ANSWERS

CHAPTER 1 (Introduction to Management Accounting)

Work Them Out

1. C	2. C	3. B	4. B	5. D	6. A	7. A	8. A	9. A	10. D

Short Questions

1. Resources like materials and labour are scarce and costly. Cost accounting measures these resources and management accounting analyses the data, determines the cost behaviour and makes decisions on the reallocation and efficient use of the resources.

2.
   - Prices of products
   - The number of products to produce
   - The number of people to hire
   - Cost of a particular product
   - Whether it is wise to open or close a particular retail branch
   - Whether the expense incurred by a department exceeds the original planned amount
   - Whether the revenue generated by a product meets the original planned amount
   - Expected profit for the following year

Long Question

1.

Financial Accounting	Management Accounting
Provide information to external users	Provide information to internal users
Mandatory reporting	Optional reporting
Based on entire business	Based on segment
Follow accounting standards	No need to follow accounting standards

Cost accounting provides cost information of goods for the management to make business decisions.

CHAPTER 2 (Cost Classification, Concepts and Terminology)

Work Them Out

1. A	2. B	3. B	4. C	5. D	6. D	7. D	8. C	9. A	10. B

Short Questions

1. Avoidable costs may be saved upon choice but unavoidable costs may not. During low seasons, the management in a restaurant may hire fewer part-time staff or switch off the air-conditioning in some areas. In these circumstances, the labour cost and electricity cost are avoidable. During hot summer months, air-conditioning is an unavoidable cost in the restaurant business.

   Avoidable costs are relevant when making a decision on whether to accept an order. For example, when the expected income of a proposed order cannot cover the processing cost, the cost is relevant if it is avoidable; it saves money if not accepting the order. However, if the cost is unavoidable, it becomes not relevant for decision because it has already been incurred.

   Unavoidable costs are more common when they play the role of sunk costs. Sunk costs have already been established by a past decision. If the decision remains valid, the costs become unavoidable and irrelevant to a present decision. For example, the rental cost that has already been agreed on and paid is a sunk cost. If a shop decides to reduce the floor area, the same rental cost is incurred.

2.

(a)	Manufacturing overheads	product cost, e.g. indirect cost of wages to inventory store
(b)	Selling expenses	period cost, e.g. advertising cost with no certainty of effect
(c)	Administrative expenses	period cost, e.g. salary of financial accountant who deals with the whole company
(d)	Direct labour	product cost, e.g. wages of assembly line worker
(e)	Direct material	product cost, e.g. paper for book printing

Long Questions

1.
(a) Total fixed costs remain constant.
(b) Total variable costs will increase.
(c) Unit fixed costs will decrease.
(d) Unit variable costs will remain constant.

2. Variable cost = $12 x 860 = $10,320
Fixed costs $4,300
Total costs $14,620
Average costs = $14,620 / 860 = $17

CHAPTER 3 (Costing for Materials)

Work Them Out

1. B	2. D	3. A	4. D	5. B	6. B	7. C	8. B	9. C	10. B

Short Questions

1.
(a) EOQ = (Square root of) √ {(2 x (104,000/25) x $94.50) / ($5 x 25 x 15%)} = 204.8
(b) Reorder point = 104,000/25 x 7/365 days = 79.8 packs

2.

FIFO

		Receipts			Issues			Balance	
Date	Units	Cost Per Unit	Value	Units	Cost Per Unit	Value	Units	Cost Per Unit	Value
		$	$		$	$		$	$
Begin	50	150	7,500				50	150	7,500
31 Mar	50	155	7,750				50	150	7,500
							50	155	7,750
Q1				50	150	7,500			
				10	155	1,550	40	155	6,200
30 Jun	55	160	8,800				40	155	6,200
							55	160	8,800
Q2				40	155	6,200			
				30	160	4,800	25	160	4,000
30 Sep	60	170	10,200				25	160	4,000
							60	170	10,200
Q3				25	160	4,000			
				30	170	5,100	30	170	5,100
15 Dec	55	175	9,625				30	170	5,100
							55	175	9,625
Q4				30	170	5,100			
				30	175	5,250	25	175	4,375
					Cost of goods issued	**$39,500**		**End. Inv.**	**$4,375**

LIFO

		Receipts			Issues			Balance	
Date	Units	Cost Per Unit	Value	Units	Cost Per Unit	Value	Units	Cost Per Unit	Value
		$	$		$	$		$	$
Begin	50	150	7,500				50	150	7,500
31 Mar	50	155	7,750				50	150	7,500
							50	155	7,750
Q1				50	155	7,750			
				10	150	1,500	40	150	6,000
30 Jun	55	160	8,800				40	150	6,000
							55	160	8,800
Q2				55	160	8,800			
				15	150	2,250	25	150	3,750
30 Sep	60	170	10,200				25	150	3,750
							60	170	10,200
Q3				55	170	9,350	25	150	3,750
							5	170	850
15 Dec	55	175	9,625				25	150	3,750

							5	170	850
							55	175	9,625
Q4				55	175	9,625			
				5	170	850	25	150	3,750
				Cost of goods issued		**$40,125**		**End. Inv.**	**$3,750**

Weighted average

	Receipts			Issues			Balance		
Date	Units	Cost Per Unit	Value	Units	Cost Per Unit	Value	Units	Cost Per Unit	Value
		$	$		$	$		$	$
Begin	50	150	7,500				50	150	7,500
31 Mar	50	155	7,750				100	152.50	15,250
Q1				60	152.50	9,150	40	152.50	6,100
30 Jun	55	160	8,800				95	156.84	14,900
Q2				70	156.84	10,979	25	156.84	3,921
30 Sep	60	170	10,200				85	166.13	14,121
Q3				55	166.13	9,137	30	166.13	4,984
15 Dec	55	175	9,625				85	171.87	14,609
Q4				60	171.87	10,312	25	171.87	4,297
				Cost of goods issued		**$39,578**		**End. Inv.**	**$4,297**

Long Questions

1.

(a) (i) FIFO:

	Receipts			Issues			Balance		
Date	Units	Cost Per Unit	Value	Units	Cost Per Unit	Value	Units	Cost Per Unit	Value
		$	$		$	$		$	$
July	850	5	4,250	400	5	2,000	450	5	2,250
August				300	5	1,500	150	5	750
September	600	6	3,600				150	5	750
							600	6	3,600
October				150	5	750			
				250	6	1,500	350	6	2,100
November	200	7	1,400				350	6	2,100
							200	7	1,400
December				200	6	1,200	150	6	900
							200	7	1,400
			9,250			6,950			

(ii) LIFO:

	Receipts			Issues			Balance		
Date	Units	Cost Per Unit	Value	Units	Cost Per Unit	Value	Units	Cost Per Unit	Value
		$	$		$	$		$	$
July	850	5	4,250	400	5	2,000	450	5	2,250
August				300	5	1,500	150	5	750
September	600	6	3,600				150	5	750
							600	6	3,600
October				400	6	2,400	150	5	750
							200	6	1,200
November	200	7	1,400				150	5	750
							200	6	1,200
							200	7	1,400
December				200	7	1,400	150	5	750
							200	6	1,200
			9,250			7,300			

(iii) Weighted average:

Date	Receipts Units	Receipts Cost Per Unit	Receipts Value	Issues Units	Issues Cost Per Unit	Issues Value	Balance Units	Balance Cost Per Unit	Balance Value
		$	$		$	$		$	$
July	850	5	4,250	400	5	2,000	450	5	2,250
August				300	5	1,500	150	5	750
September	600	6	3,600				750	5.80	4,350
October				400	5.80	2,320	350	5.80	2,030
November	200	7	1,400				550	6.24	3,430
December				200	6.24	1,248	350	6.24	2,182
			9,250			7,068			

(b) FIFO:

Sales	**$**
July	3,200
August	2,700
September	0
October	4,200
November	0
December	2,400
	12,500
Less: COGS	6,950
Gross profit	5,550

LIFO:

Sales	**$**
July	3,200
August	2,700
September	0
October	4,200
November	0
December	2,400
	12,500
Less: COGS	7,300
Gross profit	5,200

Weighted average:

Sales	**$**
July	3,200
August	2,700
September	0
October	4,200
November	0
December	2,400
	12,500
Less: COGS	7,068
Gross profit	5,432

2.

(a) (i) Annual costs of ordering and carrying inventory:

(1) Order Quantity (Units)	**(2) No. Of Orders Per Year**	**(3) Annual Ordering Costs ($)**	**(4) = (1) / 2 Average Inventory (Units)**	**(5) = (4) × $2 Annual Carrying Costs ($)**	**(6) = (3) + (5) Total ($)**
5,000	100	20,000	2,500	5,000	25,000
10,000	50	10,000	5,000	10,000	20,000
50,000	10	2,000	25,000	50,000	52,000
100,000	5	1,000	50,000	100,000	101,000

Based on the calculations on the previous page, the best order quantity is 10,000 units per order, in which the total annual costs of ordering and carrying inventory is the lowest.

(ii) Economic order quantity (EOQ):

$$\sqrt{\frac{2 \times 500{,}000 \times \$50}{\$20 \times 10\%}}$$

= 5,000 units

(b) Cost of goods sold and closing inventory:

Method	Cost Of Goods Sold	Closing Inventory
FIFO	4,000 × \$8 = \$32,000	2,000 × \$10 = \$20,000
	6,000 × \$10 = \$60,000	3,000 × \$12 = \$36,000
	\$92,000	\$56,000
LIFO	2,000 × \$8 = \$16,000	2,000 × \$8 = \$16,000
	8,000 × \$10 = \$80,000	3,000 × \$12 = \$36,000
	\$96,000	\$52,000
Weighted average cost	10,000 × \$9.3333 = \$93,333	2,000 × \$9.3333 = \$18,667
	(4,000 × \$8 + 8,000 × \$10) / 12,000 = \$9.3333	3,000 × \$12 = \$36,000
		\$54,667

CHAPTER 4 (Costing for Labour)

Work Them Out

1. B	2. D	3. C	4. B	5. C	6. D	7. A	8. C	9. B	10. A

Short Questions

1. Characteristics of a good incentive scheme:
   - fair
   - easy to understand
   - flexible
   - low implementation expense
   - acceptance by both workers and employers
   - staff satisfaction
   - compliance with legal requirements and trade agreements
   - stability (not changed frequently)

2.

Remuneration	Advantages	Disadvantages
Time basis	Simple to manage and avoids arguments	No incentive for efficient workers
	Attention on quality of output	Higher cost of production when more than average time is spent
	Meeting the needs of special job orders	
Piece work basis	Incentive and fair remuneration to efficient workers and overall efficiency will improve	Quality may decline, resulting in cost of rectification
	No payment for idle time	Over workload may cause illness and accidents at work

3.

(a) Wages per day for 800 units = \$200
Bonus for extra output (1,000 – 800) x (20 / 100) = \$40
Total wages = \$240

(b) Piece work for 1,000 units (1,000 / 800 x 200) = \$250

Long Questions

1.

(a) Labour turnover is defined as the ratio of the number of workers leaving an organisation during a period as related to the number of workers employed.

Labour turnover ratio:

$$\frac{\text{No. of workers who leave and require replacement during a period}}{\text{Average number of workers employed during the same period}} \times 100\%$$

(b) Prevention costs are those costs that on being incurred can prevent the workers from leaving.

Cost of providing:
(i) better fringe benefits
(ii) better wage rate
(iii) better working conditions and safety measures
(iv) promotion and training

(c) Replacement costs refer to the costs that have to be incurred in connection with replacing workers who have left.

Cost of:
(i) recruitment and training of new workers
(ii) production rejection due to new workers' lack of experience
(iii) repair of production equipment damaged
(iv) compensation for workers because of accidents

2.
(a)

	Billy	**George**
Time allowed (hour), (1,440 / 12) x (30 / 60); (960 / 12) x 1	60	80
Time taken (hour)	54	60
Bonus hour	6	20
Bonus earned (6 x 40) x (2/3); (20 x 60) x (2/3)	$160	$800

(b)

	Billy	**George**
Basic wages (54 x 40); (60 x 60)	$2,160	$3,600
Overtime premium (54 – 48) x 40 x (1/3); (6 x 60 x 1/3) + (6 x 60 x 1/2)	$80	$300
Bonus earned	$160	$800
Gross wages	$2,400	$4,700

(c) Wages cost per dozen:

Billy: 2,400 / (1,440 – 400) x 12 = $27.69
George: 4,700 / (960 – 50) x 12 = $61.98

CHAPTER 5 (Overhead Costs)

Work Them Out

1. C*	2. B*	3. A*	4. C*	5. D	6. B	7. A	8. B	9. A	10. C

* Working: 1: 18 + 10 + 4 = 32
2: (18 + 10 + 4) + (264,000 / 8,800) = 62

3: 8,700 x (78 – 32 – 5) = 356,700; 356,700 – 255,200 – 87,000 = 14,500
4: (8,800 – 8,700) x 62 = 6,200; 14,500 + 100 x (62 – 32) = 17,500

Short Questions

1. Production overheads are absorbed on a labour hour basis:

Total labour hours in the period:

	Hours
Product X ($30 / $20 x 120)	180
Product Y ($20 / $20 x 180)	180
Product Z ($40 / $20 x 210)	420
	780

Production overhead absorption rate:

$(20,740 + 5,950 + 9,000 + 11,110) / 780 = $60 per labour hour

Unit selling price:

	X	Y	Z
Per unit:	$	$	$
Direct materials	28	48	16
Direct labour	30	20	40
Prime costs	58	68	56
Production overheads ($60 per labour hour)	90	60	120
Production costs	148	128	176
Mark-up (20%)	29.60	25.60	35.20
Selling price	177.60	153.60	211.20

2. Production overhead absorption rate:

$(560,000 + 600,000 + 50,000 + 70,000) / (6,000 + 2,000) = $160 per machine hour

Using machine hours as absorption basis:

	P1	P2
Per unit:	$	$
Direct costs	220	200
Production overheads		
$160 x (6,000 / 2,000)	480	
$160 x (2,000 / 2,500)		128
Production cost	700	328

Long Questions

1.

(a) Budgeted overhead absorption rates:

	Basis Of Apportionment	Production Cost Centres Cutting	Assembly	Service Cost Centres Stores	Maintenance	Total
		$'000	$'000	$'000	$'000	$'000
Indirect material		1,000	800	400	600	2,800
Indirect labour		200	1,300	300	500	2,300
Electricity		552	188	140	120	1,000
Factory rent and rates	Floor area	600	650	200	50	1,500
Machine insurance	Gross book value of machine	250	200	20	30	500
Staff welfare	Number of employees	300	800	40	60	1,200
		2,902	3,938	1,100	1,360	9,300
Apportion maintenance		816	408	136	(1,360)	
				1,236		
Apportion stores		618	371	(1,236)	247	
Apportion maintenance		148	74	25	(247)	
Apportion stores		13	7	(25)	5	
Apportion maintenance		3	2	0	(5)	
Budgeted overhead		4,500	4,800	0	0	
÷ Machine hours		600,000				
÷ Direct labour hours			800,000			
Budgeted overhead rates		$7.50 per machine hour	$6 per direct labour hour			

(b) Quoted price:

	$
Direct materials	330,000
Direct labour	240,000
Production overhead:	
Cutting cost centre ($7.50 x 60,000)	450,000
Assembly cost centre ($6 x 30,000)	180,000
Production costs	1,200,000
Profit margin (25%)	400,000
Quoted price (100%)	1,600,000

(c) Under- or over-absorption of overheads:

	Cutting	Assembly
Overheads absorbed	$7.5 x 500,000 = $3,750,000	$6 x 900,000 = $5,400,000
Overheads incurred	$3,500,000	$5,600,000
Over/(Under)-absorption	$250,000	($200,000)

2.

(a) (i) Using absorption costing system:

Budgeted operating statement for the year ended 31 December

	2010	2011
	$'000	$'000
Sales (40,000 x 400; 70,000 x 400)	16,000	28,000
Less: Production costs of sales		
Opening inventory	–	2,200
Add: Variable production costs (W1)	10,000	12,000
Fixed production overhead costs (1,000 = 50,000 x 20)	1,000	1,200
	11,000	15,400
Less: Closing inventory [(50,000 – 40,000) x (200 + 20)]	2,200	–
	8,800	15,400
Under/(Over)-absorbed fixed production costs (80 = 4,000 x 20)	80	(120)
	8,880	15,280
Gross profit	7,120	12,720
Less: Variable non-production overhead costs (W2)	400	700
Fixed non-production overhead costs	2,000	2,000
	2,400	2,700
Net profit	4,720	10,020

(ii) Using marginal costing system:

Budgeted operating statement for the year ended 31 December

	2010	2011
	$'000	$'000
Sales	16,000	28,000
Less: Variable production costs of sales		
Opening inventory	–	2,000
Add: Variable production costs (W1)	10,000	12,000
	10,000	14,000
Less: Closing inventory [(50,000 – 40,000) x 200]	2,000	–
	8,000	14,000
Variable non-production overhead costs (W2)	400	700
	8,400	14,700
Contribution	7,600	13,300
Less: Fixed production overhead costs	1,080	1,080
Fixed non-production overhead costs	2,000	2,000
	3,080	3,080
Net profit	4,520	10,220

Working:

(W1) 2010: $(50 + 120 + 30) x 50,000 = $10,000,000
2011: $(50 + 120 + 30) x 60,000 = $12,000,000

(W2) 2010: $10 x 40,000 = $400,000
2011: $10 x 70,000 = $700,000

(b) Reconciliation of the budgeted profits for 2010 and 2011:

	2010	2011
	$'000	$'000
Absorption costing profit	4,720	10,020
2010: Adjust for fixed overheads in inventory (10,000 units x $20)	(200)	–
2011: Adjust for fixed overheads in inventory (10,000 units x $20)	–	200
Marginal costing profit	4,520	10,220

(c) Over-absorption means that the overheads charged to the cost of sales are greater than the overheads actually incurred. Under-absorption means the overheads charged to the cost of sales are less than overheads actually incurred.

Over/under-absorption of overheads will occur in the following situations:
(i) actual overheads incurred are different from budgeted overheads, and/or
(ii) actual production level is different from the budgeted production level

CHAPTER 6 (Standard Costing)

Work Them Out

1. D	2. B	3. B	4. D*	5. B*	6. B	7. B	8. A*	9. D*	10. A*

* Working: 4: (50 – 55) x 22,000 = 110,000 U
5: [19,000 – (2 x 10,000)] x 50 = 50,000 F
8: [8 – (41,000/5,000)] x 5,000 = 1,000 A; [6 – (17,600/3,200)] x 3,200 = 1,600 F
9: [5,000 – (5,000 + 3,200) x 0.7] x 8 = 5,920 F; [3,200 – (5,000 + 3,200) x 0.3] x 6 = 4,440 A
10: [(7 x 800) – (5,000 + 3,200) x 0.7] x 8 = 1,120 F; [(3 x 800) – (5,000 + 3,200) x 0.3] x 6 = 360 F

Short Questions

1. Use of lower grade labour of lesser pay favourable to labour rate variance but
• unfavourable to labour efficiency variance because of less skilful workers
• unfavourable to material usage variance because of wastage

Use of higher grade labour of more pay unfavourable to labour rate variance but
• favourable to labour efficiency variance because of smooth operation
• favourable to material usage variance because of reduced wastage

2. Use of material that is of higher quality but more expensive to substitute the other causes an unfavourable variance because it increases the cost of the standard mix — adverse direct material mix variance.

Use of better quality material will reduce wastage and improve yield of material — favourable material yield variance.

The net effect is equivalent to that of the material usage variance, and the two subdivided variances explain the background.

Long Questions

1.

(a) (i) Direct material used, in kg = 10,000 x 20 + 4,000 (materials usage variance) = 204,000kg

(ii) Direct material purchased, in kg = (204,000 + 1,000)kg = 205,000kg

(iii) Direct material purchased, in dollars = (204,000 + 1,000) x $5 + $51,250 = $1,076,250

(iv) Actual average material cost per kg = $1,076,250 / 205,000kg = $5.25/kg

(v) Actual direct manufacturing cost, in dollars
= $300,000 + $30,000 (labour efficiency variance) – $33,000 (labour rate variance) + 204,000 x $5.25 + $290,000 + $420,000
= $2,078,000

(vi) Direct manufacturing labour hours = 10,000 hours + 1,000 (efficiency variance) = 11,000 hours

(vii) Actual variable overhead, in dollars
= $400,000 (flexible budget amount) + 40,000 (variable overhead efficiency variance) – 20,000 (variable overhead spending variance)
= $420,000

(viii) Actual machine hours used = $40,000 / $20 + 20,000 = 22,000 hours

(ix) Actual fixed manufacturing overhead, in dollars = $300,000 – $10,000 = $290,000

(b) The budgetary control system comprises the following procedures:
• assignment of control responsibility, preparation of budgets
• collection of actual performance
• comparison of actual performance against budgets
• analysis of variances
• communication of results to responsible managers
• corrective actions and/or revision of budgets

2.
(a) Operating statement for the month ended 31 March 2008:

	Budget	Actual	Variance	
Number of units sold	23,000	23,000	0	
	$	$	$	
Sales	230,000	225,400	4,600	A
Cost of goods sold:				
Direct materials	80,500	82,830	2,330	A
Direct labour	46,000	41,250	4,750	F
Production overheads — fixed	20,000	23,000	3,000	A
— variable	18,400	16,000	2,400	F
	164,900	163,080	1,820	F
Gross profit	65,100	62,320	2,780	A
Selling overheads — fixed	15,000	14,000	1,000	F
— variable	25,300	26,000	700	A
	40,300	40,000	300	F
Net profit	24,800	22,320	2,480	A

(b) Material price variance: (SP – AP) x AQ = {[$70,000 / (3.5 x 20,000)] – $1.1} x $82,830 / $1.1 = $7,530 A
Material usage variance: (SQ – AQ) x SP = (3.5 x 23,000 – $82,830 / $1.1) x $70,000 / (3.5 x 20,000) = $5,200 F
Labour rate variance: (SR – AR) x AH = ($50 – $55) x $41,250 / $55 = $3,750 A
Labour efficiency variance: (SH – AH) x SR = [($46,000 / $50) – ($41,250 / $55)] x $50 = $8,500 F

(c) Possible reasons for adverse material price variance:
• increase in the purchase price of material
• inefficient purchasing function
• use of better quality material than the standard

Possible reasons for favourable material usage variance:
• reducing wastage by using better quality material than the standard
• more effective use of materials by labour
• use of better quality material for jobs

CHAPTER 7 (Job Costing)

Work Them Out

1. C	2. B	3. C	4. B*	5. B*	6. D	7. B	8. D	9. D	10. C

* Working: 4: (2 x 325,000) – 620,000 = 30,000
5: 50,000 x 1.1 = 55,000

Short Questions

1.

(a)

Manufacturing Overhead Control a/c

Indirect costs incurred	59,800	Transfer to work in progress J111 [52,000 x 80%]	41,600
Indirect materials	3,000	Transfer to work in progress J112 [26,000 x 80%]	20,800
Indirect labour	2,000	Under-absorption	2,400
	64,800		64,800

The manufacturing overhead is under-absorbed as it has a debit balance of $2,400, i.e. the amount incurred is more than the amount absorbed. The balance shall be written off as a separate item under cost of goods sold in the profit and loss account for the period.

(b)

Work In Progress — J112

Direct materials	21,000	Carried forward	67,800
Direct labour	26,000		
Manufacturing overhead	20,800		
	67,800		67,800

The value of closing WIP carried forward is understated because of the under-absorption of overhead costs.

2.
- The cost input of each job is order-specific and may differ from one to another.
- Costs (direct and indirect) accumulate when a job is processed.
- Costs accumulated in accounts will remain as work in progress until completion of a job.
- The cost of final product of each job is calculated individually.

Long Questions

1.

(a)

	Job R092	Job N090	Job N093
Material	$	$	$
Opening balance	10,000		44,000
MR336	40,000		
MR338		91,000	
MR339			35,000
MT024	(6,000)		6,000
MN017		(5,000)	
	44,000	86,000	85,000
Labour cost			
Opening cost	16,800		22,800
Designers	3,000	7,200	4,500
Engineers	2,240	4,480	5,600
Supervisors	6,000	2,000	12,000
Workers	14,280	12,600	19,600
	42,320	26,280	64,500
Overheads (60% labour)	25,392	15,768	38,700
Total cost	111,712	128,048	188,200
Prices quoted	130,000	140,000	170,000
Profit	18,288	11,952	(18,200)

(b) Examples for non-manufacturing businesses that use job-order costing include consultancy services, garages and advertising services.

2.

	Job I	Job II	Job III	Job IV	Total
Material	10,000	9,000	8,000	6,000	33,000
Material returned	(1,500)	(700)			(2,200)
Material transferred out	(1,000)			(800)	(1,800)
Material transferred in	800	1,000			1,800
	8,300	9,300	8,000	5,200	30,800
Labour	9,000	6,000	5,000	4,000	
Production overhead	14,400	9,600	8,000	6,400	
Production cost	31,700	24,900	21,000	15,600	

Other overhead (65% production cost)	20,605	16,185	13,650	
Total cost	52,305	41,085	34,650	
Sales	50,000	48,000	55,000	
Profit	(2,305)	6,915	20,350	24,960

CHAPTER 8 (Process Costing)

Work Them Out

1. B	2. D*	3. B*	4. C*	5. B*	6. D*	7. C*	8. A	9. D	10. C

* Working: 2: 100 + 2,800 – 80 + 100 = 2,920
3: 1,200 + 3,000 – 80 – 800 =3,320
4: $100,000 + $25,000 = $125,000
5: 5,000 x ($18 – $2) and 8,000 x ($22 – $3)
6: (5,000 x 90%) x ($39 – $6) = $148,500
7: [(8,000 x 90%) x ($43 – $8)] – (8,000 x 90% x 2% x 43) = $245,808

Short Questions

1.

(a) Physical unit method

	M	N	X
Quantity (units)	161,000	130,000	80,000
%	43.40%	35.04%	21.56%
Share of joint cost ($)	1,388,800	1,121,280	689,920
Further processing cost ($)	250,000	300,000	500,000
Total cost ($)	1,638,800	1,421,280	1,189,920
Unit product cost ($)	10.18	10.93	14.87

(b) Sales value method (at split-off point)

	M	N	X
Quantity (units)	161,000	130,000	80,000
Selling price at split-off point ($)	12	14	10
Sales revenue at split-off point ($)	1,932,000	1,820,000	800,000
%	42.44%	39.98%	17.58%
Share of joint cost ($)	1,358,080	1,279,360	562,560
Further processing cost ($)	250,000	300,000	500,000
Total cost ($)	1,608,080	1,579,360	1,062,560
Unit product cost ($)	9.99	12.15	13.28

(c) Net realisable value method

	M	N	X
Quantity (units)	161,000	130,000	80,000
Selling price (after further processing) ($)	25	18	20
Sales revenue ($)	4,025,000	2,340,000	1,600,000
Further processing cost ($)	250,000	300,000	500,000
Net realisable value ($)	3,775,000	2,040,000	1,100,000
%	54.59%	29.50%	15.91%
Share of joint cost ($)	1,746,880	944,000	509,120
Further processing cost ($)	250,000	300,000	500,000
Total cost ($)	1,996,880	1,244,000	1,009,120
Unit product cost ($)	12.40	9.57	12.61

2. *Total costs in calculation of unit cost*

The total production costs used in weighted average method comprise opening WIP cost, material input and conversion input costs during the period.

The total production costs in first-in-first-out (FIFO) method comprise materials and conversion inputs during the period. This method does not include the opening WIP cost in the calculation of unit cost but assigns it separately to completed units.

Equivalent units
The main difference between the weighted average method and the FIFO method is in the calculation of equivalent units done. FIFO counts the work done on the incomplete portion of opening WIP and as the first work done in the process. It expresses the work done on opening WIP in terms of equivalent units.

The weighted average method does not count the outstanding work on the opening WIP in the calculation of equivalent units because the method assumes that it is not separable from input during the period once the process has started.

3. In process costing, products need to go through a number of processes before completion, and WIP may exist in each process. *Equivalent units* are used in process costing to measure WIP in terms of equal quantity of whole units of complete work. Each component of input (materials, labour and production overheads) can be expressed in equivalent units based on their different degrees of completion in WIP. Unit cost of production for each component of input (total cost divided by respective equivalent unit) can be calculated and used to value WIP and completed output. It forms the basis of process costing because cost of output of each process is calculated and accumulated to arrive at the value of finished goods.

Long Questions

1. Calculation of equivalent unit and cost per equivalent unit:

Second Process

	Materials Input	**Materials Added**	**Labour And Overheads**
Completed units (kg) transferred to Third Process	25,000	25,000	25,000
Closing work in process (W1)	4,000	2,400	1,600
Abnormal gain (W2)	(500)	(500)	(500)
Equivalent units	28,500	26,900	26,100
Costs (W3)	$171,000	$134,500	$78,300
Cost per equivalent unit	$6	$5	$3

Third Process

	Materials Input	**Materials Added**	**Labour And Overheads**
Completed units (kg) transferred to finished goods	24,000	24,000	24,000
Closing work in process (W7)	1,000	700	300
Abnormal loss (W8)	1,000	1,000	1,000
Equivalent units	26,000	25,700	25,300
Costs incurred in the period	$350,000	$144,200	$118,500
Costs of opening work in process	$40,000	$10,000	$8,000
	$390,000	$154,200	$126,500
Cost per equivalent unit	$15	$6	$5

Second Process Account

	Kg	$		Kg	$
Materials input from First Process	30,000	171,000	Transferred to Third Process (W5)	25,000	350,000
Materials added		134,500	Normal loss	1,500	0
Labour		26,100	Closing WIP (W6)	4,000	40,800
Overheads		52,200			
Abnormal gain (W4)	500	7,000			
	30,500	390,800		30,500	390,800

Third Process Account

	Kg	$		Kg	$
Opening WIP	3,000	58,000	Finished goods (W9)	24,000	624,000
Materials input (from Second Process)			Normal loss	2,000	0
	25,000	350,000	Abnormal loss (W10)	1,000	26,000
Materials added		144,200	Closing WIP (W11)	1,000	20,700
Labour		23,700			
Overheads		94,800			
	28,000	670,700		28,000	670,700

Working:
(W1) 4,000 x 100% = 4,000; 4,000 x 60% = 2,400; 4,000 x 40% = 1,600
(W2) [30,000 x (1 – 5%) – 25,000 – 4,000] units = 500 units

(W3) Labour and overheads: $26,100 x (1 + 200%) = $78,300
(W4) $(6 + 5 + 3) x 500 = $7,000
(W5) $(6 + 5 + 3) x 25,000 = $350,000
(W6) Closing WIP valuation:

	$
Materials input (4,000 x $6)	24,000
Materials added (2,400 x $5)	12,000
Labour and overheads (1,600 x $3)	4,800
	40,800

(W7) 1,000 x 100% = 1,000; 1,000 x 70% = 700; 1,000 x 30% = 300
(W8) [25,000 x (1 – 8%) + 3,000 – 24,000 – 1,000] units = 1,000 units
(W9) $(15 + 6 + 5) x 24,000 = $624,000
(W10) $(15 + 6 + 5) x 1,000 = $26,000

(W11) Closing WIP valuation:

	$
Materials input (1,000 x $15)	15,000
Materials added (700 x $6)	4,200
Labour and overheads (300 x $5)	1,500
	20,700

2.
(a) Number of equivalent units (EU)

	Total Units	Materials	Conversion Costs
Work in process inventory, 1 March	3,000		
Started in March	10,000		
	13,000		
Completed units	6,000	6,000	6,000
Normal loss (10,000 x 8%)	800	–	–
Abnormal loss	200	200	200
Work in process inventory, 31 March (100%; 60%)	6,000	6,000	3,600
	13,000	12,200	9,800

(b) Cost per equivalent unit

	Total	Materials	Conversion Costs
	$	$	$
Work in process inventory, 1 March	225,000	90,000	135,000
Costs incurred in the month	1,463,800	324,800	1,139,000
	1,688,800	414,800	1,274,000
Number of equivalent units		12,200	9,800
Cost per equivalent unit		34	130

(c) Assignment of costs

	Total	Materials	Conversion Costs
	$	$	$
Units completed and transferred out ($34 x 6,000; $130 x 6,000)	984,000	204,000	780,000
Abnormal loss ($34 x 200; $130 x 200)	32,800	6,800	26,000
Work in process inventory, 31 March ($34 x 6,000; $130 x 3,600)	672,000	204,000	468,000
	1,688,800	414,800	1,274,000

(d) Joint products are two or more products that are separated from a joint processing operation, each having a substantial saleable value to warrant recognition as a main product.

The other products of a joint processing operation that have a low sales value compared with the sales values of the joint products are called by-products.

CHAPTER 9 (Contract Costing)

Work Them Out

1. D	2. C	3. A	4. C	5. D	6. B	7. D*	8. A*	9. B*	10. C*

* Working: 7: 800 / (800 + 200) = 80%
8: 500,000 – 300,000 = $200,000
9: (1,200,000 – 750,000 – 250,000) x (750,000 / 1,000,000) = $150,000
10: 200,000 – 250,000 = ($50,000)

Short Questions

1.
- Cost value is large.
- Duration of performance is long and covers more than one accounting period.
- Assessment of progress is required during the course.
- Profit is recognised in part and based on estimation.
- Loss is recognised in full if foreseeable.

2.
(a) The outcome of a contract work can be estimated reliably. — HKAS 11
(b) By reference to the stage of completion — there is no specific figure, and the general guideline is not to recognise profit in early stage and two-thirds completion will be a prudent reference point.
(c) Loss incurred or expected must be recognised in full in the period when it is recognised.

Long Questions

1.

Contract Account

	$		$
Materials issued	364,000	Materials returned	164,000
Wages (paid and accrued)	130,000	Materials on site c/f	47,000
Depreciation (9/12 x 16% x 189,000)	22,680	Cost to date c/f	605,680
Hire of plant	142,000		
Supervisory staff			
— direct	21,000		
— indirect	32,000		
Head office charges	105,000		
	816,680		816,680
Cost to date b/f	605,680	Contractee account	
Profit (W2)	41,636	— value of work certified	595,000
Profit in suspense c/f (W3)	32,684	Cost of work not yet certified c/f	85,000
	680,000		680,000
1 Apr			
Material on site b/f	47,000	Profit in suspense b/f	32,684
Cost of work b/f	85,000	Accrued wages b/f	12,000

(W1)	Cost to date	605,680
	Less: Cost not yet certified	(85,000)
		520,680
	Value of work certified	595,000
	Profit calculated	74,320
(W2)	Contingent proportion 2/3 on W1	
	74,320 x 2/3 x 500,000 / 595,000	
		41,636
(W3)	Profit in suspense	
	(74,320 – 41,636)	32,684

2.

Contract Account

	$'000		$'000
Cost b/f	320	Inventory discrepancy	3
Material on site b/f	19	Materials on site c/f	35
Materials delivered to site	602	Cost of work not certified c/f	56

Hire of plant	100	Cost of work certified c/f	1,635
Wages	498		
Other expenses	82		
General overheads (2,160 x 5%)	108		
	1,729		1,729
Cost of work certified b/f	1,635		
Cost of work not certified b/f	56		
Material on site b/f	35		
Profit (balance)	434	Value of work certified	2,160
	2,160		2,160

Cost of work certified	1,635
Cost of work not yet certified	56
Further cost to complete	219
	1,910
Contract price	2,280
Anticipated profit	370

In consideration of a majority of work has been completed, the profit recommended to take is:
370,000 x Value of work certified (2,160) / Contract price (2,280) = 350,526

CHAPTER 10 (Activity-based Costing)

Work Them Out

1. D	2. C	3. A	4. C	5. D	6. D*	7. C	8. A	9. B	10. C

* Working: 6: (40,000 + 296,000 + 191,600) / 8,000 = 66 (rounded)

Short Questions

1. Using activity-based costing:

(a) Cost driver rates:

	$
Machining department costs per machine hour [$20,740 / (360 + 180 + 70)]	34
Set-up cost per production run [$5,950 / (4 + 6 + 7)]; [4 = 120/30]	350
Store receiving costs per order [$9,000 / (10 + 30 + 20)]	150
Material handling costs per requisition [$11,110 / (30 + 50 + 21)]	110

(b) Unit selling price:

	X	Y	Z
Production overheads:	$	$	$
Machining department costs	12,240	6,120	2,380
Set-up cost	1,400	2,100	2,450
Store receiving costs	1,500	4,500	3,000
Material handling costs	3,300	5,500	2,310
Total	18,440	18,220	10,140
Units produced	120	180	210
Per unit:	$	$	$
Production overheads	153.67	101.22	48.29
Prime costs	58.00	68.00	56.00
Production costs	211.67	169.22	104.29
Mark-up (20%)	42.33	33.84	20.86
Selling price	254.00	203.06	125.15

2. Using activity-based costing:
Calculation of cost driver rates:

	$
Utility costs per machine hour ($189,000 / 9,000); 9,000 = 1,000 + 2,500 x 1.5 + 2,500 x 2	21
Set-up cost per production run ($120,000 / 60)	2,000
Cost of ordering per order ($18,000 / 90)	200
Cost of material handling per requisition ($33,000 / 200)	165

Cost summary:

	Model 1	Model 2	Model 3
	$	$	$
Production overheads:			
Utility costs ($21 per machine hour)	21,000	63,000	105,000
Set-up cost ($2,000 per production run)	34,000	50,000	36,000
Cost of ordering ($200 per order)	4,000	6,000	8,000
Cost of material handling ($165 per requisition)	4,950	16,500	11,550
Total	63,950	135,500	160,550
Units produced	1,000	2,000	2,500
Per unit:	$	$	$
Production overheads	63.95	67.75	64.22
Prime costs ($40 = 60 x 0.5 + 10)	40.00	72.00	135.00
Production costs	103.95	139.75	199.22

Long Questions

1.

(a) (i) to (iii)

Total operating room capacity (hours)	10,800
Operating hours at 70% utilisation ratio (hours)	7,560
Hours for ear operations (3.6 x 1,270)	4,572
Hours for eye operations	2,988
Number of eye operations (2,988 / 3)	996
Total costs	$15,036,780
Less: Fixed overhead	12,000,000
Total variable costs	3,036,780
Less: Total variable costs for eye operations ($1,450 x 996)	1,444,200
Total variable costs for ear operations	1,592,580
Number of ear operations performed	1,270
Variable cost per ear operation	$1,254

Predetermined fixed overhead absorption rate = $12m / 8,000 hours
= $1,500 per hour

(b) (i) and (ii)

	Eye Operation	Ear Operation
	$	$
Variable cost	1,450	1,254
Fixed cost	(1,500 × 3) 4,500	(1,500 × 3.6) 5,400
Total cost	5,950	6,654
Profit margin (10%)	595	665.40
Charge per operation	6,545	7,319.40

(c)

Activities	Eye Operation	Ear Operation	Total
	$'000	$'000	$'000
Consultation	5,388	3,592	8,980
X-rays	900	900	1,800
Post-operation care	305	915	1,220
Budgeted fixed overhead	6,593	5,407	12,000

Number of operations	996	1,270	
Budgeted fixed overhead per operation	$6,619	$4,257	

	Eye Operation	Ear Operation
	$	$
Variable cost	1,450.0	1,254.0
Fixed cost	6,619.0	4,257.0
Total cost	8,069.0	5,511.0
Profit margin (10%)	806.9	551.1
Charge per operation	8,875.9	6,062.1

(d)

	Eye Operation	Ear Operation
	$	$
Service charge per traditional costing	6,545.0	7,319.4
Service charge per ABC	8,875.9	6,062.1
Under/(over) charged	2,330.9	(1,257.3)

ABC should be used as it provides a more accurate allocation of fixed overheads to different types of operations; therefore the service charges will be fair for all patients.

2.

(a) Production overheads are absorbed on a machine hour basis:

Total machine hours next year:

	Hours
Regular	800
Superior	500
Dream	700
	2,000

Production overhead absorption rate: $4,000,000 / 2,000 = $2,000 per machine hour

Unit selling price:

	Regular	Superior	Dream
	$	$	$
Direct materials	940,000	270,000	800,000
Direct labour	300,000	200,000	200,000
Prime costs	1,240,000	470,000	1,000,000
Production overheads ($2,000 per machine hour)	1,600,000	1,000,000	1,400,000
Production costs	2,840,000	1,470,000	2,400,000
Units produced (packs)	800,000	300,000	500,000
	$	$	$
Unit production costs	3.55	4.90	4.80
Unit mark-up (40%)	1.42	1.96	1.92
Unit selling price	4.97	6.86	6.72

(b) (i) Applying activity-based costing:

Cost Driver Rates	**$**
Machining department overheads per machine hour [$1,600,000 / (800 + 500 + 700)]	800
Set-up overheads per production run [$1,500,000 / (60 + 140 + 100)]	5,000
Material handling overheads per requisition [$480,000 / (40 + 90 + 70)]	2,400
Quality inspection overheads per production run [$420,000 / (60 + 140 + 100)]	1,400

(ii) Unit selling price

	Regular	Superior	Dream
	$	$	$
Prime costs	1,240,000	470,000	1,000,000

Production overheads:			
Machining department	640,000	400,000	560,000
Set-up	300,000	700,000	500,000
Material handling	96,000	216,000	168,000
Quality inspection	84,000	196,000	140,000
	2,360,000	1,982,000	2,368,000
Units produced (packs)	800,000	300,000	500,000
	$	$	$
Unit production costs	2.95	6.61	4.74
Unit mark-up (40%)	1.18	2.64	1.90
Unit selling price	4.13	9.25	6.64

(c) Comparison of the unit selling prices:

	Regular	**Superior**	**Dream**
	$	$	$
Traditional absorption costing	4.97	6.86	6.72
Activity-based costing	4.13	9.25	6.64

Under traditional absorption costing, the company earns much less revenue when it sells Superior at the price of $6.86 (as result of under-costing). At the same time, the selling price for Regular at $4.97 may be too high (as a result of over-costing) to compete with competitors. The selling price of Dream under either method is more or less the same.

Activity-based costing is generally regarded as being superior to traditional absorption costing because the production cost calculated under activity-based costing, by referring to the cause-and-effect relationship between the level of an activity and the costs related to that level of activity, is more accurate and meaningful.

CHAPTER 11 (Cost-Volume-Profit Analysis and Short-Term Decision Making)

Work Them Out

1. C	2. C	3. D	4. D	5. C*	6. B*	7. D*	8. A	9. B	10. B

* Working: 5: 150 – (1,000 / 20) – 9 – 11 = 80
6: (1,000 + 180 + 220) / 80 = 17,500; 20,000 – 17,500 = 2,500
7: [(100,000 x 0.3) + 24,000] / 0.3 = 180,000

Short Questions

1.
- Variable costs change linearly with production volume within a relevant range.
- Relevant range is the production range expected in the short-run (See Note).
- Sales prices are constant.
- The number of units produced is equal to the number of units sold.
- Fixed costs and variable costs can be precisely estimated.
- The volume of output is the only factor which affects the total cost.
- A single product or a constant sales mix shall apply.
- The effect of time value of money is negligible.

Note: The assumption of short-run is important because factors on sales prices, production capacity and most costs are mostly stable in the short-run so that the relationship between values and quantity can be derived; in the longer term, production method may change and even fixed cost may vary. Besides, the cost structure outside the range of normal production capacity, e.g. factory facilities, may also change.

2.

Short-term Decisions	**Possible Qualitative Considerations**
Make or buy (outsourcing)	Quality of products and reliability of delivery schedule of supplier; perception of employee of scale-down of production facilities; leakage of product ingredients secrecy to outside contractor.
Accept or reject special order	Effect on future order / potential business from the customer if rejected; Effect on relationship with existing customers.
Sell or process further	Effect on timing of cash flows if further process; consumers' preference on the difference.

Eliminate or retain unprofitable products (discontinuance)	Redundancy of workers and possible reaction (strike, morale) upon discontinuance; damage to customer loyalty ; effect of brand or goodwill on other products on keeping the unprofitable production
Optimum production mix	Synergistic effect of sale mix; completeness of product range in market.

3.
(a) Variable costs:

	$'000
Direct materials	17,810
Direct labour	540
Production overheads: variable	1,226
Selling overheads: variable	224
	19,800

Variable costs per unit: $19,800,000 / 36,000 = $550
Contribution per unit: $1,250 – $550 = $700
Breakeven point in units: $(12,590,000 + 2,110,000) / 700 = 21,000 units
Margin of safety in dollar sales: (36,000 – 21,000) x $1,250 = $18,750,000

(b) Current situation:

	$'000
Total contribution ($700 x 36,000)	25,200
Less: Fixed costs (12,590,000 + 2,110,000)	14,700
Net profit	10,500

New proposal:
Revised sales volume: 36,000 units x 80 / 60 = 48,000 units
Revised selling price per unit: $1,250 x 90% = $1,125
Revised contribution per unit: $1,125 – $550 = $575

	$'000
Total contribution ($575 x 48,000)	27,600
Less: Fixed costs (12,590,000 + 2,110,000 + 3,000,000)	17,700
Net profit	9,900

The proposal from the marketing director should not be adopted as it will lower the company's profit by $600,000 ($10,500,000 – $9,900,000).

Long Questions

1.
(a) Units to be sold: $4,800,000 / $120 = 40,000 units

Variable Costs	**Total**	**Per Unit**
	$'000	$
Direct material	1,200	30
Direct labour	600	15
Production overhead: variable	520	13
Non-production overhead: variable	480	12
	2,800	70

Contribution margin per unit: $(120 – 70) = $50
Breakeven point in unit: $(780,000 + 620,000) / $50 = 28,000 units

(b) Margin of safety: (40,000 – 28,000) / 40,000 x 100% = 30%
The margin of safety measures the difference between the budgeted level of sales and the breakeven sales. It is used as a measure of risk, the larger the ratio, the safer is the situation since there is a lower probability of reaching the breakeven point. A margin of safety of 30 percent means that losses begin if the sales revenues of the company drop by more than 30 percent.

(c) Selling price: $120 × 95% = $114
Revised contribution margin per unit: $(114 – 70) = $44
Sales volume: 40,000 units / 80% = 50,000 units

	$'000
Total contribution ($44 × 50,000)	2,200
Fixed overheads ($780,000 + $620,000 + $50,000)	1,450

Net profit	750

The proposal from the marketing director is feasible since it can increase the company's net profit by $150,000 to $750,000.

(d)

Required Contribution	**$'000**
Fixed costs ($780,000 + 620,000)	1,400
Target profit	800
	2,200
Revised sales volume (40,000 units x 110%)	44,000
Revised contribution margin per unit	**$**
$(2,200,000 / 44,000)	50.00
Add: Revised variable costs per unit	
($30 x 95% + $15 + $13 +$12)	68.50
Revised selling price per unit	118.50

2.

(a) Profit statement for the year ended 31 December 2006:

	M	**L**	**S**	**Total**
	$	**$**	**$**	**$**
Sales	2,160,000	3,900,000	3,402,000	9,462,000
Less: Variable costs				
Direct materials	378,000	1,023,750	453,600	1,855,350
Direct labour	630,000	1,092,000	1,134,000	2,856,000
Variable overheads	945,000	1,638,000	1,701,000	4,284,000
Total variable costs	1,953,000	3,753,750	3,288,600	8,995,350
Contribution	207,000	146,250	113,400	466,650
Less: Fixed overhead				315,000
Net profit				151,650

(b) Profitability ranking:

	M	**L**	**S**
	$	**$**	**$**
Sales per unit	21.60	30.00	18.90
Less: Variable costs			
Direct materials	3.78	7.875	2.52
Direct labour	6.30	8.40	6.30
Variable overheads	9.45	12.60	9.45
Total variable costs per unit	19.53	28.875	18.27
Contribution per unit	2.07	1.125	0.63
Direct labour hours per unit	1.50	2.00	1.50
Contribution per labour hour	1.38	0.5625	0.42
Ranking	1st	2nd	3rd

Optimum production schedule:

	Labour Hours
Total available labour hours	500,000
Less: Product M (100,000 units)	150,000
	350,000
Less: Product L (130,000 units)	260,000
	90,000
Less: Product S (60,000 units)	90,000

The company should manufacture:
- Product M: 100,000 units
- Product L: 130,000 units
- Product S: 60,000 units

Projected profit calculation for the year ended 31 December 2006:

	M	**L**	**S**	**Total**
	$	$	$	$
Contribution per unit	2.07	1.125	0.63	
Sales in units	100,000	130,000	60,000	

Contribution	207,000	146,250	37,800	391,050
Less: Fixed overhead costs				315,000
Projected net profit				76,050

(c) Possible ways to overcome labour shortage:
- Sub-contract out work to low-cost service providers.
- Improve productivity through incentive schemes, bonus, etc.
- Automation.
- Redesign the product process to reduce the requirement for labour hours.

3.

(a) Minimum price to be quoted to the potential customer with conversion:

	Note	$
Disposal value of the tableware	ii	120,000
Relevant costs of conversion:		
Material X	iii	9,000
Material Y	iv	13,500
Skilled labour	v	2,400
Unskilled labour	vi	1,500
Variable overheads	vii	1,250
		147,650

(b) Notes:

(i) Cost of production for the set of tableware is a sunk cost and is thus irrelevant.

(ii) Disposal value of $120,000 for the tableware is the opportunity cost and should be included.

(iii) Since Material X will be used regularly by the company in other production, the company needs to buy the required Material X if it proceeds with the conversion. The historical cost is irrelevant and the relevant cost is the replacement cost of $45 per unit and of $9,000 in total ($45 x 200).

(iv) Material Y is no longer used in production. If it is used for the conversion, it cannot be sold. The historical cost is also irrelevant. The relevant costs are the net realisable value of the 400 units in inventory and the replacement cost for purchasing 100 units: $25 x 400 + $35 x 100 = $13,500.

(v) The company will rationally take the lower of the:
- basic pay plus over-time allowance: 10 x $(200 + 100) = $3,000, and
- basic pay plus contribution forgone for other job: 10 x $(200 + 40) = $2,400.
- Thus the relevant cost of skilled labour is $2,400.

(vi) Since the unskilled labour is currently working below full capacity, the hourly rate will be paid for the conversion cost.

(vii) Variable overheads are incremental costs and are thus relevant.

(viii) Fixed overhead costs are absorbed and do not change as a result of the conversion and are considered unavoidable fixed costs. It is thus irrelevant for the conversion.

CHAPTER 12 (Budgeting and Budgetary Control)

Work Them Out

1. D	2. D	3. C*	4. B*	5. D	6. C	7. B	8. B	9. D	10. D

* Working: 3: 45,000 + 36,000 + 20,000 + 18,000 = $119,000
4: Closing inventory 45,000 + Materials required 80,000 x 2 – Opening inventory 40,000 = Purchase 165,000

Short Questions

1. Production budget for the first quarter of 2010:

	January	February	March	Total
	Units	Units	Units	Units
Sales	10,000	9,000	12,000	31,000
Add: Closing inventory (W1)	13,800	17,600	17,200	17,200
	23,800	26,600	29,200	48,200
Less: Opening inventory	(13,600)	(13,800)	(17,600)	(13,600)
Production	10,200	12,800	11,600	34,600

Working:

(W1) January: 9,000 + 12,000 x 40% = 13,800
February: 12,000 + 14,000 x 40% = 17,600
March: 14,000 + 8,000 x 40% = 17,200

2. Budgeted profitability ranking:

	X	Y	Z
	$	$	$
Sales per unit	320	300	280
Less: Variable costs			
Direct materials	60	75	80
Direct labour	80	60	40
Variable overheads	90	120	100
Total variable costs per unit	230	255	220
Contribution per unit	90	45	60
Direct labour hours per unit	2	1.5	1
Contribution per labour hour	$45	$30	$60
Production priority	2nd	3rd	1st

Budgeted optimum production plan:

	Labour Hours	Product	Units Produced
Total available labour hours	10,100		
Less: Z (1 x 2,800 units)	(2,800)	Z	2,800
X (2 x 2,000 units)	(4,000)	X	2,000
Labour hours available for Y	3,300	Y	2,200
			(3,300 / 1.5)

Long Questions

1.

(a)

	Jul	Aug	Sep	Oct	Nov	Dec
	$'000	$'000	$'000	$'000	$'000	$'000
Opening balance	0	(38)	76	10.6	217	34.5
Cash receipts:						
Capital introduced	50	–	–	–	–	–
Receipts from customers:						
Current month (50% x 98%)	49	98	117.6	127.4	122.5	73.5
The month after (50%)	–	50	100	120	130	125
Total receipts	99	148	217.6	247.4	252.5	198.5
Less: Cash payments:						
Payments to suppliers	–	–	240	–	345	120
Salaries to sales representatives	15	15	15	15	15	15
Sales commissions	–	5	10	12	13	12.5
Rental deposits	24	–	–	–	–	–
Rent expenses	24	12	12	12	12	12
Government rent and rates	–	–	4	–	–	4
General expenses	2	2	2	2	2	2
Motor vehicles	72	–	–	–	48	–
Total payments	137	34	283	41	435	165.5
Closing balance/(bank overdraft)	(38)	76	10.6	217	34.5	67.5

(b) Amount due to suppliers: $160,000
Amount due from customers: $150,000 x 50% = $75,000
Commissions due to sales representatives: ($150,000 x 5%) = $7,500

(c) The cash budget compares the estimated cash receipts and cash payments of the company during the budget period and shows the resultant cash position. It helps in coordinating and controlling the financial aspect of the business. It ensures that sufficient cash is available when required. If shortage of cash is foreseen, borrowing may be required and if surplus of cash is revealed, the company may invest this surplus.

2.

(a) Cash budget for the period from January to March 2009:

	January	February	March
	$	$	$
Opening balance	168,800	145,420	32,452

Cash receipts:			
Cash sales (W1)	56,000	64,000	66,000
Receipts from credit customers:			
Sales in November 2008 (W2)	40,000	–	–
Sales in December 2008 (W3)	184,320	48,000	–
Sales in January 2009 (W4)	–	172,032	44,800
Sales in February 2009 (W5)	–	–	196,608
Total receipts	280,320	284,032	307,408
Less: Cash payments:			
Payments to suppliers (W6)	228,000	323,000	342,000
Salaries	36,000	36,000	36,000
Sales commissions (W7)	30,000	28,000	32,000
Dividends	–	–	20,000
Overheads (W8)	9,700	10,000	10,000
Total payments	303,700	397,000	440,000
Closing balance/(bank overdraft)	145,420	32,452	(100,140)

Working:

(W1) January: $280,000 x 20% = $56,000
February: $320,000 x 20% = $64,000
March: $330,000 x 20% = $66,000

(W2) January: $250,000 x 80% x 20% = $40,000

(W3) January: $300,000 x 80% x 80% x 96% = $184,320
February: $300,000 x 80% x 20% = $48,000

(W4) February: $280,000 x 80% x 80% x 96% = $172,032
March: $280,000 x 80% x 20% = $44,800

(W5) March: $320,000 x 80% x 80% x 96% = $196,608

(W6) January: $240,000 x 95% = $228,000
February: $340,000 x 95% = $323,000
March: $360,000 x 95% = $342,000

(W7) January: $300,000 x 10% = $30,000
February: $280,000 x 10% = $28,000
March: $320,000 x 10% = $32,000

(W8) Monthly depreciation: $360,000 x 10% / 12 = $3,000
January: $(12,000 – 3,000) x 30% + $(13,000 – 3,000) x 70% = $9,700
February and March: $(13,000 – 3,000) x (70% + 30%) = $10,000

(b) Amount due to suppliers: $340,000
Amount due from credit customers: $320,000 x 80% x 20% + 330,000 x 80% = $315,200

(c) A fixed budget is one that is prepared for a single level of output and is intended to be kept constant even though there may be changes in activity output levels. A flexible budget is one that, by recognising different cost behaviour patterns, is designed to change as the level of activity changes.

A flexible budget is required when the actual output level attained is different from the budgeted output level. In order to overcome the problem, the actual output level attained can be compared with a budget that has the same level of output.