
Answers

Section A

- 1 C**
- | | £ |
|---------------------|-------|
| Cost of warrant | 0.40 |
| Exercise price | 2.00 |
| | <hr/> |
| | 2.40 |
| Current share price | 1.75 |
| | <hr/> |
| Premium | 0.65 |
- 2 A** Both statements are correct. The profitability index approach assumes that projects are divisible. Where capital rationing extends over more than one period, linear programming should be used rather than the profitability index approach.
- 3 D** The dividend growth model should be used to answer this question. Thus:
- $$R = (D_1/P_0) + g$$
- $$R = (0.21/2.50) + 0.05$$
- $$R = \underline{0.134} \text{ or } 13.4\%$$
- 4 B** Option B is correct. Convertible bonds attract a lower coupon rate than non-convertible bonds as they offer the possibility of a gain from conversion.
- 5 C**
- | | |
|--|----------|
| Share price – Calleva Co is [14 x (\$6.0/30m)] | = \$2.80 |
| Share price – Londinium 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 | = <u>\$0.30</u> |
- 6 C**
- | | |
|----------------------|-------------------------------|
| Dividend per share | = EPS x Dividend payout ratio |
| | = \$0.60 x 20% |
| | = <u>\$0.12</u> |
| Share price | = DPS/Dividend yield |
| | = \$0.12/0.04 |
| | = <u>\$3.00</u> |
| Price/earnings ratio | = Share price/EPS |
| | = \$3.00/0.60 |
| | = <u>5 times</u> |
- 7 D** Both statements are incorrect. Unlike a debt factor, an invoice discounter does not have any involvement with the management of receivables that have been used as loan security.
- 8 B** A long inventory holding period suggests high levels of inventory, which is consistent with a company having more resources than necessary.

9 D Profit after tax = $20\text{m} \times \$1.00$ (i.e. $5 \times \$0.20$)
 = \$20m

	\$m
Net profit before interest and taxation (6x)	30.0
Less interest (x)	5.0
Net profit before taxation (Y) = (5x)	25.0
Less taxation (0.2Y)	5.0
Net profit after taxation (0.8Y)	<u>20.0</u>

10 A The operating cash cycle is:
 $5 + 1 + 2 + 3 - 4 = \underline{7 \text{ weeks}}$

11 C Expected return = $(0.7 \times 15\%) + (0.3 \times 7\%)$
 = 12.6%
 Portfolio risk = $\sqrt{[(0.7^2 \times 5\%^2) + (0.3^2 \times 2\%^2) + (2 \times 0.7 \times 0.3 \times 5\% \times 2\% \times +0.6)]}$
 = $\sqrt{[12.25 + 0.36 + 2.52]}$
 = 3.9%

12 B The first statement is correct. However, futures contracts are standardised.

13 C Option C is correct. The company is selling euros and so the higher three months forward rate applies.
 Hence:
 Sterling receipts = $200,000/1.4897$
 = £134,255

14 C The company needs to buy sterling with US dollars in two months' time. It must, therefore, buy sterling futures now and then sell them in two months' time thereby closing its position. The company will need to buy sterling call options now.

15 D The cost of loan capital is:
 $10\% (6.0/8.0) \times (1 - 0.20) = 6\%$
 WACC is calculated as follows:
 $12\% = [(8/20) \times 6\%] + [(12/20) \times X\%]$
 $0.6X = 9.6\%$
 $X = \underline{16\%}$

16 C The first statement is incorrect. It reflects the residual view of dividends. The second statement is correct.

17 C According to the Combined Code, independent, non-executive directors should comprise at least half of the board, *excluding* the chairman, and should comprise all of the audit committee.

18 C Statement 1 is incorrect. According to the Combined Code, directors should submit themselves for re-election after no more than three years. Statement 2 is correct.

19 B Statement 1 is correct. Statement 2 is incorrect. A borrower will let an option lapse if, at the expiry date, the current market rate of interest is *lower* than the strike rate.

20 D Financial gearing increases the risk of share price and earnings per share volatility as well as loan default.

Section B

1 (a) Relevant costs

		Year			
	Notes	1 \$000	2 \$000	3 \$000	4 \$000
Materials					
– Alpha	(1)	160·0	160·0	160·0	160·0
– Beta	(2)	–	–	–	–
Labour (20,000 x \$10·50)		210·0	210·0	210·0	210·0
Overheads	(3)	130·0	130·0	130·0	130·0
		500·0	500·0	500·0	500·0

Notes:

- (1) Material Alpha has a relevant cost of \$8·00 per 100 mg as the stock of this material will be replaced. Total cost per year = 20,000 x \$8 = \$160,000.
- (2) Material Beta has a relevant cost of [(\$1 per 200 mg) x 80,000] = \$80,000 as the stock will be sold if it is not used in the production of the device. This will occur in Year 0.
- (3) Overheads represent the total overheads [(20,000 x \$12·50) = \$250,000] less the depreciation charge and general overheads apportioned to the project. The depreciation charge is (\$200,000/4) = \$50,000 per year and general overheads apportioned are \$70,000 per year. The overheads are therefore [\$250,000 – (\$50,000 + \$70,000)] = \$130,000.

The discount factor represents the weighted average cost of capital [(0·75 x 12%) + (0·25 x 8%) = 11%].

The minimum selling price must cover the initial outlay plus the annual operating costs. Thus:

Initial outlay (\$200,000 + \$80,000)	Notes (1)	\$000 (280·0)
The net present value of the annual operating costs are: \$500,000 x 3·1	(2)	<u>(1,550·0)</u> <u>(1,830·0)</u>

Notes:

- (1) The development and market research costs are ignored as they are committed costs.
- (2) As cash outflows are constant, the annuity factors over the four-year period can be used as a short cut.

Let R = the minimum selling price

$$20,000R \times 3\cdot1 = \$1,830,000$$

$$R = \underline{\underline{\$29\cdot52}}$$

The above calculations reveal that \$29·52 represents the minimum price that can be charged to avoid making a loss and thereby diminishing shareholder wealth. This figure is just below the \$30, which the market research report indicated was needed to ensure the maximum output from the equipment. It may be useful to carry out sensitivity analysis to help gain an insight to how changes in key variables, such as material and labour costs, will affect the profitability of the new device.

It was mentioned earlier that the development costs and market research costs have been ignored as the amounts had already been spent. If these costs had not been spent before the appraisal was carried out, and therefore had been included in the calculations, the cost per device would have been higher and the investment would have been even less attractive.

- (b) (i)** Unless a project affects the overall level of risk associated with a business, the manner in which a company finances an investment opportunity is not normally relevant to its financial appraisal. The particular source of new funds used to finance an investment opportunity should reflect the long-term target capital structure of the company. Assuming no change in the overall level of risk arising from the investment opportunity, it is this target capital structure that is relevant for appraisal purposes. The discount factor to be applied to future cash flows from the investment should reflect the overall level of risk, which is reflected in the weighted average cost of capital (WACC) of the company's target capital structure.

- (ii)** If the investment was more risky than other investments undertaken by the company, this should be taken into account. The risk premium should be added to the WACC so that the appropriate discount rate is 12 (i.e. 11 + 1)%. The minimum selling price would be calculated as follows:

Initial outlay	\$000 (280·0)
The net present value of the annual operating costs are: \$500,000 x 3·04*	<u>(1,520·0)</u> <u>(1,800·0)</u>

Let R = the minimum selling price

$$20,000R \times 3.04 = \$1,800,000$$

$$R = \$29.61$$

* This represents the annuity factors as explained above. (In this case the discount rate is 12%.)

2 (a) (i) Projected income statements for the year ended 31 May 2008

	Share Option \$000	Loan Option \$000
Net profit before interest and taxation	536.0	536.0
Interest payable	48.0	93.0*
Net profit before taxation	<u>488.0</u>	<u>443.0</u>
Corporation tax (25%)	122.0	111.0
Net profit after taxation	<u>366.0</u>	<u>332.0</u>
Dividend paid	150.0	100.0
Retained profit for the year	<u><u>216.0</u></u>	<u><u>232.0</u></u>

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

(ii) Earnings per share	<u>366.0</u>	<u>332.0</u>
	(200.0 + 100.0)	200.0
	<u>122p</u>	<u>166p</u>

(iii) Gearing ratio

Long-term loan capital	x 100%	<u>600</u>	x 100%	<u>1,100</u>	x 100%
Share capital + reserves	(612 + 500 + 216		(612 + 232		
+ long-term loan capital	+ 600)		+ 1,100)		
		<u>31.1%</u>		<u>56.6%</u>	

(Examiner's note: Other measures of gearing would have been acceptable in answering this part as long as they are clearly defined.)

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

Share option	=	Loan option
$(x - 48.0)(1 - 0.25)$		$(x - 93.0)(1 - 0.25)$
$(200.0 + 100.0)$		200.0
$200(0.75x - 36)$		$300(0.75x - 69.75)$
$150x - 7,200$		$225x - 20,925$
$75x$		$13,725$
x		<u>183 (thousand)</u>

(c) 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.

- 3 (a) In order to survive, all businesses must retain an uninterrupted capacity to pay debts as and when they fall due. As debts are normally paid in the form of cash, the cash flows of a business should be a matter of intense interest to its managers. A forecast cash flow statement helps managers to monitor future movements in cash. It sets out the anticipated cash inflows and outflows arising over a particular forecast period and so can provide an early warning of problems. This allows managers a better opportunity to deal with these problems. For example, a forecast cash flow statement may help to identify future breaches of an overdraft limit that has been agreed with the bank (See Part (b) below.) which may allow managers time to review their plans. Where the forecast cash flow statement indicates a cash surplus, managers have the opportunity to consider whether this surplus should be re-invested or distributed to shareholders.

(b) Cash flow forecast for the year ended 30 November 2007

	June \$000	July \$000	Aug \$000	Sept \$000	Oct \$000	Nov \$000
Receipts						
Sales						
– within 1 month	212	220	267	251	216	204
– within 2 months	57	54	56	68	64	55
	<u>269</u>	<u>274</u>	<u>323</u>	<u>319</u>	<u>280</u>	<u>259</u>
Payments						
Purchases	164	175	204	183	188	167
Admin expenses	33	36	30	33	30	27
Selling expenses	74	45	43	47	42	46
Taxation due		29				
Mortgage repayment			70			
Capital expenditure			38	59		
	<u>271</u>	<u>285</u>	<u>385</u>	<u>322</u>	<u>260</u>	<u>240</u>
Net cash flow	(2)	(11)	(62)	(3)	20	19
Opening balance	<u>(75)</u>	<u>(77)</u>	<u>(88)</u>	<u>(150)</u>	<u>(153)</u>	<u>(133)</u>
Closing balance	<u><u>(77)</u></u>	<u><u>(88)</u></u>	<u><u>(150)</u></u>	<u><u>(153)</u></u>	<u><u>(133)</u></u>	<u><u>(114)</u></u>

- (c) The cash flow forecast indicates that the company will breach the overdraft limit agreed with the bank from August 2007 onwards. Although the size of the overdraft decreases in October 2007 and again in November 2007, it will remain significantly above the agreed limit. Some revision of earlier plans is therefore necessary. A number of possible ways to improve cash flows may be considered. These may include:

- an injection of long-term capital, such as ordinary shares or loan capital;
- delaying capital expenditure plans (assuming no binding commitments have been made);
- delaying the early mortgage repayment;
- chasing receivables that pay after two months rather than after one month;
- delaying payments to suppliers.

The business should be aware of the risk that the last two suggestions will have adverse repercussions for the company.

Although cost savings may also be made, the forecast overdraft during the six-month period exceeds the agreed limit by a significant amount and it is unlikely that cost savings alone would be sufficient to deal with the problem.

Section C

- 4 (a) Market value of the company:
 = profit before interest/weighted average cost of capital
 = \$6m/0.12
 = \$50m
- Market value of debt
 = \$10m x (70/100)
 = \$7m
- Market value of ordinary shares
 = market value of company – market value of loan capital
 = \$50m – \$7m
 = \$43m
- Earnings available to ordinary shareholders
 = \$6m – (\$10.0m x 5%)
 = \$5.5m

$$\begin{aligned} \text{Cost of ordinary shares (D}_o\text{/P}_o\text{)} \\ &= \$5.5\text{m}/\$43.0\text{m} \\ &= \underline{12.8\%} \end{aligned}$$

$$\begin{aligned} \text{Market value per share} \\ &= \$43.0\text{m}/4.0\text{m} \\ &= \underline{\$10.75} \end{aligned}$$

- (b) To repurchase 1,400,000 shares, \$15.05m (that is, 1,400,000 x \$10.75) will be required.

This requires loan capital with a nominal value of \$21.5m (i.e. \$15.05 x 100/70).

According to the net operating income approach, the weighted average cost of capital and market value of the company will remain unchanged by the repurchase. The market value of ordinary shares will now be:

$$\begin{aligned} &= \text{market value of company} - \text{market value of loan capital} \\ &= \$50.0\text{m} - (\$7.0\text{m} + \$15.05\text{m}) \\ &= \underline{\$27.95\text{m}} \end{aligned}$$

$$\begin{aligned} \text{Annual dividends} \\ &= \$6.0\text{m} - (\$31.5\text{m} \times 5\%) \\ &= \underline{\$4.425\text{m}} \end{aligned}$$

$$\begin{aligned} \text{Cost of ordinary share (D}_o\text{/P}_o\text{)} \\ &= \$4.425\text{m}/\$27.95\text{m} \\ &= \underline{15.8\%} \end{aligned}$$

$$\begin{aligned} \text{Market value per share} \\ &= \$27.95\text{m}/(4.0\text{m} - 1.4\text{m}) \\ &= \underline{\$10.75} \end{aligned}$$

- (c) The above calculations reveal that the effect of an increase in the level of gearing is an increase in the cost of ordinary shares. This increase offsets the effect of the introduction of cheaper loan capital such that the weighted average cost of capital remains unchanged.

The market value of the business also remains unchanged. Although the total market value of ordinary shares decreases, so does the number of ordinary shares in issue and the market value per share is unchanged. Thus, the net operating income approach suggests that the level of gearing has no effect on shareholder wealth and is, therefore, a matter of indifference to shareholders.

- (d) There are a number of assumptions underpinning the net operating income approach that may not hold in the real world. These include:

- the assumption that businesses can borrow at any level of gearing. When very high levels of gearing are reached, the risk of default is likely to discourage lenders from providing additional finance. Default risk and the risk of business failure, however, is not taken into account.
- the assumption that shareholders hold a well-diversified portfolio. Where this is the case, the increased level of risk arising from a higher level of gearing in an individual business can be managed by adjusting the investment portfolio so as to maintain the overall level of risk. In the real world, however, shareholders may not hold a well-diversified portfolio of investments.

The introduction of taxation has a major effect on the conclusions discussed in (b) above. Loan interest is an allowable expense for taxation purposes and the effect of this is to make the cost of the loan capital much cheaper than first envisaged and to reduce the weighted average cost of capital. Modigliani and Miller modified their ideas on gearing to take account of taxation. They demonstrated that, when taxation is taken into account, the weighted average cost of capital will continue to fall as the level of gearing increases. The market value of the company, on the other hand, will rise as the weighted average cost of capital falls. This modified view suggests that the level of gearing has an effect on shareholder wealth and so should be a matter of concern for shareholders.

- 5 (a) When determining whether the loan portfolio is being properly managed, the following issues and risks should be considered:

The balance between fixed and floating interest rates Fixed interest rate loans can protect the company against interest rate rises when market rates rise but may lock the company into higher-than-market rates when market interest rates fall. Floating interest rate loans, on the other hand, do not protect the company against rising market rates but will enable the company to benefit from falling market rates. The directors should consider the appropriate mix of fixed and floating rates of interest and, if necessary, interest rate swaps may be used to adjust the loan portfolio to the required mix.

The use of hedging instruments To avoid uncertainty, it may be desirable to fix the rate of interest to be paid on a floating-rate loan in advance. To do this a variety of hedging instruments are available including forward rate agreements, options, futures and swaps.

Maturity risk The company must be in a position to make loan capital repayments when they fall due. There must therefore be sufficient cash available for such events. To avoid having large amounts of loan capital being due for repayment within a short period, there should be a reasonable spread of maturity dates within the loan portfolio.

Protection against currency risk As Corinium plc has assets in mainland Europe, borrowing in the currency in which investments are made may provide a useful hedge against currency risk.

Refinancing risk The length of a loan period should match the period for which the finance is required. Failure to do this may lead the company to seek replacement finance at a difficult time because of changes in the company's circumstances or changes in the loan market.

(b) The borrowing rates for each company are as follows:

	Fixed %	Floating %
Corinium plc	5.4	LIBOR + 0.4
Dora plc	6.9	LIBOR + 1.0
Difference	<u>1.5</u>	<u>+ 0.6</u>

These differences in interest rates can be used to the benefit of both companies as follows:

	%
Differences between fixed and floating rates (1.5 – 0.6)	0.9
Less Swap bank commission	<u>0.3</u>
Available for division between the two companies	0.6
Corinium plc savings	0.3
Dora plc savings	<u>0.3</u>
	<u>0.6</u>

As Corinium plc has the larger comparative advantage with fixed-rate borrowing, it should borrow at the fixed rate. Interest payments and receipts for Corinium plc will be as follows:

	£m	£m
Interest paid on fixed rate loan (£200m at 5.4%) to its own bank		10.8
Interest received from swap bank	(10.6)	
Interest paid (LIBOR) to swap bank (£200m x 5.8%)	<u>11.6</u>	<u>1.0</u>
Total interest cost (Variable at LIBOR + 0.1%)		<u>11.8</u>

(c) Interest rate swaps have the following advantages:

- *Transaction costs* Transaction costs tend to be fairly low as a result of competition between swap banks. These costs will include the fees of swap banks and any legal fees.
- *Flexibility* Swaps can be arranged in a way to suit the particular needs of the customer. Thus they can be arranged for different time periods, different amounts and so on.
- *Set up arrangements* Swaps can often be arranged easily through a swap bank. The swap bank will normally undertake to find a suitable counterparty to the swap agreement (although the bank may be willing to act as a counterparty, thereby making this unnecessary). It is possible to reverse a swap agreement before the maturity date by re-swapping with other counterparties. However, this will usually result in additional costs being incurred.

The main disadvantage of a swap agreement is counterparty risk, that is, the risk that the counterparty to the agreement will default on its commitments. This risk may be managed by paying a fee to the swap bank to act as guarantor (as described in the question). Where a swap bank agrees to act as the counterparty, this problem is not really an issue.

6 Recommendations for a framework for evaluating the performance of the board of directors

To: Board of directors of Dubris Co

From: A. Candidate

The main areas that provide a framework for the evaluation of the board of directors are set out below along with the key points that should be considered within each area.

Board structure and roles

- Do board members have clearly defined roles and responsibilities? In particular, are the roles of chairman and chief executive clearly defined?
- Does the structure of the board and do the roles of board members reflect key functions and responsibilities?
- Are the terms of reference for key board committees such as the nomination, remuneration and audit committees of the board appropriate?

- Is the reporting relationship between the board and its key committees clear and logical?

Aims and objectives of the business

- Are there clear aims and a fully-developed strategy for the business?
- Are all board members aware of, and committed to, the aims and strategic objectives of the business?
- Do the aims and strategic objectives of the business inform key board decisions?
- Does the board review progress towards achievement of the aims and objectives of the business on a regular basis?

Board meetings

- Are board meetings arranged on a regular and frequent basis and is there a written agenda for each meeting?
- Are unscheduled meetings arranged if required?
- Is there a requirement that all board members attend board meetings and what is the attendance record of each board member?
- Do board meetings concentrate on the key issues affecting the performance and position of the business?
- Is material relevant to board meetings distributed on a timely basis?
- How are urgent matters arising between board meetings dealt with and how are they reported to the board?

Board composition

- Does the tenure of the board members provide an appropriate balance between continuity and change?
- Are the roles of chairman and chief executive separated?
- Is there an appropriate balance between executive and non-executive directors and what proportion of non-executive directors is independent?
- Is there an appropriate balance of skills and experience within the board?
- Is the age profile of the board of directors appropriate?
- Is the composition of key board committees, such as the nomination, remuneration and audit committees appropriate?

Board deliberations

- Is sufficient time allowed for board members to deliberate on key areas?
- Are all board members given an opportunity to contribute towards board discussions?
- Do all board members make a satisfactory contribution towards board discussions and decisions?
- Do board deliberations and discussions result in appropriate decisions being made?
- Do independent, non-executive directors fulfil their roles at board meetings?
- Do board members work effectively together as part of a team?

Board communication with stakeholders

- Does the board have clear policies and procedures for communicating with stakeholders?
- Are key stakeholders, such as employees, suppliers, and shareholders informed of key issues and strategies in an effective and timely manner?
- Does the board communicate with both institutional and private shareholders on a regular basis and are the forms of communication used appropriate and effective?
- Does the board communicate all relevant issues concerning compliance with the Combined Code to shareholders?

Board development

- Are there appropriate policies in place for board development and for board succession?
- Are the training and development opportunities available to board members aligned to the needs of the business?
- Are induction programmes available for new board members?

(Examiner's note: Other areas and issues may have been identified and discussed when answering this question.)

		Marks
1	(a) 2 marks material Alpha, 2 marks material Beta, 2 marks overheads, 1 mark labour, 1 mark DCF calculations, 2 marks WACC, 3 marks minimum price calculations, 2 marks comments	15
	(b) 1 mark (i) , 4 marks (ii)	<u>5</u>
		<u>20</u>
2	(a) (i) 4 marks for projected income statement under each option	8
	(ii) 1 mark for EPS under each option	2
	(iii) 1 mark for gearing ratio under each option	2
	(b) 2 marks formula, 2 marks calculations	4
	(c) 2 marks per point (max. 4 marks)	<u>4</u>
		<u>20</u>
3	(a) 2 marks nature, 3 marks benefits	5
	(b) 3 marks receipts, 5 marks payments, 2 marks opening and closing cash flows	10
	(c) 2 marks comments, 3 marks suggestions	<u>5</u>
		<u>20</u>
4	(a) 4 marks cost of equity, 3 marks MV per share	7
	(b) 3 marks cost of equity, 3 marks MV per share	6
	(c) 1 mark per point	2
	(d) 3 marks taxation effect, 2 marks other assumptions	<u>5</u>
		<u>20</u>
5	(a) 2 marks each issue/type of risk (max. 8 marks)	8
	(b) 3 marks analysis of benefits, 4 marks swap interest and receipts	7
	(c) 3 marks advantages, 2 marks disadvantages	<u>5</u>
		<u>20</u>
6	1 mark for identifying each board performance area (max. 5 marks), 2 marks for each point to be addressed within each area (max. 15 marks)	<u>20</u>