The Institute of Finance Management
Accounting and Finance Department
Tutorial Questions
Pricing Decision
BACC 3 and BAIT 3
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QUESTION 1

(a) What are the advantages and limitations of the cost-based pricing method?

(b) Donge-Mikanjuni Ltd is a manufacturer of a new cheap video disc system. The company's fixed costs amount to Shs 900 a week and the Management Accountant estimate the variable cost function to be [$1/4Q^2 + 8Q$] where Q is the number of units sold per week.

The weekly demand function is P = 168 - 3/4Q where P is the price in shillings

REQUIRED;

(i) Determine the price and the quantity for maximum sales revenue. What is the maximum revenue?

(ii) Determine the price and quantity for maximum profit. What is the maximum profit?

QUESTION 2

Mpingo Co is launching a new, innovative product onto the market and is trying to decide on the right launch price for the product. The product's expected life is three years. Given the high level of costs which have been incurred in developing the product, Mpingo Co wants to ensure that it sets its price at the right level and has therefore consulted a market research company to help it do this. The research, which relates to similar but not identical products launched by other companies, has revealed that at a price of Shs 60, annual demand would be expected to be 250,000 units.

However, for every Shs 2 increase in selling price, demand would be expected to fall by 2,000 units and for every Shs 2 decrease in selling price, demand would be expected to increase by 2,000 units.

A forecast of the annual production costs which would be incurred by Mpingo Co in relation to the new product are as follows:

Annual production (units)	200,000	250,000	300,000	350,000
	Shs	Shs	Shs	Shs
Direct material	2,400,000	3,000,000	3,600,000	4,200,000
Direct labour	1,200,000	1,500,000	1,800,000	2,100,000
Overheads	1,400,000	1,550,000	1,700,000	1,850,000

REQUIRED:

(a) Calculate the total variable cost per unit and total fixed overheads.

(b) Calculate the optimum (profit maximising) selling price for the new product AND calculate the resulting profit for the period.

(c) The sales director is unconvinced that the sales price calculated in (b) above is the right one to charge on the initial launch of the product. He believes that a high price should be charged at launch so that those customers prepared to pay a higher price for the product can be 'skimmed off' first.

REQUIRED:
Discuss the conditions which would make market skimming a more suitable pricing strategy for Mpingo, and recommend whether Mpingo should adopt this approach instead.

QUESTION 3
BM Co specializes in the production of a range of air conditioning appliances for industrial premises. It is about to launch a new product, the 'Buster', a unique air conditioning unit which is capable of providing unprecedented levels of air conditioning using a minimal amount of electricity. The technology used in the Buster is unique so BM Co has patented it so that no competitors can enter the market for two years. The company's development costs have been high and it is expected that the product will only have a five-year life cycle.

BM Co is now trying to ascertain the best pricing policy that they should adopt for the Buster's launch onto the market. Demand is very responsive to price changes and research has established that, for every Shs15 increase in price, demand would be expected to fall by 1,000 units. If the company set the price at Shs 735, only 1,000 units would be demanded.

The costs of producing each air conditioning unit are as follows:

	Shs	
Direct materials	42	
Labour	12	(1·5 hours at Shs8 per hour See note below)
Fixed overheads	6	(based on producing 50,000 units per annum)
Total cost	60	

Note
The first air conditioning unit took 1·5 hours to make and labour cost Shs8 per hour. A 90% learning curve exists, in relation to production of the unit, although the learning curve is expected to finish after making 100 units. BM Co's management has said that any pricing decisions about the Energy Power should be based on the time it takes to make the 100th unit of the product..

All other costs are expected to remain the same up to the maximum demand levels.
REQUIRED:

a) Establish the demand function (equation) for air conditioning units;

b) Calculate the marginal cost for each air conditioning unit after adjusting the labour cost as required by the note above;

c) Equate marginal cost and marginal revenue in order to calculate the optimum price and quantity.

d) Explain what is meant by a 'penetration pricing' strategy and a 'market skimming' strategy and discuss whether either strategy might be suitable for BM Co when launching the Energy Power.

QUESTION 4

ABC Ltd wishes to decide whether to lease a new machine to assist in the manufacture of its single product for the coming next six month, and also decide what price to charge for its product in order to maximise its profit.

In the six month just ended ABC Ltd's results were as follows

		Shs '000'	**Shs '000'**
Sales (200,000 units)			600,000
Less; Cost of sales			
Production wages:	Fixed	20,000	
	Variable	90,000	
Direct materials		400.000	(510,000)
Gross profit			90,000
Less selling cost (Shs 500 per unit sold)		100,000	
Less administration (fixed)		30,000	(130,000)
Loss			(40,000)

ABC Ltd expect that, during the next six month

(i) Fixed wages Shs 20,000,000, fixed administration cost Shs 30,000,000 and the selling cost per unit sold will not change;

(ii) The variable wages rate will increase to Shs 500 per unit

Quality control is very difficult and a high proportion of material is spoiled. A new machine has become available that can be delivered immediately. Tests have shown that it will eliminate quality control problems, resulting in a halving of the usage of materials. It cannot be bought but can be leased for Shs 115,000,000 per next six months.

The product has a very short shelf life and is produced only to order. ABC Ltd estimates that if it changed the unit selling price, demand for the product would increase by 1,000 units per six months for Shs 10 decrease in selling price (so that it would receive orders for 500,000 units if it was to offer them free of charge), and would decrease by 1,000 units per six months for Shs 10 increase in the unit selling price (so that a price of Shs 5,000 its sales would be zero).

REQUIRED

Advise ABC Ltd whether, in the next six months, it should lease the new machine and also the price it should charge its product, to maximize its profit

QUESTION 5

Ubungo Ltd operates in an entirely different industry. However, it also produces to order and carries no inventory.

Its demand function is estimated to be $P = 100 - 2Q$ (where P is the unit selling price in Shs and Q is the quantity demanded in thousands of units).

Its total costs function is estimated to be $C = Q^2 + 10Q + 500$ (where C is the total cost in Shs'000' and Q is as above)

You are required in respect of Ubungo Ltd to

(i) Calculate the output in units that will maximise total profit, and to calculate the corresponding unit selling price, total profit and total sales revenue

(ii) Calculate the output in units that will maximise total revenue, and to calculate the corresponding unit selling price, total loss and total sales revenue

QUESTION 6

Kariakoo Ltd budgets to make 100,000 units of product XB. The variable cost per unit is 10,000. Fixed costs are Shs 600,000,000.

The finance director has suggested that the cost –plus approach should be used with a profit mark-up of 25%

However, the Marketing Director disagreed and has supplied the following information

Price per unit Shs	**Demand (unit)**
18,000	84,000
20,000	76,000
22,000	70,000
24,000	64,000
26,000	54,000

REQUIRED

As Management Accountant of the company analyse the above proposal

QUESTION 7

A company sells one of its products in the domestic market as well as in the export market. The relationship between price and demand in the different two markets are represented as under:

Domestic market (in Shs) = $136 – 8Q_1$

Export market (in Shs) = $228 – 20Q_2$

Q_1 and Q_2 represent the quantity of demand in thousand units in the domestic and export markets respectively

Unit variable cost (in Shs) is represented by $38 – Q$ where $Q = Q_1 + Q_2$

Calculate the optimum selling price and total contribution for sales in the

(i) Domestic market

(ii) Export market

QUESTION 8

You are the management Accountant of a successful medium sized chemical producing company which is well known in your industry for innovative approach to both the marketing and production functions

Recently, the chief chemists in your company have discovered a means of producing a new product which they feel is more effective than competing products. The president has requested you that in conjunction with the marketing and production specialists, prepare on the feasibility of successfully marketing this new product.

The production specialist have determined that the new product could be produced by either of the two processes having the following characteristics and costs functions

Process	Maximum capacity Required In litres	Initial investment Required Shs	Cost function Shs
A	28,000	300,000	90,000/yr + 7.75/litre
B	34,000	600,000	160,000/yr + 4.25/litre

After a thorough investigation, the marketing specialist has determined a demand function for the new product which is approximately linear over the range of 20,000 litres to 30,000 litres as describe below;

$P = 20 – 0.25Q$

Where P = price per litre and Q is the quantity demanded in thousands of litre

Your company has a cost of capital of 14%. This particular investment proposal is one of many attractive opportunities available to your company.

Required:

(a) Determine which production process and what level of production should be chosen in order to maximize return on original investment

(b) (i) Under what conditions is the pricing strategy implied by your choice of production alternative in part (a) above appropriate?

(ii) Discuss any other advantages and disadvantages associated with your choice in (i) above

QUESTION 9

BM Co makes various novelty items that are sold to wholesalers particularly in the toy trade. It has just decided to produce a new line, namely small umbrellas to decorate cocktails, which will be sold to various chains of cocktail bars and called a bar brolly.

It has provided you with the following information concerning the total cost of annual production and the prices at which that production could be sold:

Annual production and sales (per 100) (boxes of 100)	*Total cost* Shs 000	*Selling price* Shs
2,500	100.3	70.8
5,000	186.3	66.7
7,500	287.8	62.5
10,000	405.0	58.3
12,500	537.8	54.2
15,000	686.3	50.0
17,500	850.3	45.8

REQUIRED:

Determine the optimal selling price for bar brollies.

QUESTION 10

Hill Co has recently developed a new product, the Slade. Its parent company, Powell, requires that subsidiaries achieve of 16% a return on opening capital employed on all new investment.

Financial data regarding the development and production of the Slade is as follows:

The development of the product took three years and cost Shs 120,000. It is anticipated that demand for the product will be 4,000 units per annum and that it will last six years.

Investment in machinery will amount to Shs 200,000 and this will be scrapped at the end of the product's life for Shs 20,000. Incremental cash fixed costs will be Shs 40,000 per year and the unit variable cost of production is expected to be Shs 50.

REQUIRED:
Calculate a price which, based on the above data, will achieve the target ROCE of 16%.

QUESTION 11
A company manufactures a single product, product Y. It has documented levels of demand at certain selling prices for this product as follows:

Demand	*Selling price per unit*	*Cost per unit*
Units	Shs	Shs
1,100	48	22
1,200	46	21
1,300	45	20
1,400	42	19

Required:
Using a tabular approach calculates the marginal revenues and marginal costs for product Y at the different levels of demand, and so determine the selling price at which the company profits are maximised.

QUESTION 12
Albany has recently spent some time on researching and developing a new product for which they are trying to establish a suitable price. Previously they have used cost plus 20% to set the selling price.
The standard cost per unit has been estimated as follows:

	Shs	
Direct materials		
Material 1	10	(4 kg at Shs2·50/kg)
Material 2	7	(1 kg at Shs7/kg)
Direct labour	13	(2 hours at Shs6·50/hour)
Fixed overheads	7	(2 hours at Shs3·50/hour)
	37	

REQUIRED:

a) Using the standard costs calculate two different cost plus prices using two different bases and explain an advantage and disadvantage of each method.
b) Give two other possible pricing strategies that could be adopted and describe the impact of each one on the price of the product.