Answers

Section B

1   The question as to whether Crago Co can be considered to be overtrading (undercapitalised) calls for the evaluation of a number of indicators of overtrading.

Rapid increase in sales revenue
Overtrading can arise as a result of a rapid increase in sales revenue which is not matched by a corresponding increase in working capital investment. The sales revenue of Crago Co has increased by 42·5% over the year, indicating a rapid increase in sales revenue, while the ratio of sales income/net working capital has increased from 12 times to 86 times, showing that working capital investment has not matched the increase in sales revenue.

Overtrading can also arise due to non-replacement of long-term debt which has been repaid (redeemed), but the long-term debt of Crago Co has not changed. Overtrading can also arise due to inflation eroding the operating capability of a company, however, information on inflation has not been provided.

Increased reliance on short-term finance
There is evidence of an increased reliance by Crago Co on short-term finance, since the overdraft has increased by 182% from $850,000 to $2,400,000, while trade payables have increased by 52% from $1,250,000 to $1,900,000. In addition, the proportion of current assets financed from short-term sources has increased from 68% to 96%. As noted earlier, there has been no increase in long-term debt.

Rapid increase in current assets
Current assets may increase rapidly in line with sales volume and sales revenue. Trade receivables have certainly increased by $1,000,000 or 100% over the period. However, inventory has only increased by 19% from $2,100,000 to $2,500,000, an increase which is much smaller than the increase in the sales revenue of Crago Co.

Decline in solvency and liquidity ratios
The current ratio of Crago Co has declined from 1·5 times to 1·05 times, while its quick ratio has remained unchanged at 0·5 times. Both ratios are below their sector average values of 1·7 times and 0·8 times respectively, however.

Overcoming overtrading
Overtrading or undercapitalisation can be overcome by increasing the long-term capital of a company. This could be achieved by Crago Co raising either new debt finance or new equity finance. Alternatively, the balance between the level of business activity and the amount of long-term finance could be restored, for example, by calling a halt to the rapid expansion of sales until Crago Co has consolidated its financial position.

Financial analysis

	20X5	20X4	Sector
Inventory days			
360 x 2,500/8,550	105 days		
360 x 2,100/7,500		101 days	65 days
Trade receivable days			
360 x 2,000/17,100	42 days		
360 x 1,000/12,000		30 days	30 days
Trade payables days			
360 x 1,900/8,550	80 days		
360 x 1,250/7,500		60 days	50 days
Current ratio			
4,500/4,300	1·05 times		
3,100/2,100		1·5 times	1·7 times
Quick ratio			
2,000/4,300	0·5 times		
1,000/2,100		0·5 times	0·8 times
Sales income/net working capital			
17,100/200	86 times		
12,000/1,000		12 times	
Short-term funding of current assets			
20X5: 100 x 4,300/4,500	96%		
20X4: 100 x 2,100/3,100		68%	

Sales income growth: 17,100/12,000 = 42·5%
Inventory growth: 2,500/2,100 = 19%
Trade receivables growth: 2,000/1,000 = 100%
Trade payables growth: 1,900/1,250 = 52%
Overdraft growth: 2,400/850 = 182%

2 (a) Plam Co needs to make an interest payment of 30 million pesos in six months' time. The current dollar cost of this interest payment is $30/58\cdot335 = \$514,271$. In six months' time the dollar cost of the interest payment will be $30/56\cdot585 = \$530,176$. This is an increase in cost of $15,905.

Plam Co could lock into the six-month forward exchange rate of 56·585 pesos/$ by entering into a forward exchange contract with a bank. This would fix the cost of the interest payment at $530,176 and protect Plam Co against any unexpected deterioration in the exchange rate. However, Plam Co could not benefit if the future spot were more favourable than the current forward exchange rate.

Plam Co could use a money market hedge by placing pesos on deposit now, financed by borrowing dollars for repayment in six months' time. The six-month interest rate for placing pesos on deposit is 1·5% (3%/2) and the six-month interest rate for borrowing dollars is 5% (10%/2). The dollar cost of hedging the peso interest payment would be $532,005 (30 x 1·05)/(1·015 x 58·335).

On financial grounds, the forward market hedge would be recommended.

(b) Interest rate risk is concerned with the sensitivity of profit and cash flows to changes in interest rates.

Fixed rate debt and floating rate debt
Plam Co has both fixed rate debt and floating rate debt. Analysis shows that floating rate debt contributes 21·7% of nominal value of debt and 24·3% of annual interest payments. Plam Co expects interest rates to fall over the next year and its high proportion of fixed rate debt would lead to the company losing competitive advantage compared to a company with a higher proportion of floating rate debt. Plam Co will continue to be disadvantaged by its fixed interest debt for a long time, if interest rates continue to fall, since its fixed rate debt cannot be redeemed for another eight years.

Gap exposure and basis risk
Gap exposure considers groups of interest-sensitive assets and liabilities with similar maturities and determines whether liabilities exceed assets (a negative gap) or assets exceed liabilities (a positive gap), in evaluating sensitivity to interest rate increases and decreases.

Even if interest-sensitive assets and liabilities are matched, interest rate risk can arise if variable interest rates on assets and liabilities are determined on different bases (basis risk).

There is no information indicating that Plam Co has interest-bearing assets and on this basis gap exposure and basis risk are not relevant.

Workings
Interest on dollar-denominated loan notes = $20m x 0·07 = $1,400,000
Interest on dollar-denominated bank loan = $4m x 0·08 = $320,000
Interest on dollar-denominated overdraft = $3m x 0·1 = $300,000
Interest on peso-denominated loan notes = 300m pesos x 0·1/56·585 = $530,176

Total interest payment = $1,400,000 + $320,000 + $300,000 + $530,176 = $2,550,176
Percentage of floating rate interest = 100 x ($320,000 + $300,000)/$2,550,176 = 24·3%

Debt nominal value = $20m + $4m + $3m + $5·3m* = $32·3 million
Percentage of floating rate debt = 100 x $7m/$32·3m = 21·7%

*$530,176/0·1 or 300m pesos/56·585

3 (a) If share prices increase by 4% per year, the share price in seven years' time will be $8·55 per share ($6·50 x 1·04[7]) and the conversion value will be $940 per loan note ($8·55 x 110).

This conversion value is less than the nominal value of $1,000 per loan note and less than the expected market value of $990·82 per loan note at the end of seven years (0·926 x $1,070). On financial grounds, holders of the loan notes are likely to hold them until redemption after eight years.

The market value of the loan notes will be (70 x 5·747) + (1,000 x 0·540) = 402·29 + 540·00 = $942·29 per loan note. This is also referred to as the floor value of the loan notes.

If share prices increase by 6% per year, the share price in seven years' time will be $9·77 per share (6·50 x 1·06[7]) and the conversion value will be $1,075 per loan note (9·77 x 110). Holders of the loan notes are likely to prefer conversion, as the conversion value is now greater than nominal value of $1,000 per loan note and the expected market value of $990·82 per loan note at the end of seven years.

The current market value of the loan notes will be (70 x 5·206) + (1,075 x 0·583) = 364·42 + 626·73 = $991·15 per loan note.

(b) The dividend growth model (DGM) values the ordinary shares of a company as the present value of its expected future dividends and the model makes the assumption that these future dividends increase at a constant annual rate.

The main problem with the DGM is that while predictions can be made of future dividends, future dividends cannot be known with certainty. In fact, experience shows that directors take many factors into account when making dividend decisions and dividends do not increase at a constant annual rate in the real world. It is therefore extremely unlikely that future dividends will increase at a constant annual rate in perpetuity.

The DGM also assumes that the cost of equity is constant. In reality, the cost of equity will change as economic circumstances change. The capital asset pricing model suggests that the cost of equity will vary with changes in systematic risk, whether business risk or financial risk. It is therefore unrealistic to expect that the cost of equity will remain constant in the future.

Dividends are of great importance to many shareholders, however, and the value placed on shares will often reflect the value of expected future dividend income. The DGM offers shareholders a way of estimating the value of future dividend income, provided that the assumptions of the model are accepted.

4 (a) Cost of equity
The dividend growth model can be used to calculate the cost of equity.
$K_e = ((0.25 \times 1.04)/4.26) + 0.04 = 10.1\%$

Cost of preference shares
$K_p = (0.05 \times 1.00)/0.56 = 8.9\%$

Cost of debt of loan notes
After-tax annual interest payment $= 6 \times (1 - 0.25) = 6 \times 0.75 = \$4.50$ per year

Year	Cash Flow ($)	5% discount	PV ($)	6% discount	PV ($)
0	(95·45)	1·000	(95·45)	1·000	(95·45)
1–5	4·50	4·329	19·48	4·212	18·95
5	100·00	0·784	78·40	0·747	74·70
			2·43		(1·80)

After-tax cost of debt of loan notes $= K_d = 5 + (1 \times 2.43)/(2.43 + 1.80) = 5 + 0.57 = 5.6\%$

Cost of debt of bank loan
The after-tax fixed interest rate of the bank loan can be used as its cost of debt. This will be 5·25% (7 x 0·75). Alternatively, the after-tax cost of debt of the loan notes can be used as a substitute for the after-tax cost of debt of the bank loan.

Market values

	$000
Equity: 4·26 x (23,000,000/0·25) =	391,920
Preference shares: 0·56 x (5,000,000/1·00) =	2,800
Loan notes: 95·45 x (11,000,000/100) =	10,500
Bank loan	3,000
	408,220

After-tax weighted average cost of capital
$((10.1 \times 391,920) + (8.9 \times 2,800) + (5.6 \times 10,500) + (5.25 \times 3,000))/408,220 = 9.9\%$

(b) The creditor hierarchy refers to the order in which financial claims against a company are settled when the company is liquidated. The hierarchy, in order of decreasing priority, is secured creditors, unsecured creditors, preference shareholders and ordinary shareholders. The risk of not receiving any cash in a liquidation increases as priority decreases. Secured creditors (secured debt) therefore face the lowest risk as providers of finance and ordinary shareholders face the highest risk.

The return required by a provider of finance is related to the risk faced by that provider of finance. Secured creditors therefore have the lowest required rate of return and ordinary shareholders have the highest required rate of return. The cost of debt should be less than the cost of preference shares, which should be less than the cost of equity.

(c) Wealth creation in Islamic finance requires that risk and reward, in terms of economic benefit, are shared between the provider of finance and the user of finance. Economic benefit includes wider economic goals such as increasing employment and social welfare. Conventional finance, which refers to finance which is not based on Islamic principles and which has historically been used in the financial system, does not require the sharing of risks and rewards between the provider of finance (the investor) and the user of finance.

Interest (*riba*) is absolutely forbidden in Islamic finance and is seen as immoral. This can be contrasted with debt in conventional finance, where interest is seen as the main form of return to the debt holder, and with the attention paid to interest rates in the conventional financial system, where interest is the reward for depositing funds and the cost of borrowing funds.

Islamic finance can only support business activities which are acceptable under Sharia law.

Murubaha and *sukuk* are forms of Islamic finance which can be compared to conventional debt finance. Unlike conventional debt finance, however, *murubaha* and *sukuk* must have a direct link with underlying tangible assets.

5 (a) Calculation of NPV over four years

Year	1	2	3	4
	$000	$000	$000	$000
Sales income	12,525	15,030	22,545	22,545
Conversion cost	(7,913)	(9,495)	(14,243)	(14,243)
Contribution	4,612	5,535	8,302	8,302
Fixed costs	(4,000)	(5,000)	(5,500)	(5,500)
Before-tax cash flow	612	535	2,802	2,802
Tax liability at 28%	(171)	(150)	(785)	(785)
Tax allowable depreciation benefits	112	112	112	112
After-tax cash flow	553	497	2,129	2,129
Discount at 11%	0·901	0·812	0·731	0·659
Present values	498	404	1,556	1,403

	$000
Sum of present values	3,861
Initial investment	4,000
NPV	(139)

Workings

Average selling price = (30,000 x 0·20) + (42,000 x 0·45) + (72,000 x 0·35) = $50,100 per unit

Average conversion cost = (23,000 x 0·20) + (29,000 x 0·45) + (40,000 x 0·35) = $31,650 per unit

Year	1	2	3	4
Sales volume (units/year)	250	300	450	450
Average selling price ($/unit)	50,100	50,100	50,100	50,100
Sales income ($000/year)	12,525	15,030	22,545	22,545

Year	1	2	3	4
Sales volume (units/year)	250	300	450	450
Average conversion cost ($/unit)	31,650	31,650	31,650	31,650
Conversion cost ($000/year)	7,913	9,495	14,243	14,243

Contribution may be calculated directly, with small rounding differences. Average contribution = 50,100 – 31,650 = $18,450 per unit.

Year	1	2	3	4
Sales volume (units/year)	250	300	450	450
Average contribution ($/unit)	18,450	18,450	18,450	18,450
Contribution ($000/year)	4,613	5,535	8,303	8,303

Tax allowable depreciation = 4,000,000/10 = $400,000 per year

Benefit of tax allowable depreciation = 400,000 x 0·28 = $112,000 per year

(b) Ignoring tax allowable depreciation, after-tax cash flow from year five onwards will be:

2,802,000 – 785,000 = $2,017,000 per year

Present value of this cash flow in perpetuity = (2,017,000/0·11) x 0·659 = $12,083,664

There would be a further six years of tax benefits from tax allowable depreciation. The present value of these cash flows would be 112,000 x 4·231 x 0·659 = $312,282.

Increase in NPV of production and sales continuing beyond the first four years would be 12,083,664 + 312,282 = $12,395,946 or approximately $12·4 million.

If only the first four years of operation are considered, the NPV of the planned investment is negative and so it would not be financially acceptable. If production and sales beyond the first four years are considered, the NPV is strongly positive and so the planned investment is financially acceptable. In fact, the NPV of the planned investment becomes positive if only one further year of operation is considered:

NPV = (2,129,000 x 0·593) – 139,000 = 1,262,497 – 139,000 = $1,123,497

(c) Risk in investment NPV appraisal refers to a range of outcomes whose probability of occurrence can be quantified. Risk can therefore be distinguished from uncertainty in investment appraisal, where the likelihood of particular outcomes occurring cannot be quantified.

As regards incorporating risk into investment appraisal, probability analysis can be used to calculate the values of possible outcomes and their probability distribution, the value of the worst possible outcome and its probability, the probability that an investment will generate a positive NPV, the standard deviation of the possible outcomes and the expected value (mean value) of the NPV. Standard deviation is a measure of risk in financial management.

One difficulty with probability analysis is its assumption that an investment can be repeated a large number of times. The expected value of the NPV, for example, is a mean or average value of a number of possible NPVs, while standard deviation is a measure of dispersal of possible NPVs about the expected (mean) NPV. In reality, many investment projects cannot be repeated and so only one of the possible outcomes will actually occur. The expected (mean) value will not actually occur, causing difficulties in applying and interpreting the NPV decision rule when using probability analysis.

Another difficulty with probability analysis is the question of how the probabilities of possible outcomes are assessed and calculated. One method of determining probabilities is by considering and analysing the outcomes of similar investment projects from the past. However, this approach relies on the weak assumption that the past is an acceptable guide to the future. Assessing probabilities this way is also likely to be a very subjective process.

Fundamentals Level – Skills Module, Paper F9
Financial Management

			Marks	*Marks*

Section B

1	Rapid increase in sales revenue		1	
	Increased reliance on short-term finance		1–2	
	Rapid increase in current assets		1	
	Decline in solvency and liquidity ratios		1	
	Other relevant discussion		1	
	Overcoming overtrading		1–2	
	Calculation of inventory days for both years		0.5	
	Calculation of trade receivables days for both years		0.5	
	Calculation of trade payables days for both years		0.5	
	Calculation of current ratio for both years		0.5	
	Calculation of quick ratio for both years		0.5	
	Calculation of sales/net working capital for both years		0.5	
	Other financial analysis		1	
		Maximum		**10**

2	**(a)**	Increased dollar cost of interest payment	1	
		Six-month forward market hedge	1	
		Six-month interest rates	1	
		Six-month money market hedge	1	
		Six-month hedging recommendation	1	
				5
	(b)	Fixed interest rate and floating interest rate discussion	1–4	
		Analysis of fixed and floating rate interest	1	
		Analysis of fixed and floating rate nominal value	1	
		Gap exposure and basis risk	1	
			Maximum	5
				10

3	**(a)**	Conversion value using 4% share price growth	1	
		Justification for valuation calculation	1	
		Market value using 4% share price growth	1	
		Conversion value using 6% share price growth	1	
		Justification for valuation calculation	1	
		Market value using 6% share price growth	1	
				6
	(b)	Assumption of constant dividend growth rate	1–2	
		Assumption of constant cost of equity	1–2	
		Other relevant discussion	1–2	
			Maximum	4
				10

			Marks	Marks
4	**(a)**	Cost of equity	1	
		Cost of preference shares	1	
		After-tax loan note interest payment	1	
		Setting up loan note cost of debt calculation	1	
		After-tax cost of debt of loan notes	1	
		After-tax cost of debt of bank loan	1	
		Market values	1	
		After-tax weighted average cost of capital	1	
				8
	(b)	Explanation of creditor hierarchy	1	
		Relative risks and costs of sources of finance	2	
				3
	(c)	Sharing of risk and reward	1–2	
		Forbidding of *riba*	1–2	
		Other relevant discussion	1–2	
		Maximum		4
				15

			Marks	Marks
5	**(a)**	Sales income	1	
		Conversion cost	1	
		Before-tax cash flow	1	
		Tax liability	1	
		Tax allowable depreciation benefits	1	
		After-tax cash flow	1	
		Calculation of NPV	1	
				7
	(b)	PV of future cash flows ignoring tax allowable depreciation	1	
		PV of tax allowable depreciation benefits	1	
		Comment on financial acceptability	1	
				3
	(c)	Risk and uncertainty	1	
		Explanation of probability analysis	1–2	
		Repeatability assumption	1–2	
		Difficulty in determining probabilities	1–2	
		Maximum		5
				15