MET1 Examinations 2011

PAPER 5

Module 3P8

Financial Accounting

SECTION A

1   (a)   £2,900
Inventory should be valued at the lower of cost or net realisable value. This means that the painting should be valued at £1,200 (selling price is lower than cost), the necklace should be valued at £900 (cost) and the earrings at £800 (cost).

(b)   £0.30
Share price – Ponting Co is [14 x (£6·0/30m)] = £2·80
Share price – Strauss Co is [14 x (£15m/50m) = £4·20
Thus there is a 2-for-3 issue.
No. of shares in issue following the takeover (50m + 20m) = 70m
Combined profits after tax = £15m + £6m = £21m
EPS following the takeover = £21·0m/70m = £0·30

(c)   Credit of £1,821

Net book value of assets	£1,728,500
Tax written down value	£1,407,200
Accelerated capital allowances	£321,300

Deferred tax liability at 23%	£73,899
Balance brought forward	£75,720
Movement	£1,821

(As balance has reduced, this will give rise to a credit entry in the income statement)

(d)   £5.60 and 2,500 shares

Value per share following scrip issue
£28m/2·5m = £11·20
Value per share following stock split
£11·20/2 = £5·60
Shares held by individual [{1,000 + (0·25 x 1,000)} x 2]
= 2,500

(e)

(i)　　a.

	£	£
Increase in retained earnings		49,000
Add back:		
Interest charge	3,400	
Taxation charge	11,400	
Dividends paid	6,700	21,500
		———
Profit before tax		70,500
Depreciation		15,500
		———
		86,000
Increase in inventories		(9,000)
Increase in receivables		(12,000)
Decrease in payables		(2,000)
		———
		63,000
Less:		
Interest paid (note 1)	(3,400)	
Tax paid (note 2)	(13,400)	(16,800)
		———
Cash inflow from operating activities		46,200

Note 1

Interest paid = Interest charge as no opening or closing accruals or prepayments.
Also, interest paid could be included in the cash outflow from financing activities.

Note 2

Opening tax liability	£14,000
Charge	£11,400
	———
	£25,400
Paid (balancing figure)	£13,400
	———
Closing tax liability	£12,000

(i)

b.

	£	£
Closing value of non-current assets		294,000
Opening value of non-current assets	276,000	
less Depreciation	15,500	260,500
		———
thus Acquisitions – cash outflow		33,500
		———

Value of acquisitions represents the outflow on investing activities

(i)   c.   £
       Proceeds of share issue   10,000
       Decrease in long-term borrowings   (13,000)
       Decrease in short-term borrowings   (2,000)
       Dividends paid   (6,700)
                                                   ─────────
       Cash outflow from financing activities   (11,700)
                                                   ─────────

(i)   d.
       Movement in cash and cash equivalents:
       Increase in bank balance (inflow)   £1,000

(e) (ii)
       An audit is an independent, external review of an entity's financial statements, and is
       intended to provide reasonable assurance that the financial statements are fairly
       presented. This assurance is communicated in the auditor's report.
       The fact that the financial statements have not been audited does not mean that no
       reliance can be placed on them. Although an audit provides reasonable assurance, it
       does not provide a guarantee. In many ways, the key issue is whether the owner and
       the management team are reliable and trustworthy, as this will make it more likely
       that the financial statements are also reliable.

2   (a)   £75,000

If the directors seek to maximise short term profit, they will wish to capitalise expenditure when this is allowed. Such expenditure will then be written off over the life of the product. Only the £600,000 qualifies for such treatment as it is development expenditure. (The £300,000 is research expenditure and must be written off as incurred.) Thus the charge for the current year is £600,000 ÷ 8 = £75,000.

(b)   Charge of £22,516

Book value	£1,743,500	
Tax value	£1,045,900	
To be reversed	£697,600 x 21% =	£146,496
Balance brought forward		£123,980
Increase (thus charge to income statement)		£22,516

(c)   104.81p

Earnings = £524,054 i.e. Operating profit less interest and taxation. (Although the dividend has been paid to shareholders, it is part of 'earnings'). There are 500,000 shares in issue, thus earnings per share is:

£524,054 ÷ 500,000 = 104·81 pence

(d)   12.5 times

Dividend per share = EPS/Dividend cover
      = £0·20/2·0
      = £0·10
Share price = DPS/Dividend yield
      = £0·10/0·04
      = £2·50
Price/earnings ratio = Share price/EPS
      = £2·50/£0·20
      = 12·5 times

(e)   (i)
      a. Projected income statements for the year ended 31 May 2011

	Share scheme	Loan scheme
	£000	£000
Net profit before interest and taxation	536·0	536·0
Interest payable	48·0	93·0*
Net profit before taxation	488·0	443·0
Corporation tax (25%)	122·0	111·0
Net profit after taxation	366·0	332·0
Dividend paid	150·0	100·0
Retained profit for the year	216·0	232·0

* This is calculated as follows: [48 + (9% x 500)] = 93

(i)   b.   Earnings per share

	Share scheme	Loan scheme
Profit available for shareholders	366·0	332·0
Number of shares	(200·0 + 100·0)	200·0
EPS	122p	166p

(ii)   c.   Gearing ratio

	Share scheme	Loan scheme
Long-term loan capital x 100%	600 x 100%	1,100 x 100%
Share capital + reserves + long-term loan capital	(612 + 500 + 216 + 600)	(612 + 232 + 1,100)
Gearing ratio	31·1%	56·6%

(Note: Other measures of gearing would have been acceptable in answering this part as long as they were clearly defined.)

(ii)
The level of profit before interest and taxation at which the earnings per share under each option will be identical is calculated as follows:

Let x = profit for equal eps.

Share scheme	Loan scheme
$(x - 48\cdot0)(1 - 0\cdot25) =$ 0·25)	$(x - 93\cdot0)(1 -$
(200·0 + 100 ·0)	200·0

$200(0\cdot75x - 36) = 300(0\cdot75x - 69\cdot75)$
$150x - 7{,}200 = 225x - 20{,}925$
$75x = 13{,}725$
$x = 183 \text{ (,000)}$

(iii) The calculations above reveal that the loan option is expected to generate a significantly higher return for shareholders than the ordinary share option. It will also increase EPS above the current figure of £1·53 (i.e. 306/200).
The share option will lead to one third of the total shares in issue being in the hands of a single shareholder, which may have serious implications for the control of the business.
Although the loan option avoids this problem, it results in a higher level of gearing than both the share option, which is 31·1%, and the current level of gearing, which is 49·5% (i.e. 600/1,212).
The times interest earned ratio is 11·2 times (536/48) for the share option and 5·8 times (536/93) for the loan option. The loan option results, therefore, in a significantly lower times interest earned ratio than the share option and the existing ratio of 9·5

times (456/48). There is still, however, a reasonably good margin of safety should profits decline. The shareholders may therefore feel that the increase in earnings per share arising from the loan option outweighs the additional risk that must be borne.

Also the gearing levels under both options will decline as time passes due to retentions adding to the equity base and thus the loan option gearing levels will soon be at a much lower level, assuming profits remain at their current level.

SECTION B

3   (a)   £2307.80
Set up cost = £1,139,200 ÷ 3,200 = £356·00 per set up
Handling = £ 488,900 ÷ 5,000 = £97·78 per order
Thus each batch costs:

Set up	1 set up x £356·00 =	£356
Handling	50 orders x £97·78 =	£4,889
Cost per batch (500 units)		£5,245

Thus overhead cost per unit £5,245 ÷ 500   = £10·49

Thus overhead cost of 220 units   £10.49 x 220 = £2,307·80

(b)   Box 10,000 & Dax nil
In order to maximise short term profit, the scarce resource (material A) should be utilised in order to maximise the contribution per kg.
The contribution per unit produced is:
      Box £14
      Dax £15
The contribution per kg of material A is:
      Box £4
      Dax £3
Thus production of Box is preferred. There is only sufficient material A to satisfy the market demand for Box so no production of Dax should be undertaken.

(c)   £78,400
Capital employed before project £2,680,000

Current profit (ROI of 15·5%)	£415,400
Profit from project	£53,000
Profit including project	£468,400

Investment in project £320,000
Capital employed after project £3,000,000

Imputed cost of capital at 13%	£390,000
Residual Income	£78,400

(d)   £4,480
As the material currently in inventory has no alternative use and has no salvage value (i.e. no opportunity cost as a result of being used), the relevant cost of using the existing inventory is nil. The cost of the additional 160 units is the replacement cost of £28·00. Thus the contract cost is: 160 units at £28·00 = £4,480.

(e) (i)
Although it is correct to say that the transfer price will represent income to one division and a cost to the other, and that the income and cost will cancel one another out, it is not correct to say that this will have no effect on profit. An effective transfer pricing system will encourage divisional managers to take appropriate decisions which will lead to overall company profit being maximised. On the other hand an ineffective transfer pricing system will lead to divisional managers taking decisions which will maximise the profit for their own division, but will not maximise overall company profit. This can arise because the basic premise of divisionalisation is that each division is autonomous. This basic premise will encourage managers to seek the best result for their division, irrespective of the effect on the rest of the company.

This means that an effective transfer pricing system is likely to be designed (and may even be imposed) by head office. As a result, the concept of divisional autonomy is somewhat undermined. There is therefore a tension between the concept of divisional autonomy and head office control. The extent to which managers will be satisfied with a transfer pricing system, and therefore managerial behaviour, is likely to be influenced by two factors. One of these will be the extent to which divisional managers perceive that their decisions are constrained by head office involvement (more involvement = less autonomy = less satisfaction). The second will be the extent to which managers feel that the transfer price provides adequate reward for the effort and resources which have been utilised.

Consequently, the transfer pricing system will have a significant influence on the motivation of divisional managers and therefore divisional and corporate performance. The greater the extent to which the transfer pricing system can achieve a balance between maximising overall company profits and maintaining divisional autonomy, the more successful it will be. The transfer price should:
- provide an adequate reward to the supplying division to compensate for the resources used;
- provide the receiving division with access to resources at a reasonable cost;
- allow divisional performance to be assessed on a basis which is commercial;
- motivate divisional managers to achieve corporate goals;
- maximise overall company profits.

(e) (ii)

Market-based

	£	£
Selling price of final product		78·00
less: Margin (25%)	19·50	
Processing cost	12·50	32·00
Selling price/Transfer price		46·00

Capacity 450,000 hours ÷ 2·5 = 180,000 units

	£000	£000
Revenue		
180,000 units at £46·00		8,280
Costs		
Variable cost 180,000 units at £26·80	4,824	
Fixed costs	2,700	7,524
Profit		756

Target profit £8,280,000 x   5% = 414,000
Excess = 756,000 – 414,000 = 342,000
Bonus at 4% = £13,680

Cost-based

	£
Variable cost	26·80
Mark up 70%	18·76
Transfer price	45·56

	£000	£000
Revenue		
External sales 60,000 units at £46·00		2,760·00
Transfers 120,000 units at £45·56	5,467·20	
	8,227·20	
Costs (as market-based)	7,524·00	
Profit	703·20	

Target profit £8,227,200 x   5% = 411,360
Excess = 703,200 – 411,360 = 291,840
Bonus at 4% = £11,673·60

(e) (iii) Recommended basis

The fact that an external customer is the catalyst for establishing divisions and therefore transfer pricing means that the transfer price should be based on market price. The emergence of the partner creates a market where it appears none previously existed. As the market price will be based on negotiations with an external partner, it will provide a degree of objectivity. This will mean that the transfer price will be perceived as equitable.

In market based systems, the transfer price may be set below the external sales price. This is to reflect the fact that certain costs (e.g. advertising, packaging, distribution) are not incurred on internal transfers. Flower has been approached by the partner, so it can be argued that most of the possible savings considered above in respect of market based transfer prices do not apply. For example, as there has not been any external market for the component in the past, there will not be any advertising costs

associated with the component. If there will be any packaging and distribution costs to be incurred in connection with sales to the partner, it should be possible to ensure that the price negotiated is calculated to take account of such costs. In that way, it will be possible to arrive at a final price for the component itself. This should be the transfer price, as it will be an objective, market based price, and will exclude those elements which typically need to be 'stripped out' from the market price to arrive at the transfer price.

4   (a)   £936,630

If variable costs are 70% of sales, contribution is 30%

Thus contribution is £726,000 x 30% =	£217,800
less Fixed costs (balancing figure)	£145,800
= Profit (given)	£72,000

In next year:

Required profit	£81,000
Fixed costs = 145,800 + 5%	£153,090
Contribution (= 25%)	£234,090

Sales = £936,360 (= 100%)

(b)   £186,720

Total overheads	£178,400
Fixed costs	£42,000
Variable costs	£136,400 or £6·82 per unit produced

At production level of 21,220, variable costs are £144,720·40

Thus total costs are £186,720·40

(c)   £429,680

Reported profit	£705,644
Add Development costs	£320,000
	£1,025,644
Less Amortisation (1/4)	£80,000
	£945,644

Economic profit = economic value of assets (£3,534,000) x WACC = £515,964

Thus EVA® = £945,644 – £515,964 = £429,680

(d)   £743.60 A

Standard labour cost of output £21·96 for 2·4 hours

= standard cost per hour of £9·15

6,760 hours standard cost at £9·15	£61,854·00
Actual cost	£62,597·60
Variance £743·60	

Adverse, as did cost more than standard.

(e)   (i)

Fixed cost for two years = £720,000 x 2 =   £1,440,000
Development costs =   £1,215,000
Total   £2,655,000

Cost per unit is contingent on sales volume
At sales volume of 900, cost per unit is £2,950
At sales volume of 750, cost per unit is £3,540

Thus, total cost per unit:

	Sales volume: 900	750
	£	£
Materials	710	710
Labour	480	480
Variable overhead	320	320
Fixed/development	2,950	3,540
Cost per unit	4,460	5,050
Mark up (20/80)	1,115	1,262·50
Selling price	5,575	6,312·50

(e)   (ii)
In cost plus pricing, cost is used as the starting point for the calculation of the selling price, but this assumes some form of control over price setting. Target cost pricing seeks to match market expectations with producer capabilities. In this approach, the market selling price, as dictated by competition and customer demand, is the starting point in the calculation of the selling price. Once the market price is established, a profit margin is deducted. The resulting price is the 'target cost' at which the product must be produced. The key issue is that the approach places an onus on the producer to exercise effective cost control and to ensure that any costs incurred add value for the customer.
Based on the data provided, ECB could consider the following action to reduce costs:
- Improve supply chain management by forming closer relationships with a small number of suppliers. This could allow production – and material deliveries – to be scheduled to reduce the level of inventory which would need to be held;
- Allied to this, just-in-time purchasing and just-in-time production could be implemented to reduce the level of inventory held;

Both of these initiatives could lead to a reduction in stock holding costs. It should be noted however, that it is possible that these initiatives could lead to an increase in the cost of materials as suppliers seek to recover the costs of holding inventory on behalf of ECB, or the additional costs of small and frequent deliveries.

- As labour is specialised, effective human resource management will be necessary to reduce staff turnover, and the associated costs of recruitment and training;

- As discussed below, the period over which development costs are absorbed into product cost could be lengthened. This would reduce the impact of the costs. Whether this can be done will depend on the anticipated life of the product;
- Reducing labour costs through outsourcing or revised production practices such as robotic equipment;

(e)   (iii)   Market skimming

The term refers to the practice of 'skimming' the profits which can be generated early in a products life cycle by setting the market entry price at a high level. This is possible if there is no alternative product to provide direct competition. Demand is stimulated by spending on advertising and promotion. This will allow the price to be reduced as competitors enter the market. The reduction in price will be possible as development costs have been recovered early in the product life cycle. This approach is appropriate for innovative products, which have an attraction to customers who wish to be among the early adopters; when demand is uncertain, or if the product life cycle is likely to be short. Examples of this approach can be seen in technology based products such as satellite navigation systems, or wireless laptops.

Market penetration

Under this approach, the market entry price is set at a low level. This means that profits are reduced, and therefore competitors will find that it is less attractive to enter the market. Alternatively the lower entry price will mean that a higher market share can be obtained. The low price will enable sales volume to be built quickly, which will shorten the product life cycle. This approach is appropriate when it is necessary to achieve economies of scale quickly.

For that reason, the company's current two year time horizon may be too short for such an approach to be effective. From the above it can be seen that any decision on which approach to pricing is appropriate will depend on:
- the likelihood of competitors currently offering, or being able to offer, similar products;
- the expected level of demand;
- the expected life cycle for the product.

In addition a risk analysis should be carried out to assess each possible scenario.

Manufacturing Engineering Tripos

Module 3P9 Industrial Economics, Strategy and Governance

EXAM CRIB

SECTION C

5   (a)

$P = 7524 - 0.02\ Q$

$TC_1 = 10,000 + 100\ q_1 + 0.010\ q_1^2$

$TC_2 = 20,000 + 200\ q_2 + 0.002\ q_2^2$

$Q = 20\ q_1 + 20\ q_2$

$P = MC_1 = MC_2$

$MC_1 = 100 + 0.02\ q_1$

$MC_2 = 200 + 0.004\ q_2$

$q_1 = 0.2\ q_2 + 5000$

$MC_2 = P = 7524 - Q = 7524 - 0.02(\ 20\ q_1 - 20\ q_2)$

$200 + 0.004\ q_2 = 7524 - (20\ x\ 0.02)\ (0.2\ q_2 + 5000 - q_2)$

$0.484\ q_2 = 5324$

$q_2 = 11000$

$q_2 = 0.2\ x\ 11000 + 5000 = 7200$

$Q = 20\ x\ (11000 + 7200) = 364000$

$P = 7524 - 0.02\ x\ 364000 = 244$

(b)

Find minimum of each ATC,

$ATC_1 = 10000/\ q_1 + 100 + 0.010\ q_1$

$ATC_2 = 20000/\ q_2 + 200 + 0.002\ q_2$

$dATC_1\ /\ dq_1 = -10000/\ q_1^2 + 0.010 = 0$

$dATC_2\ /\ dq_2 = -20000/\ q_2^2 + 0.002 = 0$

$q_1{}^2$ = 1000000

$q_2{}^2$ = 10000000

q_1 = 1000

q_2 = 3162·28

$ATC_1{}^{min}$ = 10000/ 1000 + 100 + 0·010 x 1000 = 120

$ATC_2{}^{min}$ = 20000/ 3162·28 + 200 + 0·002 x 3162·28 = 212·65

Only Technology 1 firms exist and P = 120

Q = (7524 – 120) / 0·02 = 370200

N_2 = 370200 / 1000 = 370 approx.

(c)

Q = q_1 + q_2

P = 7524 – 0·02 (q_1 + q_2)

$Prof_1$ = (7524 – 0·02 (q_1 + q_2)) q_1 – (10000 + 100 q_1 + 0·010 $q_1{}^2$)

$dProf_1/dq_1$ = 7524 – 0·04 q_1 - 0·02 q_2 – 100 - 0·02 q_1 = 0

0·06 q_1= 7424 - 0·02 q_2

$Prof_2$ = (7524 – 0·02 (q_1 + q_2)) q_2 – (20000 + 200 q_2 + 0·002 $q_2{}^2$)

$dProf_2/dq_1$ = 7524 – 0·02 q_1 - 0·04 q_2 – 200 - 0·004q_2 = 0

0·044 q_2 = 7324 - 0·02 q_1

0·06 q_1= 21972 - 0·132 q_2 = 7424 - 0·02 q_2

q_2 = 129892·9

q_1 = 80435·7

Q = q_1 + q_2 = 210328·6

P = 7524 – 0·02 Q = 3317

(d)

TR = (7524 – 0·02 Q) x Q

MR = 7524 – 0·04 (q_1 + q_2)

MR = MC_1 = MC_2

$$MC_1 = 100 + 0.02\, q_1$$

$$MC_2 = 200 + 0.004\, q_2$$

$$q_1 = 0.2\, q_2 + 5000$$

$$MC_2 = 200 + 0.004\, q_2 = MR = 7524 - 0.04\,(q_1 + q_2) = 7324 - 0.048\, q_2$$

$$0.052\, q_2 = 7124 \quad \text{and} \quad q_2 = 137000$$

$$q_1 = 32400$$

$$Q = q_1 + q_2 = 169400$$

$$P = 7524 - 0.02\, Q = 4136$$

(e)   The discussion should cover the assumed behaviour of the firms and its reasonableness and the assumption that the cost curves would be the same in perfect competition and the two firm cases. In addition, the discussion should examine the consequences of concentration and collusion for consumer welfare.

6   (a) The answer should examine the influences at: product level (price level, profit margin, ascertainable content, differentiation, nature of the product, frequency of purchase); industry level (degree of concentration and collusion; responsiveness to advertising by firm and its competitors, U-shaped relationship with concentration); and possibly at the strategic level (product positioning etc.).

(b) First, should define what is meant by economies of scale and the concept of minimum efficient size. Might distinguish between firm-level and plant-level economies of scale. Second, will want to look at what could be measured: mes as % of market; absolute capital requirement to get to mes; unit cost increase if at, say, 50% mes; b calculated from the cost function $c = aQ^b$). Third, the answer should mention the measurement approaches: engineering estimates; statistical cost analysis; and the survivor technique.

(c) This would discuss the link between economies of scale, concentration and collusion. It would also examine the role of economies of scale as a barrier to entry. May also mention its links to advertising, patenting and innovation.

7   (a) Discuss separation of ownership from control and the difficulty of: observing from the outside what management is doing and why; and in measuring the impact of their decisions. Conclude that some discretion exists for management. Utility maximising owners should seek to maximise their share returns and market value. Managers may seek prestige, power and status. This may be seen as linked more to firm size than shareholder performance. Managers may also seek to maximise their remuneration and the candidate may discuss the difficulty of designing remuneration schemes that achieve a commonality of goals.

(b) The answer should develop the [Marris] managerial growth model and explain the demand and supply of finance constraints. This model itself argues that over a range of growth possibilities there is no conflict between higher growth and shareholder objectives. The question is whether growth beyond this point is sought by management and whether it can be financed. Raising more finance requires lower liquidity, lower payout ratio and higher gearing. Seeking to grow faster may also lower profitability through diversification costs. Together these may lower the valuation ratio.

(c) There is a dual role for takeovers. First, takeovers are the mechanism by which management teams that push their financing too far in seeking growth may be disciplined by the stock market. Second, in a contrary fashion, takeovers have been the principal means by which firms with high growth ambitions have achieved their objectives, often lowering shareholder value as a consequence.

(d) First, shareholder direct influence though meeting with the top management and through voting at shareholder meetings – the concentration of ownership amongst institutional shareholders makes this a possible, but not commonly used, route. Second, the appointment of non executive (outside) board members can be a means of bringing the opinions of shareholders into the boardroom. The Combined Code on Corporate Governance imposes such appointments (half of the board excluding the chairman) and also defines their status on key committees such as the audit and remuneration committees. There is some difficulty in recruiting able persons to these positions who are genuinely independent. Third, there is the recruitment and dismissal of top executives and their contracts, but this does not get round the non-observability of their actions and consequences. Fourth, there is the remuneration contract and tying the outcomes to shareholder performance measures through options and LTIPs. The importance that such packages should be tied to performance relative to a peer group should be discussed.

8   There is no single best answer to this question and different excellent answers may emphasise quite different aspects. There should be the identification of the key factors in the macro environment (eg a PESTEL analysis of the firm's environment). There should be some competitive analysis of the sector and discussion of strategic positioning. The marketing audit should also include competitor analysis and an audit of the existing marketing operations. The discussion could then consider key issues of choosing the target customers, price and channel design. This could lead on to the marketing mix and marketing strategy execution.