

## CONTEMPORARY MANAGEMENT ACCOUNTING

### Exercise 01

JMM is a car manufacturer. It is a relatively new company and the directors are keen to establish a reputation for high quality. The management of JMM recognises the need to establish a culture of Total Quality Management (TQM) at the company.

The management accounting team at JMM has collected the following actual information for the most recent quarter of the current year:

#### Cost data

	\$
Customer support centre cost per hour	58
Equipment testing cost per hour	30
Manufacturing rework cost per car	380
Warranty repair cost per car	2,600

#### Volume and activity data

Cars requiring manufacturing rework	800 cars
Cars requiring warranty repair	650 cars
Customer support centre time	500 hours
Production line equipment testing time	400 hours

#### Additional information

JMM undertook a quality review of its existing suppliers during the quarter at a cost of \$60,000.

Due to the quality issues in the quarter, the car production line experienced periods of unproductive 'down time' which cost \$375,000.

#### Required:

- Produce a Cost of Quality report for JMM using the four recognised quality cost headings. (6 marks)
- Explain how a Cost of Quality report would support the development of a TQM culture at JMM. (4 marks) (Total for Question Three = 10 marks) **September 2014 – CIMA**

### Exercise 02

LMN Ltd makes and sells two products, X and Y. Both products are manufactured through two consecutive processes - assembly and finishing. Raw material is input at the commencement of the assembly process.

The following estimated information is available for the period ending 31 December 20X5:

	Product X	Product Y
Production/sales (units)	12,000	7,200
Selling price per unit	\$75	\$90
Direct material cost per unit	\$20	\$20
Direct labour cost per unit		
- assembly	\$20	\$28
- finishing	\$12	\$24
Product-specific fixed costs	\$170,000	\$90,000
Company fixed costs =	\$50,000	

LMN Ltd uses a minimum contribution/sales (C/S) ratio target of 25% when assessing the viability of a product. In addition, management wish to achieve an overall net profit margin of 12% on sales in this period in order to meet return on capital targets.

#### Required:

Calculate the C/S ratio for each product and the overall net profit margin. Explain how target costing may be used in achieving the required returns.

### Exercise 03

JYT manufactures and sells a range of products. It is not dominant in the market in which it operates and, as a result, it has to accept the market price for each of its products. The company is keen to ensure that it continues to compete and earn satisfactory profit at each stage throughout a product's life cycle.

#### Required

**Explain** how JYT could use target costing AND kaizen costing to improve its future performance.

Your answer should include an explanation of the differences between target costing and kaizen costing. **(10 marks)**

### Exercise 04

The Swiss watchmaker Swatch reportedly used target costing in order to produce relatively low-cost, similar-looking plastic watches in a country with one of the world's highest hourly labour wage rates.

Suggest ways in which Swatch may have reduced their unit costs for each watch.

**Exercise 05**

SunX Limited is planning to introduce a smart bulb and the company expects the product to have a life cycle of 3 years. The following volumes and costs have been estimated.

	Year 1	Year 2	Year 3	Year 4
Units Manufactured and sold	30,000	80,000	40,000	
R&D Cost Rs.Mn	10.00			
Production cost per unit Rs.	50.00	45.00	40.00	
Warranty cost Rs.Mn	1.00	1.50	1.00	0.50
Dismantling cost Rs.Mn				2.00

**Exercise 06**

The following details relate to a new product that has finished development and is about to be launched.

	Development Finished	Launch 1 year	Growth 1 year	Maturity 1 year	Decline 1 year
Time period	Finished	1 year	1 year	1 year	1 year
R & D costs (\$ million)	20				
Marketing costs (\$ million)		5	4	3	0.9
Production cost per unit (\$)		1.00	0.90	0.80	0.90
Production volume (millions)		1	5	10	4

The launch price is proving a contentious issue between managers. The marketing manager is keen to start with a low price of around \$8 to gain new buyers and achieve target market share. The accountant is concerned that this does not cover costs during the launch phase and has produced the following schedule to support this:

<b>Launch phase:</b>		<b>\$ million</b>
Amortised R&D costs	(20 ÷ 4)	5.0
Marketing costs		5.0
Production costs	(1 million × \$1 per unit)	1.0
		11.0
<b>Total</b>		<b>11.0</b>
<b>Total production (units)</b>		<b>1 million</b>
<b>Cost per unit</b>		<b>\$11.00</b>

Prepare a revised cost per unit schedule looking at the whole lifecycle and comment on the implications of this cost with regards to the pricing of the product during the launch phase.

### Exercise 07

X Limited manufactures a product that requires 1.5 hours of machining. Machine time is a bottleneck resource, due to the limited number of machines available. There are 10 machines available, and each machine can be used for up to 40 hours per week.

The product is sold for \$85 per unit and the direct material cost per unit is \$42.50. Total factory costs are \$8,000 each week.

Calculate

- (a) the return per factory hour
- (b) the TPAR.

### Exercise 08

Justin Thyme manufactures four products, A, B, C and D. Details of sales prices, costs and resource requirements for each of the products are as follows.

<b>Rs.</b>	<b>Product A</b>	<b>Product B</b>	<b>Product C</b>	<b>Product D</b>
Sales price	280.00	160.00	240.00	560.00
Material cost	120.00	60.00	120.00	200.00
Direct labour cost	80.00	40.00	80.00	200.00
	<b>Minutes</b>	<b>Minutes</b>	<b>Minutes</b>	<b>Minutes</b>
Machine time per unit	5	2	3	6
Labour time per unit	2	1	2	5
	<b>Units</b>	<b>Units</b>	<b>Units</b>	<b>Units</b>
Weekly sales demand	2,000.00	2,000.00	2,000.00	2,000.00

Machine time is a bottleneck resource and the maximum capacity is 400 machine hours each week. Operating costs, including direct labour costs, are Rs.1,088,000 each week. Direct labour costs are Rs.2,400 per hour, and direct labour workers are paid for a 38-hour week, with no overtime.

**Required:**

(a) Determine the quantities of each product that should be manufactured and sold each week to maximize profit and calculate the weekly profit.

(b) Calculate the throughput accounting ratio at this profit-maximising level of output and sales.

**Question 01 - December 2015**

The Chemical Free Clean Co (C Co) provides a range of environmentally-friendly cleaning services to business customers, often providing a specific service to meet a client's needs. Its customers range from large offices and factories to specialist care wards at hospitals, where specialist cleaning equipment must be used and regulations adhered to. C Co offers both regular cleaning contracts and contracts for one-off jobs. For example, its latest client was a chain of restaurants which employed them to provide an extensive clean of all their business premises after an outbreak of food poisoning.

The cleaning market is very competitive, although there are only a small number of companies providing a chemical free service. C Co has always used cost-plus pricing to determine the prices which it charges to its customers but recently, the cost of the cleaning products C Co uses has increased. This has meant that C Co has had to increase its prices, resulting in the loss of several regular customers to competing service providers.

The finance director at C Co has heard about target costing and is considering whether it could be useful at C Co.

**Required:**

- (a) Briefly describe the main steps involved in deriving a target cost. (3 marks)
- (b) Explain any difficulties which may be encountered and any benefits which may arise when implementing target costing at C Co. (7 marks) (10 marks)

**Question 02 - December 2014**

Glam Co is a hairdressing salon which provides both ‘cuts’ and ‘treatments’ to clients. All cuts and treatments at the salon are carried out by one of the salon’s three senior stylists. The salon also has two salon assistants and two junior stylists.

Every customer attending the salon is first seen by a salon assistant, who washes their hair; next, by a senior stylist, who cuts or treats the hair depending on which service the customer wants; then finally, a junior stylist who dries their hair. The average length of time spent with each member of staff is as follows:

	Cut Hours	Treatment Hours
Assistant	0.1	0.3
Senior stylist	1	1.5
Junior stylist	0.5	0.5

The salon is open for eight hours each day for six days per week. It is only closed for two weeks each year. Staff salaries are \$40,000 each year for senior stylists, \$28,000 each year for junior stylists and \$12,000 each year for the assistants. The cost of cleaning products applied when washing the hair is \$0.60 per client. The cost of all additional products applied during a ‘treatment’ is \$7.40 per client. Other salon costs (excluding labour and raw materials) amount to \$106,400 each year.

Glam Co charges \$60 for each cut and \$110 for each treatment. The senior stylists’ time has been correctly identified as the bottleneck activity.

**Required:**

- Briefly explain why the senior stylists’ time has been described as the ‘bottleneck activity’, supporting your answer with calculations. (4 marks)
  - Calculate the throughput accounting ratio (TPAR) for ‘cuts’ and the TPAR for ‘treatments’ assuming the bottleneck activity is fully utilised. (6 marks)
- (10 marks)

**Question 03 - June 2014**

Duff Co manufactures three products, X, Y and Z. Demand for products X and Y is relatively elastic whilst demand for product Z is relatively inelastic. Each product uses the same materials and the same type of direct labour but in different quantities. For many years, the company has been using full absorption costing and absorbing overheads on the basis of direct labour hours. Selling prices are then determined using cost plus pricing. This is common within this industry, with most competitors applying a standard mark-up.

Budgeted production and sales volumes for X, Y and Z for the next year are 20,000 units, 16,000 units and 22,000 units respectively.

The budgeted direct costs of the three products are shown below:

Product	X	Y	Z
	\$ per unit	\$ per unit	\$ per unit
Direct materials	25	28	22
Direct labour (\$12 per hour)	30	36	24

In the next year, Duff Co also expects to incur indirect production costs of \$1,377,400, which are analysed as follows:

Cost pools	\$	Cost drivers
Machine set up costs	280,000	Number of batches
Material ordering costs	316,000	Number of purchase orders
Machine running costs	420,000	Number of machine hours
General facility costs	361,400	Number of machine hours
	<u>1,377,400</u>	

The following additional data relate to each product:

Product	X	Y	Z
Batch size (units)	500	800	400
No of purchase orders per batch	4	5	4
Machine hours per unit	1.5	1.25	1.4

Duff Co wants to boost sales revenue in order to increase profits but its capacity to do this is limited because of its use of cost plus pricing and the application of the standard mark-up. The finance director has suggested using activity based costing (ABC) instead of full absorption costing, since this will alter the cost of the products and may therefore enable a different price to be charged.

**Required:**

- Calculate the budgeted full production cost per unit of each product using Duff Co's current method of absorption costing. All workings should be to two decimal places. (3 marks)
- Calculate the budgeted full production cost per unit of each product using activity based costing. All workings should be to two decimal places. (11 marks)
- Discuss the impact on the selling prices and the sales volumes OF EACH PRODUCT which a change to activity based costing would be expected to bring about. (6 marks) (20 marks)

**Question 04 - BMA June 2017**

Bot Neck (Pvt) Ltd (BNL) produces three products, B, N and L, for which three different processes are available. The following information has been estimated for the upcoming production cycle of the three products.

	<b>B</b>	<b>N</b>	<b>L</b>
Selling price per unit (Rs.)	180	150	90
Material cost per unit (Rs.)	60	50	30
Variable overhead cost per unit (Rs.)	8	10	9
Process time required per unit (minutes):			
Process X	12	4	2
Process Y	18	6	3
Process Z	6	2	1

Original estimates of production/sales/demand for each product are 200 units. Process capacity of each process is 3,200 minutes. The total fixed factory overhead cost is Rs. 33,000. BNL has been developing an optimum production plan based on 'contribution per bottleneck resource unit'. The new senior business accountant has suggested applying throughput accounting (TA) principles to develop the optimum production plan for the next production cycle. He has proposed for product ranking to be done based on the throughput accounting ratio (TAR), which is determined according to the model given below.

TAR = Return per factory minute / Cost per factory minute, where

Return per factory minute = (Sales price - material cost) / Key process minutes per unit

Cost per factory minute = Total factory overhead cost / Total time available on key process

**Required:**

Prepare notes to the management committee on the following:

- (i) Explanation as to how the concept of contribution in marginal costing differs from that of throughput accounting. (2 marks)
  - (ii) Optimum production plan per limiting factor approach using marginal costing. (3 marks)
  - (iii) Optimum production plan per throughput accounting approach. (5 marks)
- (Total: 10 marks)



**Question 05 - BMA December 2015**

Restless Foods (RF) manufactures two products Pops and Oats, each of which passes through a common series of automated processes. The following information has been extracted from the production/sales plan for the next month.

	Pops	Oats
Direct material cost per unit (Rs.)	30	600
Production overhead cost per unit (Rs.)	420	60
Total process time per unit (minutes)	15	9
Drying process time per unit (minutes)	1.2	0.9
Production / Sales (units)	120,000	45,000
Selling price per unit (Rs.)	900	1,050
Maximum demand (units)	144,000	54,000

Drying process, which is one process of the series of processes, has a maximum capacity of 3,075 hours during the next month.

Production overhead costs are considered variable and per unit costs are estimated based on the overhead cost for the month and the planned production mix assuming 100% capacity utilization.

**Required:**

- (a) Considering the drying process as a bottleneck and based on Marginal Costing Principle calculate the product mix that will maximize the profit for the next month. (2 marks)
- (b) Considering the drying process as a bottleneck and based on Throughput Accounting Principle calculate the product mix that will maximize the profit for the next month. (2 marks)
- (c) Calculate throughput accounting ratios for the two products. (3 marks)
- (d) Demonstrate how profitability can be improved through throughput accounting ratio. (3 marks) (Total: 10 marks)

**Question 06**

MN Llc manufactures automated industrial trolleys, known as TRLs. Each TRL sells for Rs. 2,000 and the material cost per unit is Rs. 600. Labour and variable overhead are Rs. 5,500 and Rs. 8,000 per week respectively. Fixed production costs are Rs. 450,000 per annum and marketing and administrative costs are Rs. 265,000 per annum.

The trolleys are made on three different machines. Machine X makes the four frame panels required for each TRL. Its maximum output is 180 frame panels per week. Machine X is old and unreliable and it breaks down from time to time – it is estimated that, on average, between 15 and 20 hours of production are lost per month. Machine Y can manufacture parts for 52 TRLs per week and machine Z, which is old but reasonably reliable, can process and assemble 30 TRLs per week.

The company has recently introduced a just-in-time (JIT) system and it is company policy to hold little work-in-progress and no finished goods stock from week to week. The company operates a 40-hour week, 48 weeks a year (12 months ÷ 4 weeks) but cannot meet demand. The demand for the next year is predicted to be as follows and this is expected to be typical of the demand for the next four years.

	Units per week		Units per week
January	30.00	July	48
February	30.00	August	45.00
March	33.00	September	42.00
April	36.00	October	40.00
May	39.00	November	33.00
June	44.00	December	30.00

The production manager has suggested that the company replaces machine Z with machine G which can process 45 TRLs per week. The maintenance manager is keen to spend Rs. 100,000 on a major overhaul of machine X as he says this will make it 100% reliable.

**Required**

- (1) **Calculate** the throughput accounting ratio (defined below) for the key resource for an average hour next year. **(5 marks)**
- (2) Briefly **describe** the uses to which advocates of throughput accounting suggest that the ratio be put. **(4 marks)**
- (3) **Recommend** two other ratios which may be used by a company operating throughput accounting and explain the use to which they may be put. **(5 marks)**
- (4) **Explain** how the concept of contribution in throughput accounting differs from that in marginal costing. **(6 marks)**