

J.K. SHAH[®]
CLASSES
CAFC → INTER CA → FINAL CA 7

FINAL CA
MAY '19
REVISION NOTES
Costing

Part - I

CHAPTER 1 - DECISION MAKING

Q. 1. The following figures relate to a Company manufacturing a varied range of products :

	Total Sales	Total Cost
	₹	₹
Year ended 31st December 2015	22,23,000	19,83,600
Year ended 31st December 2016	24,51,000	21,43,200

Assuming stability in price, with variable costs carefully controlled to reflect pre-determined relationships, and an unvarying figure for fixed costs, calculate :

- The profit / volume ratio, to reflect the rate of growth for profit and sales.
 - Fixed cost, Break even point and margin of safety.
 - Profit if sales are ₹ 25,00,000 & sales required to earn profit of ₹ 7,00,000
 - Sales if profit after tax required is ₹ 10,00,000 (tax rate 30%).
 - Profit of second year if selling price is increased by 10%, quantity increases by 15% and fixed cost decreases by ₹ 1,00,000.
- Q. 2.** A Ltd. makes and sells a single product. The company's trading results for the year 2016 are :

	Figs. - ₹ '000 (Year 2016)	
Sales	---	3,000
Direct materials	900	---
Direct labour	600	---
Overheads	900	2,400
Profits		600

For the year 2017, the following are expected :

- Reduction in the selling price by 10%.
- Increase in the quantity sold by 50%.
- Inflation of direct material cost by 8%.
- Price inflation in variable overhead by 6%.
- Reduction of fixed overhead expenses by 25%.

It is also known that :

- In 2015, overhead expenditure totalled to ₹ 8,00,000.
- Total overhead cost inflation for 2016 has been 5% more than 2015.
- Production and sales volumes have been 25% higher in 2016 than in 2015.

You are required to :

- Prepare a statement showing the estimated trading results for 2017.
- Calculate the Break - even point for 2016 and 2017.
- Comment on the BEP and profits of the years 2016 and 2017.

Q. 3. A paint manufacturing company manufactures 2,00,000 per annum medium - sized tins of "Spray Lac Paints" when working at normal capacity. It incurs the following costs of manufacturing per unit :

Direct Material	7.80
Direct Labour	2.10
Variable Overhead	2.50
Fixed Overhead	4.00
Product cost (per unit)	16.40

Each unit (tin) of the product is sold for ₹ 21 with variable selling and administrative expenses of 60 paise per tin.

During the next quarter only 10,000 units can be produced and sold. Management plans to shutdown the plant estimating that the fixed manufacturing cost can be reduced to ₹ 74,000 for the quarter.

When the plant is operating, the fixed overheads are incurred at a uniform rate throughout the year. Additional costs of plant shut - down for the quarter are estimated at ₹14,000.

You are required :

- (a) To express your opinion, along with the calculations, as to whether the plant should be shut - down during the quarter ; and
 - (b) To calculate the shut - down point for quarter in units of products (i.e., in terms of number of tins)
- Q. 4.** Kalyan University conducts a special course of 'Computer Applications' for a month during summer. For this purpose, it invites applications from graduates. An entrance Test is given to the candidates and based on the same, a final selection of a hundred candidates is made. An entrance test consists of four objective types of examinations and is spread over four days, one examination per day. Each candidate is charged a fee of ₹50/- for taking up the entrance test. The following data was gathered for the past two years.

KALYAN UNIVERSITY

Statement of Net revenue from the Entrance Test for the course on "Computer Applications"

	₹	2015	2016
Gross Revenue (Fees collected)		1,00,000	1,50,000
Costs			
Valuation		40,000	60,000
Question booklets		20,000	30,000
Hall rent at ₹ 2,000 per day		8,000	8,000
Honorarium to chief administrator		6,000	6,000
Supervision charges (One supervisor for every 100 candidates at the rate of ₹ 50 per day)		4,000	6,000
General administration expenses		6,000	6,000
TOTAL COST		84,000	1,16,000
Net Revenue		16,000	34,000

You are required to compute :

- (a) The budgeted net revenue if 4,000 candidates take up the entrance test in 2017.
- (b) The break-even number of candidates.
- (c) The number of candidates to be enrolled if the net income desired is ₹ 20,000/-.

Q. 5. ACE Ltd. has an inventory of 5,000 units of a product left over from last years production. This model is no longer in demand. It is possible to sell these at reduced prices through the normal distribution channels. The other alternative is to ask someone to take them on "as is where is" basis. The latter alternative will cost the company ₹ 5,000. The company produced 2,40,000 units of the product last year, when the unit costs were as under :

	₹	₹
Manufacturing Cost :		
Variable	6.00	----
Fixed	1.00	7.00
Selling & Distribution cost :		
Variable	3.00	----
Fixed	1.50	4.50
Total cost	----	11.50
Selling price per unit	----	14.00

Required :

Should the company scrap the items or sell them at a reduced price? If you suggest the latter, what minimum price would you recommend.

Q. 6. Soft Drinks Ltd., bottles and distributes 'Amrit' brand cold drinks. It operates its distribution division as a cost centre. Budgeted cost for the year ending 31st March, 2016 is as follows :

	₹
Cash operating costs	21,00,000
Depreciation on fleet of vehicles (8 x 52,500)	4,20,000
Apportioned Corporate Costs	3,00,000
	28,20,000

Distribution division has started operation on 1st April, 2014. Each vehicle of the fleet was acquired at a cost of ₹ 2,40,000 and had on estimated economic life of four years. Salvage value each vehicle at the end of four years (March 31, 2018) was estimated at ₹ 30,000.

Countrywide Distributors Ltd. which has countrywide network for the distribution of food and beverages has offered Soft Drinks Ltd. a three year distribution contract for ₹ 19,50,000 each year. The contract will start on 1st April, 2015.

If Soft Drinks Ltd. accepts the offer, it will close down its own distribution division, and will sell the delivery vehicles. Current (April 1, 2015) disposal price of each vehicle is estimated at ₹ 75,000. Soft Drinks Ltd. will avoid cash operating cost of ₹ 21,00,000. Security analysts have recommended the purchase of share of Soft Drinks Ltd. Security analysts are forecasting a net profit of ₹ 6,60,000 for 2015-2016 as against an estimated profit of ₹ 6,30,000 for 2014-2015. The forecast assumes that the company will continue operation of its distribution division.

Required :

- (a) Recommend whether Soft Drinks Ltd. should accept the offer of Countrywide Distributors.
- (b) Why might Soft Drinks Ltd. be reluctant to accept the offer of countrywide distributors?

(Ignore Income tax and time value of money. Wherever appropriate, suitable assumptions to be made by you).

Q. 7. A company has been making a machine to order for a customer, but the customer has since gone into liquidation and there is no prospect that money will be obtained from the winding up of the company.

Costs incurred to - date in manufacturing the machine are ₹ 50,000 and progress payments of ₹ 15,000 have been received from the customer prior to the liquidation.

The sales department has found another company willing to buy the machine for ₹ 34,000 once it has been completed.

To complete the work, the following costs would be incurred :

- (a) Materials : These have been bought at a cost of ₹ 6,000. They have no other use and if the machine is not finished, they would be sold as scrap for ₹ 2,000.
- (b) Further labour costs would be ₹ 8,000. Labour is in short supply, and if the machine is not finished, the work force would be switched to another job which would earn ₹ 30,000 in revenue and incur direct costs, not including direct labour, of ₹ 12,000 and absorb fixed overheads of ₹ 8,000.
- (c) Consultancy fees ₹ 4,000. If the work is not completed, the consultant's contract would be cancelled at a cost of ₹ 1,500.
- (d) General overheads of ₹ 8,000 would be added to the cost of the additional work.

Should the new customer's offer be accepted? Prepare a statement showing the economics of the proposition.

Q. 8. S.M. Ltd. is engaged in the manufacture of plastic bottles of standard size. The factory has eight machines of identical size, each capable of producing 50 bottles per hour. The variable costs per bottle is Re.0.40 and the selling price is Re. 1.00 each.

The company has received an offer from another firm for manufacture of 50,000 units of a plastic moulded toy. The price per toy is ₹ 6.00 and the variable cost is ₹ 4.80 each. In case the company takes up the job, it has to meet the expense of making a special mould required for the manufacture of the toy. The cost of the mould is ₹ 20,000. The company's time study analysis shows that the machines can produce only 20 toys per hour. The company has a total capacity of 10,000 hours during the period in which the toy is required to be manufactured. The fixed costs excluding the cost of construction of the mould during the period will be ₹ 2,00,000.

The company has an order for the supply of 3,75,000 bottles during the period.

Required:

- 1. Do you advise the company to take up the order for manufacturing plastic moulded toys during the time it has an order in its books for the supply of 3,75,000 bottles?
- 2. If the order for the supply of bottles increases to 5,00,000 bottles, will you advise the company to accept the order for the supply of the plastic moulded toys? State the reasons.

3. An associate company of S. M. Ltd. has idle capacity and is willing to take up the whole or part of the manufacturing of the plastic moulded toys on subcontracting basis. The sub-contract price inclusive of the cost of construction of mould is ₹ 5.60 per toy. Determine the minimum expected excess machine hour capacity needed to justify producing any portion of the toy order by the company itself rather than subcontracting.
4. The company expected that it would be left with an excess capacity of 1600 machine hours during the period. Consequently, it accepted the toy order and subcontracted the balance requirements of the toys to meet the order. Later the demand for bottles increased to 4,50,000 units for the period. Since the company had accepted the toy order to fill 1600 machine hours, it could meet the demand for bottles only to the extent of 8400 machine hours. Work out the loss which the company suffered in not being able to predict the demand for the bottles accurately.

Q. 9. Fortune Ltd., manufactures product N using one unit each of three components named P, Q & R and sells it at ₹ 37.50 per unit. It has two divisions. In production division it produces all the types of components by using its full capacity of 42,000 machine hours. In assembly division the remaining job is performed by the workers manually before N is ready for sale :

Product N is manufactured in batches of 100 units and data relating to the current production per batch are :

	Machine hours	Variable costs	Fixed costs	Total costs
Production Division :		₹	₹	₹
Component - P	15	375	150	525
Component - Q	25	450	175	625
Component - R	30	450	450	900
Assembly Division :				
Assembly	----	800	325	1,125
	----	2,075	1,100	3,175

For the next year the company has estimated that its sale would go up by 50% more than the present sales and probably even by 75% if the production capacity is made available. The machine capacity cannot be increased during the next year even though the workers in the assembly division can be increased as per requirement without any increase in fixed costs. To meet the increase demand, production can be taken up and processed in assembly division by procuring the components from the open market. The company has received the following price quotations for the purchase of components :

	P	Q	R
Price offered per component (₹)	5.55	7.00	8.40

You are required to :

- (i) Determine the production and profits being earned at present.
- (ii) Indicate which of the components (s) should be purchased and in what quantities at the two estimated levels of output viz., increase by 50% and 75% of existing production.
- (iii) Prepare a statement showing the company's profitability at both the estimated levels of output.

Q. 10. Tiptop Textiles manufactures a wide range of fashion fabrics. The company is considering whether to add a further product the 'Superb' to the range. A market research survey recently undertaken at a cost of ₹ 50,000 suggests that demand for the 'Superb' will last for only one year during which 50,000 units could be sold at ₹18 per unit. Production and sale of 'Superb' would take place evenly throughout the year.

The following information is available regarding the cost of manufacturing 'Superb':

Raw Materials :

Each 'Superb' would require 3 types of raw material Posh, Flash and Splash. Quantities required, current stock levels and cost of each raw material are shown below. Posh is used regularly by the company and stocks are replaced as they are used. The current stock of Flash is the result of overbuying for an earlier contract. This material is not used regularly by Tiptop Textiles and any stock that is not used to manufacture 'Superb' should be sold. The company does not carry a stock of Splash and the units required would be specially purchased.

Raw Material	Quantity required. per unit of Superb (meters)	Current Stock level (metres)	per metre of raw material		
			Original Cost	Current replacement cost	Current resale value
			₹	₹	₹
Posh	1.00	1,00,000	2.10	2.50	1.80
Flash	2.00	60,000	3.30	2.80	1.10
Splash	0.5	—	—	5.50	5.00

Labour :

Production of each 'Superb' would require a quarter of an hour of skilled labour and two hours of unskilled labour. Current wage rates are Rs. 3 per hour for skilled labour and ₹ 2 per hour for unskilled labour. In addition, one foreman would be required to devote all his working time for one year in supervision of the production of Superb. He is currently paid an annual salary of ₹ 15,000/-. Tiptop Textiles is currently finding it very difficult to get skilled labour. The skilled workers needed to manufacture 'Superb' would be transferred from another job on which they

are earning a contribution surplus of ₹1.50 per labour hour comprising sales revenue of ₹ 10.00 less skilled labour wages of ₹ 3.00 and other variable costs of ₹ 5.50. It would not be possible to employ additional skilled labour during the period. The company expects to have available 2,00,000 surplus unskilled labour hours during the coming year. Because the company intends to expand in the future, it has decided not to terminate services of any unskilled worker in the foreseeable future. The foreman is due to retire immediately on an annual pension payable by the company of ₹ 6,000. He can be prevailed upon to stay on for a further year and to defer his pension for one year in return for his annual salary, if SUPERB is introduced.

Machinery :

Two machines would be required to manufacture 'Superb', MT 4 and MT 7. Details of each machine are as under :

	Start of the year	End of the year
	₹	₹
MT 4		
Replacement Cost	80,000	65,000
Resale Value	60,000	47,000
MT 7		
Replacement Cost	13,000	9,000
Resale Value	11,000	8,000

Straight line depreciation has been charged on each machine for each year of its life. Tiptop Textile owns a number of MT 4 machineries, which are used regularly on various products. Each MT 4 is replaced as soon as it reaches the end of its useful life. MT 7 machines are no longer used and the one which would be used for 'Superb' is the only one the company now has. If it was not used to produce 'Superb', it would be sold immediately.

Overheads :

A predetermined rate of recovery for overhead is in operation and the fixed overheads are recovered fully from the regular production at ₹ 3.50 per labour hour. Variable overhead costs for Superb are estimated at ₹ 1.20 per unit produced.

For decision making, incremental costs based on relevant cost and opportunity costs are usually computed.

You are required to compute such a cost sheet for 'Superb' with all details of material, labour, overhead etc. substantiating the figures with necessary explanations.

- Q. 11.** A construction company has accepted contract AX and work thereon is about to begin. However, the company has received an offer for another contract BX. The company cannot, due to certain constraints, take up both the contracts simultaneously. In case the company is desirous of taking up contract BX, it can get the first contract AX rescinded upon payment of a penalty of ₹ 70,000.

The following are the estimates relating to the two Contracts ;

	Contract AX	Contract BX
	₹	₹
Material X - in stock at original cost	54,000	---
Material Y - in stock at original cost	---	62,000
Material X - firm orders placed at original cost	76,000	---
Material X - Not yet ordered (at current cost)	1,50,000	---
Material Z - Not yet ordered (at current cost)	---	1,78,000
Labour - to be engaged and paid for	2,15,000	2,75,000
Site Management Costs	85,000	85,000
Travel and other expenses	17,000	14,000
Depreciation of Plant	24,000	32,000
Interest on Capital at 12%	12,800	16,000
Head Office expenses allocated to contracts	31,690	33,100
Total	6,65,490	6,95,100
Contract Price	7,20,000	8,80,000
Estimated Profit	54,510	1,84,900

The following additional information is available :

1. Material X is not in regular use. It can be used as a substitute for other materials, which are currently quoted at 10% less than the original cost of X.
2. Material Y is in regular use and its price has doubled since it was purchased, Its net realisable value if sold will be its new price less 15%. It can, however, be kept in store for use in other contracts to be taken up in the next year.
3. If contract AX is undertaken, a part of the plant having spare capacity can be hired out for a rental of ₹ 15,000 for the period.
4. It is the policy of the company to charge notional interest on the estimated working capital at 12% per annum.
5. Either of two contracts can be completed by 31st March, 2003. Which is the close of the company's financial year.
6. Site management cost is fixed.

Required :

- (i) Using the relevancy of cost concept prepare a comparative statement to show the net benefit resulting from each contract.
- (ii) Advise the management of the company as to which of two contracts should be undertaken.

Q. 12. B Ltd. is a company that has, in stock, materials of type XY that cost Rs.75,000, but that are now obsolete and have a scrap value of only ₹ 21,000. Other than selling the material for scrap, there are only two alternative uses for them.

Alternative 1 : Converting the obsolete materials into a specialised product, which would require the following additional work and materials :

Material A	600 units
Material B	1,000 units
Direct Labour	
5,000 hours unskilled	
5,000 hours semi i - skilled	
5,000 hours highly skilled	
Extra selling and delivery expenses	₹ 27,000
Extra advertising	₹ 18,000

The conversion would produce 900 units of saleable and these could be sold for ₹ 300 per unit.

Material A is already in stock and widely used within the firm. Although present stocks, together with orders already planned. Will be sufficient to facilitate normal activity and extra material used by adopting this alternative will necessitate such materials being replaced immediately. Material B is also in stock, but it is unlikely that any additional supplies can be obtained for some considerable time, because of an industrial dispute. At the present time material B is normally used in the production of product Z, which sells at ₹ 390 per unit and incurs total variable cost (excluding Material B) of ₹ 210 per unit. Each unit of product Z uses four units of Material B. The details of Material A and B are as follows :

	Material A	Material B
	(₹)	(₹)
Acquisition cost at the time of purchase	100 per unit	₹ 10 per unit
Net realisable value	85 per unit	₹ 18 per unit
Replacement cost	90 per unit	---

Alternative 2 : Adopting the obsolete materials for use as a substitute for a sub-assembly regularly used within the firm. Details of the extra work and materials required are as follows :

Material C	1,000 units
Direct Labour :	
4,000 hours unskilled	
1,000 hours semi - skilled	
4,000 hours highly skilled	

1,200 units of the sub - assembly used per quarter at a cost of ₹ 900 per unit. The adaptation of material XY would reduce the quantity of the sub - assembly purchased from outside the firm to 900 units for the next quarter only. However, since the volume purchased would be reduced, some discount would be lost and the price of those purchased from outside would increase to ₹ 1,050 per unit for that quarter.

Material C is not available externally though 1,000 units required would be available from stocks, it would be produced as extra production. The standard cost per unit of Material C would be as follows :

	₹
Direct Labour : 6 hours unskilled labour	18
Raw Materials	13
Variable overhead : 6 hours at Re.1	6
Fixed overhead : 6 hours at ₹ 3	18
	55

The wage rates and overhead recovery rates for B Ltd. are :

Variable overhead	Re.1 per direct labour hour
Fixed overhead	Re.3 per direct labour hour
Unskilled labour	₹ 3 per direct labour hour
Semi - skilled labour	₹ 4 per direct labour hour
Highly skilled labour	₹ 5 per direct labour hour.

The unskilled labour is employed on a casual basis and sufficient labour can be acquired to exactly meet the production requirements. Semi - skilled labour is part of the permanent labour force, but the company has temporary excess supply of this type of labour at the present time. Highly skilled labour is in short supply and cannot be increased significantly in the short - term, this labour is presently engaged in meeting the demand for product L, which requires 4 hours of highly skilled labour. The contribution from the sale of one unit of product L is ₹ 24.

Given the above information, you are required to present cost information advising whether the stocks of Material XY should be sold, converted into a specialised product (Alternative 1) or adopted for use as a substitute for a sub - assembly (Alternative 2).

Q. 13. The Legran Manufacturing Company currently manufactures part 509 K in Department 10 for assembly into one of its major products, Motor 897. Management has, for some time, been considering closing down the parts making operation and purchasing the parts from an outside source because of inefficiencies in the operations of the department.

After some careful cost scrutiny, Masters Tools and Dye Company was selected as a prospective source. The company is able to supply all the parts required at a rate of 3,000 a year at present for ₹ 60,000/- per year, the contract to run definitely for a term of five years and thereafter to be renewed from year to year.

The General Manager compared the Master's figure with the cost figures prepared by the chief accountant for the manufacture of 3,000 such parts, which are as follows :

Materials	₹ 28,000	₹ 48,000
Labour	₹ 20,000	
Departmental overheads :		
Manager's Salary	₹ 3,200	
Rent	₹ 1,800	
Depreciation of Machinery	₹ 6,000	
Maintenance of Machinery	₹ 1,440	
Other Miscellaneous Expenses	₹ 6,300	₹ 18,740
		₹ 66,740
Share of general administrative overheads		₹ 9,000
TOTAL COST OF DEPARTMENT FOR ONE YEAR		₹ 75,740

The general manager's immediate reaction was that the department should be immediately closed down and negotiations be completed with Masters. He wished, however, to discuss this proposal with the manager of the department before action was taken.

The manager was informed that his position was not in jeopardy, since another managerial position would soon be available at equal pay and opportunity, should his department be disbanded. After a few days, the manager dropped into GM's office and raised several questions. "What will be done with the machinery"?, he asked.

'It cost ₹ 48,000/- five years back but probably would only bring ₹ 8,000/- from the market now, even though it is good for another five years at least. Also there's the stock of metal castings and rings (a special stock) we bought a year ago. It cost us ₹ 40,000/- and at the rate we're using it', it'll last us another four years or so. We used about one-fifth of it last year. The accountant's figure of ₹ 28,000/- for materials probably includes about ₹ 8,000/- for this special stock. But it'll be tricky stuff to handle if we don't use it up. We purchased it at ₹ 200 a ton though its current replacement cost is ₹ 240/- . But you wouldn't have more than ₹ 160/- a ton left if you sold it, after covering handling expenses.

The chief accountant, upon hearing the manager's conjectures replied, I think my figures are pretty conclusive. Besides if you are going to get so fussy, don't forget the problem of space we're faced with. We're paying ₹ 3,400/- a year in rent for a warehouse a couple of miles away. If we closed the department we would not need the warehouse space.

Finally, the manager concluded the discussion by saying "Well I' ve told Masters that I'll let them know my decision within a week. I'll let you both know what I decide to do before I call them".

REQUIRED : Make cost analysis to arrive at a make or buy decision.

Q. 14. Vikram Ltd. produces 4 products using 3 different machines. Machine capacity is limited to 3,000 hours for each machine. The following information available for February, 2014:

Products	A	B	C	D
Contribution (Sales-direct material) ₹	1,500	1,200	1,000	600
Machine Hours Required / Unit :				
Machine 1	10	6	2	1
Machine 2	10	9	3	1.5
Machine 3	10	3	1	0.5
Estimated Demand (units)	200	200	200	200

From the above information you are required to identify the bottleneck activity and allocate the machine time.

Q. 15p. Bloom Ltd. makes 3 products, A, B and C. The following information is available:

	(Figures in Rupees per unit)		
	A	B	C
Selling price (peak-season)	550	630	690
Selling price (off-season)	550	604	690
Material cost	230	260	290
Labour (peak-season)	110	120	150
Labour (off-season)	100	99	149
Variable production overhead	100	120	130
Variable selling overhead (only for peak-season)	10	20	15
Labour hours required for one unit of production	8	11	7 (hours)

Material cost and variable production overheads are the same for the peak-season and off-season. Variable selling overheads are not incurred in the off-season. Fixed costs amount to ₹ 26,780 for each season, of which ₹ 2,000 is towards salary for special technician, incurred only for product B, and ₹ 4,780 is the amount that will be incurred on after-sales warranty and free maintenance of only product C, to match competition.

Labour force can be interchangeably used for all the products. During peak-season, there is labour shortage and the maximum labour hours available are 1,617 hours. During off-season, labour is freely available, but demand is limited to 100 units of A, 115 units of B and 135 units of C, with production facility being limited to 215 units for A, B and C put together. You are required to:

- i) Advise the company about the best product mix during peak-season for maximum profit.
- ii) What will be the maximum profit for the off-season?