocation of Land – Limiting Factor)**

| **Products** | **Apples** | **Lemons** | **Oranges** | **Peaches** |
|---|---|---|---|---|
| Selling per box () | 15 | 15 | 30 | 45 |
| Yield (boxes)/acre | 500 | 150 | 100 | 200 |
| **COST/EXPENSES ()** | | | | |
| Materials per acre | 270 | 105 | 90 | 150 |
| Labour per acre | 300 | 225 | 150 | 195 |
| Packing per box | 1.5 | 1.5 | 3 | 4.5 |
| Transport per box | 3 | 3 | 1.5 | 4.5 |

Fixed costs Rs 2,10,000. Total Acreage – 450. OF this, 300 acres can be used for Oranges and Lemons only and balance for any 4 products. Fractions of acres cannot be used. All the above products should be sold, with a minimum of 18,000 boxes of any one type.

Suggest the usage of land and profit arising there from

**Illustration 3: (Extermination Scenario)**

| **Particulars** | **Year 2014** | **Year 2015** |
|---|---|---|

| | | |
|---|---|---|
| Fees (@75 per student) | 3,00,000 | 3,75,000 |
| **Expenses:** | | |
| Rent | 12,000 | 12,000 |
| Examiners Fees | 1,20,000 | 1,50,000 |
| Printing Expenses of Question Papers | 80,000 | 1,00,000 |
| Honorarium to Superintendent | 10,000 | 10,000 |
| Invigilators Fees (@ 100 per day, for 2 days) | 16,000 | 20,000 |
| (one invigilator is required for every 50 students or part thereof) | 12,000 | 12,000 |
| Other General Expenses | | |

In 2016 Rent and other expenses are likely to increase by Rs 3,000 and Rs 8,000 respectively. Find:

**(a)** Break-Even point (in terms of No. Students) for the year 2014, 2015 and 2016.

**(b)** Number of student required to take up the exams to earn revenue of Rs 1, 50,000.

**Illustration 4: (Product Discontinuation)**

**(Figures '000)**

| Products | A | B | C | D |
|---|---|---|---|---|
| Sales | 600 | 1000 | 500 | 900 |
| Cost of Sales | 350 | 800 | 370 | 480 |
| Storage Area (Square | 40 | 60 | 70 | 30 |
| Mtrs.) | 200 | 300 | 150 | 350 |
| Boxes Sold | 100 | 120 | 80 | 100 |
| Bills Raised | | | | |

| Fixed Overheads | '000 | Basis of Spreading |
|---|---|---|
| Administration | 100 | Bills Raised |
| Salesman's Salaries | 120 | Sales |
| Rent | 60 | Area |
| Depreciation | 20 | Boxes Sold |

**Variable Costs:**

Commission - 4% of Sales. Packing - Rs 0.50 per box, Stationery - Rs 0.20 per bill.

Prepare income statement from the above AND also suggest which product should be discontinued.

**Illustration 5: (Change in Price)**

The Financial account of SONALISA LTD. has presented the following product performace report for the year ended 31st March, 2006:

| Particulars | Product A |
|---|---|
| Unit Sold | 1,00,000 |
| | **Amount (**Rs**)** |
| Sales @ 10/Unit | 10,00,000 |
| Variable Costs | 7,00,000 |
| Contribution | 3,00,000 |
| Fixed Costs | 200,000 |

| | |
|---|---|
| Profit/Loss | 100,000 |

The Marketing Manager of the company has come up with a proposal that if the price is reduced by 10% the quantity sold will go up 25%. On the other hand the costing department is of the opinion that as most of the competitors have higher prices, the price should be increased by 10%. The Marketing Manager has apprehension that if the price is increased by 10% the quantity sold will fall by 20%.

You have been invited to analyse the situation and advise the company to take a decision with reasons, whether:

**(a)** The price should be increased or

**(b)** The price should be reduced or

**(c)** The price should be left unchanged.

**Illustration 6: (Product Discontinuation)**

The financial accountant of SONALISA LTD. has presented the following product performance report for the year ended 31st March, 2006:

| **Particulars** | **PRODUCTS** | | | **Total ()** |
|---|---|---|---|---|
| | **A (Rs)** | **B (Rs)** | **C (Rs)** | |
| Sales | 600,000 | 4,00,000 | 2,00,000 | 12,00,000 |
| Variable | 3,60,000 | 2,80,000 | 1,50,000 | 7,90,000 |
| Costs | 2,40,000 | 1,20,000 | 50,000 | 4,10,000 |
| Contribution | 1,80,000 | 1,00,000 | 70,000 | 3,50,000 |
| Fixed Costs | 60,000 | 20,000 | (20,000) | 60,000 |
| Profit/(Loss) | | | | |

The managing director of the company is of the opinion that product 'C' is a non-profitable product and if they discontinue to produce and market product 'C' their overall profit will go up. You have been invited to analyse the situation and make presentation to the management to help them to take final decision in the matter. You are also required to spell out your conclusion in the matter.

**Illustration 7: (Entry in Foreign Market)**

A company annually manufactures 10,000 units of a product at a cost of Rs 4.00 per unit and there is a home market for consuming the entire volume of production at the selling price of Rs 4.25 per unit.

In the year 2006, there is a fall in the demand for home market which can consume 10,000 units only at a selling price of Rs 3.72 per unit.

The analysis of cost for 10,000 units is:

| | |
|---|---|
| Material | Rs 15,000 |
| Wages | Rs 11,000 |
| Fixed Overheads | Rs 8,000 |
| Variable Overheads | Rs 6,000 |

The foreign market is explored and it is found that these markets can consume 20,000 units of the product, if offered at a selling price of Rs 3.55 per unit. It is also discovered that for

additional 10,000 units of the product (over initial 10,000 units), the fixed overheads will increase by 10%.

Is it worthwhile to try to capture the foreign market?

**Illustration 8: (Boom and Recession Scenarios)**

Two companies ABC ltd. and XYZ ltd. sell the same type of product.

The budgeted profit and loss account for the year shows the following:

| Particulars | ABC Ltd. | | XYZ Ltd. | |
|---|---|---|---|---|
| | | Total | | Total |
| | (Rs) | (Rs) | (Rs) | (Rs) |
| Sales | | 1,50,000 | | 1,50,000 |
| **Less:** Variable Cost | 1,20,000 | | 1,00,000 | |
| Fixed Cost | 15,000 | 1,35,000 | 35,000 | 1,35,000 |
| Budgeting Profit | | 15,000 | | 15,000 |

You are required to calculate the Break Even Point of each company. Also state which company is likely to earn greater profits if there is heavy demand and poor demand for its product.

**Illustration 9: (Withdrawal of Product)**

Product wise profitability analysis in Sigma Ltd. showed following results (Rs '000):

| PRODUCT | A | R | T | Total |
|---|---|---|---|---|
| Sales | 800 | 400 | 300 | 1500 |
| Direct Labour | 80 | 60 | 60 | 200 |
| Material | 340 | 260 | 200 | 800 |
| Overheads | 120 | 90 | 90 | 300 |
| Profit/(Loss) | 260 | (10) | (50) | 200 |

50% of overheads represent fixed component. Based on above, Management is seriously considering withdrawing R and T from the market. You are required to prepare a report advising appropriate action, drawing attention to qualitative factors as well.

**Illustration 10: (Discontinuation of Product)**

The following information is presented to the Managing Director of a company:

| Particulars | Products | | | Total |
|---|---|---|---|---|
| | A (Rs) | B (Rs) | C (Rs) | (Rs) |
| Sales | 6,00,000 | 4,00,000 | 2,00,000 | 12,00,000 |
| Variable Costs | 3,60,000 | 2,80,000 | 1,50,000 | 7,90,000 |
| Contribution | 2,40,000 | 1,20,000 | 50,000 | 4,10,000 |
| Fixed Costs | 1,80,000 | 1,00,000 | 70,000 | 3,50,000 |
| Profit/(Loss) | 60,000 | 20,000 | (20,000) | 60,000 |

The Managing Director feels that product C is unprofitable and if its production and sales are discontinued the company's overall profit will go up. Advise the Managing Director with proper analysis and reasoning.

**Illustration 11: (Increase Market Share)**

Silverline Ltd. markets two brands (Aby and Baby) of same product-line. Relevant figures about operations during the year 2006 were:

| | Aby | Baby |
|---|---|---|
| Units Sold | 80,000 | 60,000 |
| Selling Price Per Unit (Rs) | 170 | 120 |
| Material Cost [Per Unit (Rs)] | 50 | 40 |
| Direct Labour [Per Unit (Rs)] | 30 | 20 |
| Production Overhead [Per Unit (Rs)] (50% Fixed) | 40 | 40 |

Marketing Manager proposes two alternative plans for the year 2007:

**(a)** Increase Aby market by 40% (no growth for Baby).

**(b)** Increase Baby market by 100% (no growth for Aby).

Company can manage either of the plan without any increase in current level of fixed expenses.

Further Selling and Distribution expenses are 5% of sales realisation.

You are required to:

Present alternate plans and advise the management – which one to accept.

**Illustration 12: (Boom and Recessionary Situations)**

EXE Ltd. And WYE Ltd. sell the same type of product. The budgeted Profit and Loss Account for the year end show the following:

| Particulars | EXE Ltd. | | WYE Ltd. | |
|---|---|---|---|---|
| | | | | |
| Sales | - | 1,50,000 | - | 1,50,000 |
| **Less:** Variable Costs | 1,20,000 | - | 1,00,000 | - |
| Fixed Costs | 15,000 | 1,35,000 | 35,000 | 1,35,000 |
| Budgeted Profit | - | 15,000 | - | 15,000 |

Calculate the break-even point for both the companies. Which company is likely to earn greater profit if there is:

**(a)** Heavy demand and

**(b)** Poor demand for the product?

**Illustration 13: (Sales Mix)**

Present the following information to show clarify to management:

**(a)** The marginal product cost and the contribution per unit.

**(b)** The total contribution an d profits resulting from each of the following mixtures.

| | Product | Price per unit (Rs) |
|---|---|---|
| Direct Material | A | 10 |
| Direct Material | B | 9 |
| Direct Wages | A | 3 |
| Direct Wages | B | 2 |

Fixed Expenses 800

Variable expenses are allotted to the products as 100% of direct wages.

| | Product | Price per unit (Rs) |
|---|---|---|
| Sales Price | A | 20 |

| | | |
|---|---|---|
| Sales Price | B | 15 |

**Sales Mixtures:**

**(a)** 100 units of product A and 200 units of B.

**(b)** 150 units of product A and 150 units of B.

**(c)** 200 units of product A and 100 units of B.

**Illustration 14: (Boom and Recession Scenarios)**

Two competing companies ABC Ltd., and XYZ Ltd. produce and sell same type of product in the same market. For the year ended March, 2007, their forecasted profit and loss accounts are as follows:

| **Particulars** | | **ABC Ltd. (Rs)** | | **XYZ Ltd. (Rs)** |
|---|---|---|---|---|
| Sales | | 2,50,000 | | 2,50,000 |
| **Less:** | | | | |
| Variable Cost | 2,00,000 | | 1,50,000 | |
| Fixed Cost | 25,000 | | 75,000 | |
| | | 2,25,000 | | 2,25,000 |
| Fore-casted net profit before tax | | 25,000 | | 25,000 |

You are required to compute:

**(a)** P/v Ratio

**(b)** Break-even sales volume

You are also required to state which company is likely to earn greater profits in conditions of:

**(a)** Low demand, and

**(b)** High demand

**Illustration 15: (Sales Mix)**

The following information in respect of Product 'A' and Product 'B' of JMR Ltd. is available.

| **Particulars** | **Product 'A'** | **Product 'B'** |
|---|---|---|
| Sales Price Rs | 1,000 | 640 |
| Direct Materials Rs | 400 | 400 |
| Direct Labour Hours (Rs 5 per hour) | 20 hours | 20 hours |
| Variable Overheads | 100% of Direct Wages | 100% of Direct Wages |

Fixed overheads for the company are Rs 30,000.

**(a)** You are required to calculate the marginal product cost and contribution per unit and

**(b)** State which of the following alternative sales mixes you would recommend and why?

**(i)** 100 units of Product 'A' and 50 units of Product 'B'.

**(ii)** 50 units of Product 'A' and 100 units of Product 'B'.

**(iii)** 150 units of Product 'A' only.

**(iv)** 150 units of Product 'B' only.

**Illustration 16: (Merger of Plants)** ***(M.U., BAF, October 2006)***

There are two plants manufacturing the same product under one corporate management which has decided to merge them. The following particulars are available regarding the two plants:

| Particulars | Plant I (Rs) | Plant II (Rs) |
|---|---|---|
| Capacity Operation | 100% | 60% |
| Sales | 6,00,000 | 2,40,000 |
| Variable Cost | 4,40,000 | 1,80,000 |
| Fixed Cost | 80,000 | 50,000 |

Calculate:

**(a)** Break-even point of the merged plant.

**(b)** Capacity of the merged plant to be operated at the break-even point?

**(c)** Profit earned if the merged plant is operated at capacity level of 80%

**Illustration 17: (Product-Mix)** ***(M.U., BAF, October 2006)***

The following are extracted from the records of a company:

| Particulars | Product A | Product B |
|---|---|---|
| Sales (Per Unit) | Rs 100 | Rs 120 |
| Consumption of Material | 2kg | 3kg |
| Material Cost | Rs 10 | Rs 15 |
| Direct Wages Cost | Rs 15 | Rs 10 |
| Direct Expenses | Rs 5 | Rs 6 |
| Fixed Expenses | Rs 5 | Rs 10 |
| Variable Expenses | Rs 15 | Rs 20 |
| Direct Wages per hour is Rs 5 | | |

Comment on the profitability of each product under the following conditions. When:

**(a)** Total sales potential in units is limited.

**(b)** Total sales potential in value is limited.

**(c)** Labour hours is in short supply.

**(d)** Assuming Raw Material as the key factor, availability of which is 10,000kg and maximum Sales potential of each product being 3,500 units; find the product-mix which will yield the maximum profit.

**Illustration 18: (Exploring Foreign Market)**

ABC Co. Ltd. produces 10,000 units of a product at a cost of Rs 4 per unit and sells in the domestic market a t a price of Rs 4.25 per unit. Through its market research department the company understands that in the year 2007 the prices will fall drastically and the product will have to be sold at Rs 3.72 per unit.

The cost data for 10,000 units is given below:

| Particulars | |
|---|---|
| Materials Rs | 15,000 |
| Wages Rs | 11,000 |
| Variable Overheads Rs | 6,000 |
| Fixed Overheads Rs | 8,000 |

However, the company has capacity to produce 30,000 units and there is a potential to sell additional 20,000 units in the export market at a price of Rs 3.45 per unit. If the company decides to sell in the domestic market as well as export market it will have to produce

30,000 units. Production up to 20,000 units does not change the fixed cost, however production and selling beyond 20,000 units will increase the present fixed cost by 20%. It is further given that to meet the export order the company will have to spend an additional Rs 0.40 per unit on packing and Rs 0.20 per unit on shipping. However, the export order also carries the following incentives:

**(a)** Cash incentive which works out to be Rs 0.40 per unit, and

**(b)** Duty drawback which works out to be Rs 0.40 per unit.

The company has two options:

**(a)** Sell 20,000 units only in export market and do not sell anything in domestic market because of expected loss.

**(b)** Produce and sell 30,000 units (10,000 domestic and 20,000 export).

Which option the company should select?

**Illustration 19: (Product Discontinuation)**

A manufacturer makes two products Luxury and Deluxe. The results for 2004 were as follows:

| **Particulars** | **Luxury** Rs | **Deluxe** Rs |
|---|---|---|
| Sales | 200,000 | 1,60,000 |
| Variable Cost | 120,000 | 1,32,000 |
| Fixed Cost | 40,000 | 32,000 |
| Profit/Loss | 40,000 | (4,000) |

The managing director has suggested that Deluxe should be dropped as it is making loss. It is estimated that Rs 8,000 will be saved in fixed overheads if his suggestion Is implemented. Should the Deluxe be dropped if:

**(a)** His decision has no effect on sales of Luxury.

**(b)** By using the vacant factory space sales of Luxury can be increased by Rs 1,00,000, the extra production would lead to increase in the total fixed cost to Rs 76,000.

**Illustration 20: (Plant Merger)**

A, B, and C are three similar plants under the same management who want them to be merged for better operation.

The following particulars are available:

| **Plant** | **A** | **B** | **C** |
|---|---|---|---|
| Capacity operated | 100% | 70% | 50% |
| | Rs **in lacs** | Rs **in lacs** | Rs **in lacs** |
| Turnover | 300 | 280 | 150 |
| Variable Cost | 200 | 210 | 75 |
| Fixed Cost | 70 | 50 | 62 |

You are required to ascertain:

**(a)** The capacity of the merged plant for break-even.

**(b)** The profit or loss at 75% and 50% capacity of the merged plant.

**(c)** The turnover from the merged plant to give profit of 28 lacs.

**Illustration 21: (Product Mix)*(M.U., BAF, May 2008)***

From the following particulars, find the most profitable product mix and prepare a statement of profitability of the product mix.

| Particulars | Product A (Rs) | Product B (Rs) | Product C (Rs) |
|---|---|---|---|
| Units budgeted to be produced and sold | 1,800 | 3,000 | 1,200 |
| Selling price per unit (Rs) | 60 | 55 | 50 |
| **Requirement per unit:** | | | |
| Direct Material | 5kg | 3kg | 4kg |
| Direct Labour | 4hrs | 3hrs | 2hrs |
| Variable Overheads Rs | 7 | 13 | 8 |
| Fixed Overheads Rs | 10 | 10 | 10 |
| Cost of Direct Materials per kg. | 4 | 4 | 4 |
| Direct Labour Hour rate | 2 | 2 | 2 |
| Maximum possible units of sales | 4,000 | 5,000 | 1,500 |

All the three products are produced from the same direct material using the same type of machines and labour. Direct Labour, which is the key factor, is limited to 18,600 hours.

**Illustration 22: (Plant Merger)** ***(M.U., BAF, May 2008)***

Vijaya Chemicals Ltd. has two factories with similar plants and machines. The Board of Directors of the company has expressed the desire to merge them and run them as one unit. Following data are available in respect of these factories:

| Particulars | Factory A | Factory B |
|---|---|---|
| Capacity in operation | 60% | 100% |
| Sales | 12,00,000 | 30,00,000 |
| Variable Cost | 9,00,000 | 22,00,000 |
| Fixed Cost | 2,50,000 | 4,00,000 |

You are required to find out:

**(a)** What should be the capacity of the merged factory to be operated for break-even?

**(b)** What is the profitability of working 80% of the integrated capacity?

**(c)** What is the sales required to earn a profit of Rs 6,00,000

**Illustration 23: (Increase in Costs)** ***(M.U., BAF, Oct 2008)***

A retail dealer in stationery is currently selling 10,000 pens annually. He supplies the following details for the year ended 31st December 2001:

| Particulars | (Rs) |
|---|---|
| Selling price | 50 |
| Variable cost per unit | 25 |
| **Fixed Cost:** | |
| Staff Salaries for the year | 1,20,000 |
| General office costs for the year | 80,000 |
| Advertising costs for the year | 40,000 |

As a cost accountant of the firm, you are required to answer the following each part independently.

**(a)** Calculate the P/V Ratio
**(b)** Calculate break-even point and margin of safety in sales revenue and number of pens sold.
**(c)** Assume that 12,000 pens were sold in a year. Find out the net profit of the firm.
**(d)** If it is decided to introduce selling commission of 5 per pen, how many pens would be required to be sold in a year to earn a net income of 80,000.
**(e)** Assuming that for the year 2002 and an additional staff salary of 30,000 is anticipated, and price of a pen is likely to be increased by 10%, what should be the break-even point in number of pens and sales revenue?

**Illustration 24: (Product Discontinuation)** ***(M.U., BAF, Oct 2008)***

Sameeksha Ltd. produces and sells three products B, N and D.
The income statement of the company, prepared in the absorption-costing format, is shown below:

| Particulars | B | N | D | Total |
|---|---|---|---|---|
| Sales | 30,00,000 | 15,00,000 | 9,00,000 | 54,00,000 |
| **Cost of Goods Sold:** | | | | |
| Variable | 18,00,000 | 10,00,000 | 6,50,000 | 34,50,000 |
| Fixed | 5,00,000 | 2,50,000 | 1,50,000 | 9,00,000 |
| Total | 23,00,000 | 12,50,000 | 8,00,000 | 43,50,000 |
| Gross Margin | 7,00,000 | 2,50,000 | 1,00,000 | 10,50,000 |
| **Selling Expenses:** | | | | |
| Variable | 2,00,000 | 1,20,000 | 80,000 | 4,00,000 |
| Fixed | 1,50,000 | 75,000 | 45,000 | 2,70,000 |
| Total | 3,50,000 | 1,95,000 | 1,25,000 | 6,70,000 |
| Gross Margin | 3,50,000 | 55,000 | (25,000) | 3,80,000 |

The management of the company is considering dropping D since it shows a loss on the income statement.
Evaluate the suggestion and suggest the management a suitable course of action showing the impact of alternatives on the profit of the company.

**Illustration 25: (Plant Merger)** ***(M.U., BAF, Oct 2008)***

Vishnu Chemicals Ltd. has two factories – X and Y with similar plant and machinery for manufacture of soda ash. The board of directors of the company has expressed the desire to merge them and to run them as one integrated unit. The following data is available in respect of these two factories:

| Factory | X | Y |
|---|---|---|
| Capacity in operation | 70% | 90% |
| Turnover | 210 Lakh | 270 Lakh |
| Variable Cost | 105 Lakh | 189 Lakh |
| Fixed Cost | 85 Lakh | 75 Lakh |

Find out:
**(a)** P/V Ratio of the merged plant.
**(b)** BEP of the merged plant.

**(c)** Margin of Safety of the merged plant.
**(d)** Profit if plant works at 80%
**(e)** Turnover at which the merged plant will earn a profit of 56 lakh.

**Illustration 26: (Product Mix)**
LML Ltd. manufacturing two products A and B. The cost records gives you the following information:

| Particulars | Product A | Product B |
|---|---|---|
| Materials | 16 | 12 |
| Wages | 48 hours @ 50 paise | 32 hours @ 50 paise |
| Other Variable Exp. | 150% of wages | 150% of wages |
| Selling Price | 80 | 60 |

Total fixed cost for the company 1,500.
Company can manufacture 500 units in total for Product A and B with a condition that atleast 150 units of each product should be produced. Show from the following alternative Sales Mix which will be best for the company:
**(a)** 250 units of A and 250 units of B.
**(b)** 200 units of A and 300 units of B.
**(c)** 150 units of A and 350 units of B.

**Illustration 27: (Product Discontinuation)**
Bajrang Chemicals Ltd. Mumbai, manufactures three chemicals namely HN1, CN1, and KN1. The Income Statement of the company is as under: (Amt in )

| | HN1 | CN1 | KN1 |
|---|---|---|---|
| Sales | 40 lac | 30 lac | 20 lac |
| Variable Cost | 28 lac | 15 lac | 16 lac |
| Fixed Cost | 5 lac | 3 lac | 4 lac |

Company Management is seriously considering dropping product KN1 as it is not profitable for the company. What will be the impact on the profitability of the company if it is dropped or suggest suitable alternative on the profitability of the company.

**Illustration 28: (Product Mix)**
The following information in respect of Product A and B of XYZ Co. Ltd is obtained:

| Particulars | Products | |
|---|---|---|
| | A | B |
| Sales Price | 2,000 | 1,200 |
| Direct Material | 1,400 | 800 |
| Direct Labour Hours (4 per hour) | 20 hrs | 40 hrs |
| Variable Overheads | 100 % of Direct Wages | 80% of Direct Wages |

Fixed overheads are 50,000 in total. You are required to:
**(a)** Calculate and present the marginal product costs and contribution per unit.
**(b)** State which of the following alternative sales mixes you would recommend?
**(i)** 100 units of Product A and 50 units of B
**(ii)** 50 units of Product A and 80 units of B
**(iii)** 200 units of Product A only

**(iv)** 150 units of Product B only

**Illustration 29: (Product Mix)** ***(M.U., BAF, April 2008)***

Following information is available:

| Particulars | Product 'X' (per unit) | Product 'Y' (per unit) |
|---|---|---|
| Direct Material | 80 | 100 |
| Direct Wages | 40 | 50 |
| Variable Overheads | 30 | 50 |
| Selling Price | 200 | 275 |

Total Fixed Overheads 20,000

From the following alternatives which sales mixes will bring higher profits?

**(a)** 250 units of Product 'X' and 150 units of 'Y'

**(b)** 150 units of Product 'X' and 250 units of 'Y'

**(c)** 400 units of Product 'X' only

**(d)** 400 units of Product 'Y' only

**(e)** 200 units of Product 'X' and 200 units of 'Y'

Support your answer with working.

**Illustration 30:** ***(M.U., BAF, April 2015)***

A, B, and C are three similar plants under same management who want them to be merged for better operation. The details are as under:

| Plant | A | B | C |
|---|---|---|---|
| Capacity Operated | 100% | 70% | 60% |
| Turnover (in lakhs) | 300 | 280 | 180 |
| Variable Cost (in lakhs) | 200 | 210 | 90 |
| Fixed Cost (in lakhs) | 70 | 50 | 62 |

You are required to find out:

**(a)** The capacity of merged plant for break-even

**(b)** The profit at 85% capacity of the merged plant.

**(c)** The turnover from the merged plant to give a profit of Rs 38 lakhs.