Financial Management

Paper F9

Time allowed

Reading and planning: 15 minutes

Writing: 3 hours

ALL FOUR questions are compulsory and MUST be attempted.

Do NOT open this paper until instructed by the supervisor.

During reading and planning time only the question paper may be annotated. You must NOT write in your answer booklet until instructed by the supervisor.

This question paper must not be removed from the examination hall.

ACCA

The Association of Chartered Certified Accountants

ALL FOUR questions are compulsory and MUST be attempted

1   Droxfol Co is a listed company that plans to spend $10m on expanding its existing business. It has been suggested that the money could be raised by issuing 9% loan notes redeemable in ten years' time. Current financial information on Droxfol Co is as follows.

Income statement information for the last year

	$000
Profit before interest and tax	7,000
Interest	(500)
Profit before tax	6,500
Tax	(1,950)
Profit for the period	4,550

Balance sheet for the last year	$000	$000
Non-current assets		20,000
Current assets		20,000
Total assets		40,000
Equity and liabilities		
Ordinary shares, par value $1	5,000	
Retained earnings	22,500	
Total equity		27,500
10% loan notes	5,000	
9% preference shares, par value $1	2,500	
Total non-current liabilities		7,500
Current liabilities		5,000
Total equity and liabilities		40,000

The current ex div ordinary share price is $4.50 per share. An ordinary dividend of 35 cents per share has just been paid and dividends are expected to increase by 4% per year for the foreseeable future. The current ex div preference share price is 76.2 cents. The loan notes are secured on the existing non-current assets of Droxfol Co and are redeemable at par in eight years' time. They have a current ex interest market price of $105 per $100 loan note. Droxfol Co pays tax on profits at an annual rate of 30%.

The expansion of business is expected to increase profit before interest and tax by 12% in the first year. Droxfol Co has no overdraft.

Average sector ratios:
Financial gearing: 45%   (prior charge capital divided by equity capital on a book value basis)
Interest coverage ratio: 12 times

Required:

(a) Calculate the current weighted average cost of capital of Droxfol Co.   (9 marks)

(b) Discuss whether financial management theory suggests that Droxfol Co can reduce its weighted average cost of capital to a minimum level.   (8 marks)

(c) Evaluate and comment on the effects, after one year, of the loan note issue and the expansion of business on the following ratios:
(i)   interest coverage ratio;
(ii) financial gearing;
(iii) earnings per share.

Assume that the dividend growth rate of 4% is unchanged.   (8 marks)

(25 marks)

2 Nedwen Co is a UK-based company which has the following expected transactions..

One month: Expected receipt of $240,000
One month: Expected payment of $140,000
Three months: Expected receipts of $300,000

The finance manager has collected the following information:

Spot rate ($ per £): 1.7820 ± 0.0002
One month forward rate ($ per £): 1.7829 ± 0.0003
Three months forward rate ($ per £): 1.7846 ± 0.0004

Money market rates for Nedwen Co:

	Borrowing	Deposit
One year sterling interest rate:	4.9%	4.6
One year dollar interest rate:	5.4%	5.1

Assume that it is now 1 April.

Required:

(a) Discuss the differences between transaction risk, translation risk and economic risk.   (6 marks)

(b) Explain how inflation rates can be used to forecast exchange rates.   (6 marks)

(c) Calculate the expected sterling receipts in one month and in three months using the forward market.
(3 marks)

(d) Calculate the expected sterling receipts in three months using a money-market hedge and recommend whether a forward market hedge or a money market hedge should be used.   (5 marks)

(e) Discuss how sterling currency futures contracts could be used to hedge the three-month dollar receipt.
(5 marks)

(25 marks)

3 Ulnad Co has annual sales revenue of $6 million and all sales are on 30 days' credit, although customers on average take ten days more than this to pay. Contribution represents 60% of sales and the company currently has no bad debts. Accounts receivable are financed by an overdraft at an annual interest rate of 7%.

Ulnad Co plans to offer an early settlement discount of 1.5% for payment within 15 days and to extend the maximum credit offered to 60 days. The company expects that these changes will increase annual credit sales by 5%, while also leading to additional incremental costs equal to 0.5% of turnover. The discount is expected to be taken by 30% of customers, with the remaining customers taking an average of 60 days to pay.

Required:

(a) Evaluate whether the proposed changes in credit policy will increase the profitability of Ulnad Co. (6 marks)

(b) Renpec Co, a subsidiary of Ulnad Co, has set a minimum cash account balance of $7,500. The average cost to the company of making deposits or selling investments is $18 per transaction and the standard deviation of its cash flows was $1,000 per day during the last year. The average interest rate on investments is 5.11%.

Determine the spread, the upper limit and the return point for the cash account of Renpec Co using the Miller-Orr model and explain the relevance of these values for the cash management of the company.   (6 marks)

(c) Identify and explain the key areas of accounts receivable management.   (6 marks)

(d) Discuss the key factors to be considered when formulating a working capital funding policy.   (7 marks)

(25 marks)

4 Trecor Co plans to buy a new machine to meet expected demand for a new product, Product T. This machine will cost $250,000 and last for four years, at the end of which time it will be sold for $5,000. Trecor Co expects demand for Product T to be as follows:

Year	1	2	3	4
Demand (units)	35,000	40,000	50,000	25,000

The selling price for Product T is expected to be $12.00 per unit and the variable cost of production is expected to be $7.80 per unit. Incremental annual fixed production overheads of $25,000 per year will be incurred. Selling price and costs are all in current price terms.

Selling price and costs are expected to increase as follows:

	Increase
Selling price of Product T:	3% per year
Variable cost of production:	4% per year
Fixed production overheads:	6% per year

Other information

Trecor Co has a real cost of capital of 5.7% and pays tax at an annual rate of 30% one year in arrears. It can claim capital allowances on a 25% reducing balance basis. General inflation is expected to be 5% per year.

Trecor Co has a target return on capital employed of 20%. Depreciation is charged on a straight-line basis over the life of an asset.

Required:

(a) Calculate the net present value of buying the new machine and comment on your findings (work to the nearest $1,000). (13 marks)

(b) Calculate the before-tax return on capital employed (accounting rate of return) based on the average investment and comment on your findings. (5 marks)

(c) Discuss the strengths and weaknesses of internal rate of return in appraising capital investments. (7 marks)

(25 marks)

Formulae Sheet

Economic order quantity

$$= \sqrt{\frac{2C_o D}{C_H}}$$

Miller – Orr Model

$$\text{Return point} = \text{Lower limit} + (\frac{1}{3} \times \text{spread})$$

$$\text{Spread} = 3 \left[\frac{\frac{3}{4} \times \text{transaction cost} \times \text{variance of cash flows}}{\text{interest rate}} \right]^{\frac{1}{3}}$$

The Capital Asset Pricing Model

$$E(r_i) = R_f + \beta_i (E(r_m) - R_f)$$

The asset beta formula

$$\beta_a = \left[\frac{V_e}{(V_e + V_d(1-T))} \beta_e \right] + \left[\frac{V_d(1-T)}{(V_e + V_d(1-T))} \beta_d \right]$$

The Growth Model

$$P_o = \frac{D_o(1+g)}{(r_e - g)}$$

Gordon's growth approximation

$$g = br_e$$

The weighted average cost of capital

$$WACC = \left[\frac{V_e}{V_e + V_d} \right] k_e + \left[\frac{V_d}{V_e + V_d} \right] k_d (1-T)$$

The Fisher formula

$$(1+i) = (1+r)(1+h)$$

Purchasing power parity and interest rate parity

$$S_1 = S_0 \times \frac{(1+h_c)}{(1+h_b)} \qquad\qquad F_0 = S_0 \times \frac{(1+i_c)}{(1+i_b)}$$

Present Value Table

Present value of 1 i.e. $(1 + r)^{-n}$

Where r = discount rate

             n = number of periods until payment

Discount rate (r)

Periods (n)	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	
1	0·990	0·980	0·971	0·962	0·952	0·943	0·935	0·926	0·917	0·909	1
2	0·980	0·961	0·943	0·925	0·907	0·890	0·873	0·857	0·842	0·826	2
3	0·971	0·942	0·915	0·889	0·864	0·840	0·816	0·794	0·772	0·751	3
4	0·961	0·924	0·888	0·855	0·823	0·792	0·763	0·735	0·708	0·683	4
5	0·951	0·906	0·863	0·822	0·784	0·747	0·713	0·681	0·650	0·621	5
6	0·942	0·888	0·837	0·790	0·746	0·705	0·666	0·630	0·596	0·564	6
7	0·933	0·871	0·813	0·760	0·711	0·665	0·623	0·583	0·547	0·513	7
8	0·923	0·853	0·789	0·731	0·677	0·627	0·582	0·540	0·502	0·467	8
9	0·914	0·837	0·766	0·703	0·645	0·592	0·544	0·500	0·460	0·424	9
10	0·905	0·820	0·744	0·676	0·614	0·558	0·508	0·463	0·422	0·386	10
11	0·896	0·804	0·722	0·650	0·585	0·527	0·475	0·429	0·388	0·350	11
12	0·887	0·788	0·701	0·625	0·557	0·497	0·444	0·397	0·356	0·319	12
13	0·879	0·773	0·681	0·601	0·530	0·469	0·415	0·368	0·326	0·290	13
14	0·870	0·758	0·661	0·577	0·505	0·442	0·388	0·340	0·299	0·263	14
15	0·861	0·743	0·642	0·555	0·481	0·417	0·362	0·315	0·275	0·239	15

(n)	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%	
1	0·901	0·893	0·885	0·877	0·870	0·862	0·855	0·847	0·840	0·833	1
2	0·812	0·797	0·783	0·769	0·756	0·743	0·731	0·718	0·706	0·694	2
3	0·731	0·712	0·693	0·675	0·658	0·641	0·624	0·609	0·593	0·579	3
4	0·659	0·636	0·613	0·592	0·572	0·552	0·534	0·516	0·499	0·482	4
5	0·593	0·567	0·543	0·519	0·497	0·476	0·456	0·437	0·419	0·402	5
6	0·535	0·507	0·480	0·456	0·432	0·410	0·390	0·370	0·352	0·335	6
7	0·482	0·452	0·425	0·400	0·376	0·354	0·333	0·314	0·296	0·279	7
8	0·434	0·404	0·376	0·351	0·327	0·305	0·285	0·266	0·249	0·233	8
9	0·391	0·361	0·333	0·308	0·284	0·263	0·243	0·225	0·209	0·194	9
10	0·352	0·322	0·295	0·270	0·247	0·227	0·208	0·191	0·176	0·162	10
11	0·317	0·287	0·261	0·237	0·215	0·195	0·178	0·162	0·148	0·135	11
12	0·286	0·257	0·231	0·208	0·187	0·168	0·152	0·137	0·124	0·112	12
13	0·258	0·229	0·204	0·182	0·163	0·145	0·130	0·116	0·104	0·093	13
14	0·232	0·205	0·181	0·160	0·141	0·125	0·111	0·099	0·088	0·078	14
15	0·209	0·183	0·160	0·140	0·123	0·108	0·095	0·084	0·074	0·065	15

Annuity Table

Present value of an annuity of 1 i.e. $\dfrac{1 - (1 + r)^{-n}}{r}$

Where   r = discount rate
            n = number of periods

Discount rate (r)

Periods (n)	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	
1	0·990	0·980	0·971	0·962	0·952	0·943	0·935	0·926	0·917	0·909	1
2	1·970	1·942	1·913	1·886	1·859	1·833	1·808	1·783	1·759	1·736	2
3	2·941	2·884	2·829	2·775	2·723	2·673	2·624	2·577	2·531	2·487	3
4	3·902	3·808	3·717	3·630	3·546	3·465	3·387	3·312	3·240	3·170	4
5	4·853	4·713	4·580	4·452	4·329	4·212	4·100	3·993	3·890	3·791	5
6	5·795	5·601	5·417	5·242	5·076	4·917	4·767	4·623	4·486	4·355	6
7	6·728	6·472	6·230	6·002	5·786	5·582	5·389	5·206	5·033	4·868	7
8	7·652	7·325	7·020	6·733	6·463	6·210	5·971	5·747	5·535	5·335	8
9	8·566	8·162	7·786	7·435	7·108	6·802	6·515	6·247	5·995	5·759	9
10	9·471	8·983	8·530	8·111	7·722	7·360	7·024	6·710	6·418	6·145	10
11	10·37	9·787	9·253	8·760	8·306	7·887	7·499	7·139	6·805	6·495	11
12	11·26	10·58	9·954	9·385	8·863	8·384	7·943	7·536	7·161	6·814	12
13	12·13	11·35	10·63	9·986	9·394	8·853	8·358	7·904	7·487	7·103	13
14	13·00	12·11	11·30	10·56	9·899	9·295	8·745	8·244	7·786	7·367	14
15	13·87	12·85	11·94	11·12	10·38	9·712	9·108	8·559	8·061	7·606	15

(n)	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%	
1	0·901	0·893	0·885	0·877	0·870	0·862	0·855	0·847	0·840	0·833	1
2	1·713	1·690	1·668	1·647	1·626	1·605	1·585	1·566	1·547	1·528	2
3	2·444	2·402	2·361	2·322	2·283	2·246	2·210	2·174	2·140	2·106	3
4	3·102	3·037	2·974	2·914	2·855	2·798	2·743	2·690	2·639	2·589	4
5	3·696	3·605	3·517	3·433	3·352	3·274	3·199	3·127	3·058	2·991	5
6	4·231	4·111	3·998	3·889	3·784	3·685	3·589	3·498	3·410	3·326	6
7	4·712	4·564	4·423	4·288	4·160	4·039	3·922	3·812	3·706	3·605	7
8	5·146	4·968	4·799	4·639	4·487	4·344	4·207	4·078	3·954	3·837	8
9	5·537	5·328	5·132	4·946	4·772	4·607	4·451	4·303	4·163	4·031	9
10	5·889	5·650	5·426	5·216	5·019	4·833	4·659	4·494	4·339	4·192	10
11	6·207	5·938	5·687	5·453	5·234	5·029	4·836	4·656	4·486	4·327	11
12	6·492	6·194	5·918	5·660	5·421	5·197	4·988	4·793	4·611	4·439	12
13	6·750	6·424	6·122	5·842	5·583	5·342	5·118	4·910	4·715	4·533	13
14	6·982	6·628	6·302	6·002	5·724	5·468	5·229	5·008	4·802	4·611	14
15	7·191	6·811	6·462	6·142	5·847	5·575	5·324	5·092	4·876	4·675	15

End of Question Paper

Answers

1 **(a)** Calculation of weighted average cost of capital (WACC)

Market values
Market value of equity = 5m x 4.50 = $22.5 million
Market value of preference shares = 2.5m x .0762 = $1.905 million
Market value of 10% loan notes = 5m x (105/ 100) = $5.25 million
Total market value = 22.5m + 1.905m + 5.25m = $29.655 million

Cost of equity using dividend growth model = [(35 x 1.04)/ 450] + 0.04 = 12.08%

Cost of preference shares = 100 x 9/ 76.2 = 11.81%

Annual after-tax interest payment = 10 x 0.7 = $7

Year	Cash flow	$	10% DF	PV ($)	5% DF	PV ($)
0	market value	(105)	1.000	(105)	1.000	(105)
1–8	interest	7	5.335	37.34	6.463	45.24
8	redemption	100	0.467	46.70	0.677	67.70
				(20.96)		7.94

Using interpolation, after-tax cost of loan notes = 5 + [(5 x 7.94)/ (7.94 + 20.96)] = 6.37%

WACC = [(12.08 x 22.5) + (11.81 x 1.905) + (6.37 x 5.25)]/ 29.655 = 11.05%

(b) Droxfol Co has long-term finance provided by ordinary shares, preference shares and loan notes. The rate of return required by each source of finance depends on its risk from an investor point of view, with equity (ordinary shares) being seen as the most risky and debt (in this case loan notes) seen as the least risky. Ignoring taxation, the weighted average cost of capital (WACC) would therefore be expected to decrease as equity is replaced by debt, since debt is cheaper than equity, i.e. the cost of debt is less than the cost of equity.

However, financial risk increases as equity is replaced by debt and so the cost of equity will increase as a company gears up, offsetting the effect of cheaper debt. At low and moderate levels of gearing, the before-tax cost of debt will be constant, but it will increase at high levels of gearing due to the possibility of bankruptcy. At high levels of gearing, the cost of equity will increase to reflect bankruptcy risk in addition to financial risk.

In the traditional view of capital structure, ordinary shareholders are relatively indifferent to the addition of small amounts of debt in terms of increasing financial risk and so the WACC falls as a company gears up. As gearing up continues, the cost of equity increases to include a financial risk premium and the WACC reaches a minimum value. Beyond this minimum point, the WACC increases due to the effect of increasing financial risk on the cost of equity and, at higher levels of gearing, due to the effect of increasing bankruptcy risk on both the cost of equity and the cost of debt. On this traditional view, therefore, Droxfol Co can gear up using debt and reduce its WACC to a minimum, at which point its market value (the present value of future corporate cash flows) will be maximised.

In contrast to the traditional view, continuing to ignore taxation but assuming a perfect capital market, Miller and Modigliani demonstrated that the WACC remained constant as a company geared up, with the increase in the cost of equity due to financial risk exactly balancing the decrease in the WACC caused by the lower before-tax cost of debt. Since in a prefect capital market the possibility of bankruptcy risk does not arise, the WACC is constant at all gearing levels and the market value of the company is also constant. Miller and Modigliani showed, therefore, that the market value of a company depends on its business risk alone, and not on its financial risk. On this view, therefore, Droxfol Co cannot reduce its WACC to a minimum.

When corporate tax was admitted into the analysis of Miller and Modigliani, a different picture emerged. The interest payments on debt reduced tax liability, which meant that the WACC fell as gearing increased, due to the tax shield given to profits. On this view, Droxfol Co could reduce its WACC to a minimum by taking on as much debt as possible.

However, a perfect capital market is not available in the real world and at high levels of gearing the tax shield offered by interest payments is more than offset by the effects of bankruptcy risk and other costs associated with the need to service large amounts of debt. Droxfol Co should therefore be able to reduce its WACC by gearing up, although it may be difficult to determine whether it has reached a capital structure giving a minimum WACC.

(c) **(i)** Interest coverage ratio
Current interest coverage ratio = 7,000/ 500 = 14 times
Increased profit before interest and tax = 7,000 x 1.12 = $7.84m
Increased interest payment = (10m x 0.09) + 0.5m = $1.4m
Interest coverage ratio after one year = 7.84/ 1.4 = 5.6 times

The current interest coverage of Droxfol Co is higher than the sector average and can be regarded as quiet safe. Following the new loan note issue, however, interest coverage is less than half of the sector average, perhaps indicating that Droxfol Co may not find it easy to meet its interest payments.

(ii) Financial gearing
This ratio is defined here as prior charge capital/equity share capital on a book value basis
Current financial gearing = 100 x (5,000 + 2,500)/ (5,000 + 22,500) = 27%
Ordinary dividend after one year = 0.35 x 5m x 1.04 = $1.82 million
Total preference dividend = 2,500 x 0.09 = $225,000

Income statement after one year

	$000	$000
Profit before interest and tax		7,840
Interest		(1,400)
Profit before tax		6,440
Income tax expense		(1,932)
Profit for the period		4,508
Preference dividends	225	
Ordinary dividends	1,820	
		(2,045)
Retained earnings		2,463

Financial gearing after one year = 100 x (15,000 + 2,500)/ (5,000 + 22,500 + 2,463) = 58%

The current financial gearing of Droxfol Co is 40% less (in relative terms) than the sector average and after the new loan note issue it is 29% more (in relative terms). This level of financial gearing may be a cause of concern for investors and the stock market. Continued annual growth of 12%, however, will reduce financial gearing over time.

(iii) Earnings per share
Current earnings per share = 100 x (4,550 – 225)/ 5,000 = 86.5 cents
Earnings per share after one year = 100 x (4,508 - 225)/ 5,000 = 85.7 cents

Earnings per share is seen as a key accounting ratio by investors and the stock market, and the decrease will not be welcomed. However, the decrease is quiet small and future growth in earnings should quickly eliminate it.

The analysis indicates that an issue of new debt has a negative effect on the company's financial position, at least initially. There are further difficulties in considering a new issue of debt. The existing non-current assets are security for the existing 10% loan notes and may not available for securing new debt, which would then need to be secured on any new non-current assets purchased. These are likely to be lower in value than the new debt and so there may be insufficient security for a new loan note issue. Redemption or refinancing would also pose a problem, with Droxfol Co needing to redeem or refinance $10 million of debt after both eight years and ten years. Ten years may therefore be too short a maturity for the new debt issue.

An equity issue should be considered and compared to an issue of debt. This could be in the form of a rights issue or an issue to new equity investors.

2 (a) Transaction risk
This is the risk arising on short-term foreign currency transactions that the actual income or cost may be different from the income or cost expected when the transaction was agreed. For example, a sale worth $10,000 when the exchange rate is $1.79 per £ has an expected sterling value is $5,587. If the dollar has depreciated against sterling to $1.84 per £ when the transaction is settled, the sterling receipt will have fallen to $5,435. Transaction risk therefore affects cash flows and for this reason most companies choose to hedge or protect themselves against transaction risk.

Translation risk
This risk arises on consolidation of financial statements prior to reporting financial results and for this reason is also known as accounting exposure. Consider an asset worth €14 million, acquired when the exchange rate was €1.4 per $. One year later, when financial statements are being prepared, the exchange rate has moved to €1.5 per $ and the balance sheet value of the asset has changed from $10 million to $9.3 million, resulting an unrealised (paper) loss of $0.7 million. Translation risk does not involve cash flows and so does not directly affect shareholder wealth. However, investor perception may be affected by the changing values of assets and liabilities, and so a company may choose to hedge translation risk through, for example, matching the currency of assets and liabilities (eg a euro-denominated asset financed by a euro-denominated loan).

Economic risk
Transaction risk is seen as the short-term manifestation of economic risk, which could be defined as the risk of the present value of a company's expected future cash flows being affected by exchange rate movements over time. It is difficult to measure economic risk, although its effects can be described, and it is also difficult to hedge against it.

(b) The law of one price suggests that identical goods selling in different countries should sell at the same price, and that exchange rates relate these identical values. This leads on to purchasing power parity theory, which suggests that changes in exchange rates over time must reflect relative changes in inflation between two countries. If purchasing power parity holds true, the expected spot rate (S_f) can be forecast from the current spot rate (S_0) by multiplying by the ratio of expected inflation rates (($1 + i_f$)/ ($1 + i_{UK}$)) in the two counties being considered. In formula form: $S_f = S_0 (1 + i_f)/ (1 + i_{UK})$.

This relationship has been found to hold in the longer-term rather than the shorter-term and so tends to be used for forecasting exchange rates several years in the future, rather than for periods of less than one year. For shorter periods, forward rates can be calculated using interest rate parity theory, which suggests that changes in exchange rates reflect differences between interest rates between countries.

(c)   Forward market evaluation

Net receipt in 1 month = 240,000 – 140,000 = $100,000
Nedwen Co needs to sell dollars at an exchange rate of 1.7829 + 0.003 = $1.7832 per £
Sterling value of net receipt = 100,000/ 1.7832 = $56,079

Receipt in 3 months = $300,000
Nedwen Co needs to sell dollars at an exchange rate of 1.7846 + 0.004 = $1.7850 per £
Sterling value of receipt in 3 months = 300,000/ 1.7850 = $168,067

(d)   Evaluation of money-market hedge

Expected receipt after 3 months = $300,000
Dollar interest rate over three months = 5.4/ 4 = 1.35%
Dollars to borrow now to have $300,000 liability after 3 months = 300,000/ 1.0135 = $296,004
Spot rate for selling dollars = 1.7820 + 0.0002 = $1.7822 per £
Sterling deposit from borrowed dollars at spot = 296,004/ 1.7822 = $166,089
Sterling interest rate over three months = 4.6/ 4 = 1.15%
Value in 3 months of sterling deposit = 166,089 x 1.0115 = $167,999

The forward market is marginally preferable to the money market hedge for the dollar receipt expected after 3 months.

(e)   A currency futures contract is a standardised contract for the buying or selling of a specified quantity of foreign currency. It is traded on a futures exchange and settlement takes place in three-monthly cycles ending in March, June, September and December, ie a company can buy or sell September futures, December futures and so on. The price of a currency futures contract is the exchange rate for the currencies specified in the contract.

When a currency futures contract is bought or sold, the buyer or seller is required to deposit a sum of money with the exchange, called initial margin. If losses are incurred as exchange rates and hence the prices of currency futures contracts change, the buyer or seller may be called on to deposit additional funds (variation margin) with the exchange. Equally, profits are credited to the margin account on a daily basis as the contract is 'marked to market'.

Most currency futures contracts are closed out before their settlement dates by undertaking the opposite transaction to the initial futures transaction, ie if buying currency futures was the initial transaction, it is closed out by selling currency futures. A gain made on the futures transactions will offset a loss made on the currency markets and vice versa.

Nedwen Co expects to receive $300,000 in three months' time and so is concerned that sterling may appreciate (strengthen) against the dollar, since this would result in a lower sterling receipt. The company can hedge the receipt by buying sterling currency futures contracts in the US and since it is 1 April, would buy June futures contracts. In June, Nedwen Co could sell the same number of US sterling currency futures it bought in April and sell the $300,000 it received on the currency market.

3   (a)   Evaluation of change in credit policy

Current average collection period = 30 + 10 = 40 days
Current accounts receivable = 6m x 40/ 365 = $657,534
Average collection period under new policy = (0.3 x 15) + (0.7 x 60) = 46.5 days
New level of credit sales = $6.3 million
Accounts receivable after policy change = 6.3 x 46.5/ 365 = $802,603
Increase in financing cost = (802,603 – 657,534) x 0.07 = $10,155

	$
Increase in financing cost	10,155
Incremental costs = 6.3m x 0.005 =	31,500
Cost of discount = 6.3m x 0.015 x 0.3 =	28,350
Increase in costs	70,005
Contribution from increased sales = 6m x 0.05 x 0.6 =	180,000
Net benefit of policy change	109,995

The proposed policy change will increase the profitability of Ulnad Co

(b)   Determination of spread:
Daily interest rate = 5.11/ 365 = 0.014% per day
Variance of cash flows = 1,000 x 1,000 = $1,000,000 per day
Transaction cost = $18 per transaction

Spread   = 3 x ((0.75 x transaction cost x variance)/interest rate)$^{1/3}$
            = 3 x ((0.75 x 18 x 1,000,000)/ 0.00014)1/3 = 3 x 4,585.7 = $13,757

Lower limit (set by Renpec Co) = $7,500
Upper limit = 7,500 + 13,757 =$21,257
Return point = 7,500 + (13,757/ 3) = $12,086

The Miller-Orr model takes account of uncertainty in relation to receipts and payment. The cash balance of Renpec Co is allowed to vary between the lower and upper limits calculated by the model. If the lower limit is reached, an amount of cash equal to the difference between the return point and the lower limit is raised by selling short-term investments. If the upper limit is reached an amount of cash equal to the difference between the upper limit and the return point is used to buy short-term investments. The model therefore helps Renpec Co to decrease the risk of running out of cash, while avoiding the loss of profit caused by having unnecessarily high cash balances.

(c) There are four key areas of accounts receivable management: policy formulation, credit analysis, credit control and collection of amounts due.

Policy formulation
This is concerned with establishing the framework within which management of accounts receivable in an individual company takes place. The elements to be considered include establishing terms of trade, such as period of credit offered and early settlement discounts: deciding whether to charge interest on overdue accounts; determining procedures to be followed when granting credit to new customers; establishing procedures to be followed when accounts become overdue, and so on.

Credit analysis
Assessment of creditworthiness depends on the analysis of information relating to the new customer. This information is often generated by a third party and includes bank references, trade references and credit reference agency reports. The depth of credit analysis depends on the amount of credit being granted, as well as the possibility of repeat business.

Credit control
Once credit has been granted, it is important to review outstanding accounts on a regular basis so overdue accounts can be identified. This can be done, for example, by an aged receivables analysis. It is also important to ensure that administrative procedures are timely and robust, for example sending out invoices and statements of account, communicating with customers by telephone or e-mail, and maintaining account records.

Collection of amounts due
Ideally, all customers will settle within the agreed terms of trade. If this does not happen, a company needs to have in place agreed procedures for dealing with overdue accounts. These could cover logged telephone calls, personal visits, charging interest on outstanding amounts, refusing to grant further credit and, as a last resort, legal action. With any action, potential benefit should always exceed expected cost.

(d) When considering how working capital is financed, it is useful to divide assets into non-current assets, permanent current assets and fluctuating current assets. Permanent current assets represent the core level of working capital investment needed to support a given level of sales. As sales increase, this core level of working capital also increases. Fluctuating current assets represent the changes in working capital that arise in the normal course of business operations, for example when some accounts receivable are settled later than expected, or when inventory moves more slowly than planned.

The matching principle suggests that long-term finance should be used for long-term assets. Under a matching working capital funding policy, therefore, long-term finance is used for both permanent current assets and non-current assets. Short-term finance is used to cover the short-term changes in current assets represented by fluctuating current assets.

Long-term debt has a higher cost than short-term debt in normal circumstances, for example because lenders require higher compensation for lending for longer periods, or because the risk of default increases with longer lending periods. However, long-term debt is more secure from a company point of view than short-term debt since, provided interest payments are made when due and the requirements of restrictive covenants are met, terms are fixed to maturity. Short-term debt is riskier than long-term debt because, for example, an overdraft is repayable on demand and short-term debt may be renewed on less favourable terms.

A conservative working capital funding policy will use a higher proportion of long-term finance than a matching policy, thereby financing some of the fluctuating current assets from a long-term source. This will be less risky and less profitable than a matching policy, and will give rise to occasional short-term cash surpluses.

An aggressive working capital funding policy will use a lower proportion of long-term finance than a matching policy, financing some of the permanent current assets from a short-term source such as an overdraft. This will be more risky and more profitable than a matching policy.

Other factors that influence a working capital funding policy include management attitudes to risk, previous funding decisions, and organisation size. Management attitudes to risk will determine whether there is a preference for a conservative, an aggressive or a matching approach. Previous funding decisions will determine the current position being considered in policy formulation. The size of the organisation will influence its ability to access different sources of finance. A small company, for example, may be forced to adopt an aggressive working capital funding policy because it is unable to raise additional long-term finance, whether equity of debt.

4 **(a)** **Calculation of NPV**

Nominal discount rate using Fisher effect: 1.057 x 1.05 = 1.1098 ie 11%

Year	1	2	3	4	5
	$000	$000	$000	$000	$000
Sales (W1)	433	509	656	338	
Variable cost (W2)	284	338	439	228	
Contribution	149	171	217	110	
Fixed production overheads	27	28	30	32	
Net cash flow	122	143	187	78	
Tax		(37)	(43)	(56)	(23)
CA tax benefits (W3)		19	14	11	30
After-tax cash flow	122	125	158	33	7
Disposal				5	
After-tax cash flow	122	125	158	38	7
Discount factors	0.901	0.812	0.731	0.659	0.593
Present values	110	102	115	25	4

	$
PV of benefits	356,000
Investment	250,000
NPV	106,000

Since the NPV is positive, the purchase of the machine is acceptable on financial grounds.

Workings

(W1) Year	1	2	3	4
Demand (units)	35,000	40,000	50,000	25,000
Selling price ($/unit)	12.36	12.73	13.11	13.51
Sales ($/year)	432,600	509,200	655,500	337,750

(W2) Year	1	2	3	4
Demand (units)	35,000	40,000	50,000	25,000
Variable cost ($/unit)	8.11	8.44	8.77	9.12
Variable cost ($/year)	283,850	337,600	438,500	228,000

(W3) Year	Capital allowances			Tax benefits	
1	250,000 x 0.25 =	62,500	62,500 x 0.3 =		18,750
2	62,500 x 0.75 =	46,875	46,875 x 0.3 =		14,063
3	46,875 x 0.75 =	35,156	25,156 x 0.3 =		10,547
4	By difference	100,469	100,469 x 0.3 =		30,141
	250,000 – 5.000 =	245,000			73,501

(b) Calculation of before-tax return on capital employed

Total net before-tax cash flow = 122 + 143 + 187 + 78 = $530,000
Total depreciation = 250,000 – 5,000 = $245,000
Average annual accounting profit = (530 – 245)/ 4 = $71,250

Average investment = (250,000 + 5,000)/ 2 = $127,500

Return on capital employed = 100 x 71,250/ 127,500 = 56%

Given the target return on capital employed of Trecor Co is 20% and the ROCE of the investment is 56%, the purchase of the machine is recommended.

(c) One of the strengths of internal rate of return (IRR) as a method of appraising capital investments is that it is a discounted cash flow (DCF) method and so takes account of the time value of money. It also considers cash flows over the whole of the project life and is sensitive to both the amount and the timing of cash flows. It is preferred by some as it offers a relative measure of the value of a proposed investment, ie the method calculates a percentage that can be compared with the company's cost of capital, and with economic variables such as inflation rates and interest rates.

IRR has several weaknesses as a method of appraising capital investments. Since it is a relative measurement of investment worth, it does not measure the absolute increase in company value (and therefore shareholder wealth), which can be found using the net present value (NPV) method. A further problem arises when evaluating non-conventional projects (where cash

flows change from positive to negative during the life of the project). IRR may offer as many IRR values as there are changes in the value of cash flows, giving rise to evaluation difficulties. There is a potential conflict between IRR and NPV in the evaluation of mutually exclusive projects, where the two methods can offer conflicting advice as which of two projects is preferable. Where there is conflict, NPV always offers the correct investment advice: IRR does not, although the advice offered can be amended by considering the IRR of the incremental project. There are therefore a number of reasons why IRR can be seen as an inferior investment appraisal method compared to its DCF alternative, NPV.

			Marks	Marks
1	**(a)**	Calculation of market values	2	
		Calculation of cost of equity	2	
		Calculation of cost of preference shares	1	
		Calculation of cost of debt	2	
		Calculation of WACC	2	
				9
	(b)	Relative costs of equity and debt	1	
		Discussion of theories of capital structure	7–8	
		Conclusion	1	
		Maximum		8
	(c)	Analysis of interest coverage ratio	2–3	
		Analysis of financial gearing	2–3	
		Analysis of earnings per share	2–3	
		Comment	2–3	
		Maximum		8
				25
2	**(a)**	Transaction risk	2	
		Translation risk	2	
		Economic risk	2	
				6
	(b)	Discussion of purchasing power parity	4–5	
		Discussion of interest rate parity	1–2	
		Maximum		6
	(c)	Netting	1	
		Sterling value of 3-month receipt	1	
		Sterling value of 1-year receipt	1	
				3
	(d)	Evaluation of money market hedge	4	
		Comment	1	
				5
	(e)	Definition of currency futures contract	1–2	
		Initial margin and variation margin	1–2	
		Buying and selling of contracts	1–2	
		Hedging the three-month receipt	1–2	
		Maximum		5
				25

			Marks	Marks
3	**(a)**	Increase in financing cost	2	
		Incremental costs	1	
		Cost of discount	1	
		Contribution from increased sales	1	
		Conclusion	1	
				6
	(b)	Calculation of spread	2	
		Calculation of upper limit	1	
		Calculation of return point	1	
		Explanation of findings	2	
				6
	(c)	Policy formulation	1–2	
		Credit analysis	1–2	
		Credit control	1–2	
		Collection of amounts due	1–2	
		Maximum		6
	(d)	Analysis of assets	1–2	
		Short-term and long-term debt	2–3	
		Discussion of policies	2–3	
		Other factors	1–2	
		Maximum		7
				25
4	**(a)**	Discount rate	1	
		Inflated sales revenue	2	
		Inflated variable cost	1	
		Inflated fixed production overheads	1	
		Taxation	2	
		Capital allowance tax benefits	3	
		Discount factors	1	
		Net present value	1	
		Comment	1	
				13
	(b)	Calculation of average annual accounting profit	2	
		Calculation of average investment	2	
		Calculation of return on capital employed	1	
				5
	(c)	Strengths of IRR	2–3	
		Weaknesses of IRR	5–6	
		Maximum		7
				25