Financial Management Pillar

Strategic Level Paper

P9 – Management Accounting – Financial Strategy

21 May 2008 – Wednesday Morning Session

Instructions to candidates

You are allowed three hours to answer this question paper.
You are allowed 20 minutes reading time **before the examination begins** during which you should read the question paper and, if you wish, highlight and/or make notes on the question paper. However, you will **not** be allowed, **under any circumstances**, to open the answer book and start writing or use your calculator during the reading time.
You are strongly advised to carefully read ALL the question requirements before attempting the question concerned (that is all parts and/or sub-questions). The question requirements are highlighted in a dotted box.
ALL answers must be written in the answer book. Answers or notes written on the question paper will **not** be submitted for marking.
Answer the ONE compulsory question in Section A on pages 2 to 5. The question requirements are on page 5, which is detachable for ease of reference.
Answer TWO of the four questions in Section B on pages 8 to 14.
Maths Tables and Formulae are provided on pages 17 to 21. These pages are detachable for ease of reference.
The list of verbs as published in the syllabus is given for reference on the inside back cover of this question paper.
Write your candidate number, the paper number and examination subject title in the spaces provided on the front of the answer book. Also write your contact ID and name in the space provided in the right hand margin and seal to close.
Tick the appropriate boxes on the front of the answer book to indicate which questions you have answered.

P9 – Financial Strategy

TURN OVER

SECTION A – 50 MARKS

[the indicative time for answering this Section is 90 minutes]

ANSWER THIS QUESTION. THE QUESTION REQUIREMENTS ARE ON PAGE 5, WHICH IS DETACHABLE FOR EASE OF REFERENCE

Question One

Background and organisational structure

Ancona International is an international advertising agency. Its shares are listed on the London Stock Exchange. Its revenue has doubled on average every four years over the past 16 years, which is satisfactory but unspectacular by industry standards. Its growth has come largely from focusing on providing high quality services and advertising products to existing clientele; its "churn" rate (the rate at which an entity replaces old customers with new ones) is low and it enjoys considerable customer loyalty. The majority of new business comes from referrals by existing customers. Ancona International usually does not bid for highly competitive, large contracts which involve very high investment costs and which, generally, have only modest chances of success.

The entity has its headquarters in the UK. Operations in other countries are established as wholly-owned subsidiaries. Because of its international interests Ancona International prepares its consolidated accounts in US$.

Proposals

The new Vice President of the USA subsidiary, Ancona USA, is Mr de Z. He does not agree with the entity's policy of growth through existing business and "word of mouth". He wants to be able to tender for major advertising contracts with leading USA entities. These tenders are, typically, fiercely competitive and require substantial management time and effort to prepare.

The Chief Executive Officer (CEO) of Ancona International thinks such a move would change the risk profile of the entity, although he recognises the merit of Mr de Z's proposal. After much discussion between the main board and the management of Ancona USA a proposal has been made to allow Mr de Z and his fellow managers and other employees to take over the USA business. This proposal would require shareholder approval, but Ancona International's CEO is confident he would get the support of most of, if not all, the institutional investors who account for 80% of the entity's shareholders.

Financial Information

Balance sheets at 31 March 2008 for Ancona International and its wholly-owned US subsidiary are shown below:

All figures are in US$ millions	**Ancona International (Group consolidated accounts)**	**Ancona USA**
Non-current assets	3,975	340
Current assets	550	95
Total assets	4,525	435
Equity		
Common shares of US$1	350	5
Retained earnings	1,750	170
Total equity	2,100	175
Non-current liabilities		
Secured 8% bonds repayable 2025	2,050	
Undated borrowings from parent at variable rate		200
Current liabilities	375	60
Total liabilities	2,425	260
Total equity and liabilities	4,525	435

Note:

- Ancona International's bonds are secured on its non-current assets.
- Figures for Ancona International include those for Ancona USA.

After-tax earnings for Ancona International for the year ended 31 March 2008 were US$680 million. This included earnings from the US operation of US$102 million. Ancona International's share price is currently US$18. Its debt is trading at par.

If Mr de Z's proposal goes ahead, a new entity will be established to acquire the USA interests of Ancona International to be named Zola Agencies Inc.

Forecast net cash flows for Ancona USA as part of Ancona International and as a separate entity for the next five years have been prepared by the Finance Department at Ancona International and are shown below:

All figures are in US$ millions	**Ancona USA (USA operation based on current policies)**			**Zola Agencies (USA operation as a separate entity)**		
31 March	**2009**	**2010**	**2011-13**	**2009**	**2010**	**2011-13**
After-tax net cash flows (assume = earnings)	118	131	210	138	172	250

Notes:

- These forecasts are in *nominal* terms.
- The 2011-2013 cash flows are assumed to remain constant in *nominal* terms each year.
- Cash flows beyond 2013 are considered too uncertain and have been ignored.

Other financial information

- Ancona International's weighted average after-tax cost of capital is 12% *nominal* compared with an industry average of 13%. The entity with policies and risk profile most similar to those proposed for Zola Agencies is financed 100% equity and has a quoted equity beta of 2·5.
- The risk free rate in the USA is currently 5% and the return on the market 9%. These rates are not expected to change in the foreseeable future.
- Corporate taxes are payable at 30% in the year in which the liability arises.

Assume that the directors and management of Ancona International and the proposed Zola Agencies have access to the same forecasts.

Financing of the deal

Information about two financing alternatives is shown below.

Alternative 1 Introduce a private equity investor

An investor has been identified, PE Capital. This entity will provide up to 95% of the capital required. It expects a return on its investment averaging 30% per annum compound by 31 March 2013. Its most likely exit route will be by initial public offering (IPO). PE Capital has two conditions: a director of PE sits on the board of Zola Agencies, and all earnings are to be retained in the business for five years. Mr de Z and his colleagues are able to fund 5% of the equity required.

Alternative 2 Obtain a consortium of funding of equity plus debt

DW bank, an investment bank based in Europe, has expressed interest in providing debt finance of up to 75% of the capital requirement. This will be a complex structure combining secured and unsecured borrowing and equity warrants, as follows:

$US250 million in euro debt secured on Zola Agencies current and non-current assets. The interest rate will be 10% and the principal repayable in five years' time. The balance of debt required will be by unsecured borrowings at a variable rate, which currently would be 11%, with equity warrants attached. The terms and conditions of the warrants have not yet been agreed.

Mr de Z and his colleagues will provide 5% of the total funding required as equity, as in **Alternative 1**. They believe they can raise the additional 20% from a consortium of private investors, mainly friends and business associates, who would require a regular dividend of at least 20% of earnings.

[this page is blank]

Requirements

(a)

(i) Calculate the present value of the forecast cash flows for Ancona USA, both as part of Ancona International, and as a separate entity (Zola Agencies), based on the information in the scenario and using discount rates that you consider appropriate. Assume in your calculations:

- Finance for a separate US entity will be all-equity;
- You are conducting the valuations on 1 April 2008;
- Cash flows occur on 31 March each year.

(5 marks)

(ii) Discuss briefly your choice of discount rates and explain any reasons why they might not be accurate. Support your explanation with additional calculations where necessary.

(4 marks)

(b)

Assume you are an independent financial adviser retained by Ancona International to advise on the sale of its USA operations. Write a report to the directors of Ancona International that:

(i) Evaluates the interests of the various stakeholder groups in both Ancona International and Ancona USA and how they might be affected by the sale of the USA operations.

(7 marks)

(ii) Evaluates the economic and market factors that might impact on the negotiations between Ancona International and Mr de Z.

(7 marks)

(iii) Recommends, with reasons, an appropriate valuation for the Ancona USA operations. You should provide a range of values on which to base your discussion, including the values calculated in part (a).

(8 marks)

(c)

Ancona International and Mr de Z eventually agree a purchase value of US$650 million and 50 million shares are issued by Zola Agencies.

(i) Calculate:

- The value that would need to be placed on Zola Agencies at 31 March 2013 if financing is as **Alternative 1**, and PE Capital is to receive its required return;
- The impact on earnings and earnings per share for the years ending 31 March 2009 and 2013 under **Alternative 2.**

(7 marks)

(ii) Evaluate the advantages and disadvantages of the two alternative methods of finance being considered by Mr de Z and recommend the most appropriate source in the circumstances. Provide additional calculations where necessary.

(9 marks)

Additional marks for structure and presentation for all of Question One ***(3 marks)***

(Total for Question One = 50 marks)

[this page is blank]

[Section B starts on the next page]

TURN OVER

SECTION B – 50 MARKS

[the indicative time for answering this Section is 90 minutes]

ANSWER TWO ONLY OF THE FOUR QUESTIONS

Question Two

You are a financial adviser working for a large financial institution. One of your clients, Dan, has a portfolio currently worth £100,000. He has invested in good quality stocks that are spread over diversified industries with an average beta of 1·2; a risk profile he is happy with. He holds other assets, such as property and bank deposits, worth approximately £150,000 (excluding his own home, on which he has a 75% mortgage).

He has recently inherited £40,000 which he intends to invest in equities. He has done some research himself and is considering investing in the following entities in equal proportions.

Entity A is a large, listed entity in a mature industry. Dan already has 15% of his equity investments in this industry sector.

Entity B is a relatively small entity whose shares have been listed on the UK's Alternative Investment Market for the past three years. Its main area of operations is bio-technology, a sector in which Dan has no investments.

Market data for the shares of the two entities are as follows:

Entity	**Current share prices (buy price)**	**Beta**	**P/E ratio**
A	250 pence cum rights	1·1	10
B	500 pence cum dividend	n/a *	20

* Your financial institution estimates a return of 15·8% is required on this stock.

Your transaction charges will be 2·5% of the capital amount.

Financial strategies of the two entities

Entity A is planning a rights issue. The terms will be 1 new share for every 4 held at a cost of 200 pence.

Entity B will allow investors registered at 30 June 2008 the option of taking a dividend of 45 pence a share or a scrip dividend of 1 share for every 10 shares held.

The policy of Entity B has been to offer scrip dividends as an alternative to cash dividends since its shares were first listed three years ago.

The risk free rate is 5% and the return on the market is 11%. These rates are not expected to change in the foreseeable future.

Required:

(a) Calculate the risk and expected return of Dan's equity investment portfolio if he goes ahead with his proposed investments. Work to a maximum of 2 decimal points in your calculations.

(5 marks)

(b)

(i) Explain the difference between systematic risk (or market risk) and unsystematic risk (or specific risk) and, briefly, the meaning of beta and how it is measured.

(4 marks)

(ii) Discuss how and to what extent the beta of Entity A and the implied beta of Entity B:

- Might affect Dan's investment decision;
- Could be of interest to the directors of single entities such as A and B.

(6 marks)

(Total for Part (b) = 10 marks)

(c) Evaluate the implications for shareholder value of Entity A's and Entity B's proposed financial strategies and advise Dan on how these strategies might affect his investment decisions. Include appropriate calculations.

(10 marks)
(Including up to 6 marks for calculations)

(Total for Question Two = 25 marks)

A REPORT FORMAT IS NOT REQUIRED IN THIS QUESTION

Section B continues on the next page

Question Three

BEN is a large, listed entity based in a country in the eurozone. Its principal activity is the manufacture and distribution of electrical consumer goods. Manufacturing operations are located in the home country but goods are sold to wholesalers worldwide, priced in the customer's local currency. The group has experienced rapid growth in recent years and many of its IS/IT systems need upgrading to handle larger volumes and increased complexity.

Group treasury is centralised at the head office and its key responsibilities include arranging sufficient long-term and short-term liquidity resources for the group and hedging foreign exchange exposures.

One of the first projects is a replacement treasury management system (TMS) to provide an integrated IS/IT system. The new integrated TMS will record all treasury transactions and provide information for the management and control of the treasury operations. It replaces the current system which consists of a series of spreadsheets for each part of the treasury operations.

BEN is considering the following choice of payment methods for the new integrated TMS:

Method 1

- Pay the whole capital cost of €800,000 on 1 July 2008, funded by bank borrowings.
- Pay on-going consultation and maintenance costs annually in arrears; these costs will depend on the actual time spent supporting the system each year but are expected to be of the order of €60,000 in the first year and, on average, to increase by 5% a year due to inflation.
- The system is expected to have no resale value after five years although it could still be usable within the entity.

Method 2

- Enter into an operating lease with the supplier, paying a fixed amount of €250,000 a year in advance, commencing 1 July 2008, for five years. This fee will include consultation and maintenance.
- At the end of five years there is an option to continue the lease agreement for a further three years, paying for maintenance on a time and materials basis. This has not been costed.

Other information

- BEN can borrow for a period of five years at a gross fixed interest rate of 8% a year.
- The entity is liable to tax at a marginal rate of 25%, payable 12 months after the end of the year in which the liability arises (that is, a time lag of 1 year). This rate is not expected to change.
- In **Method 1**, tax depreciation on the capital cost is available in equal instalments over the first five years of operation.

Required:

(a) Calculate and recommend which payment method is expected to be cheaper for BEN in NPV terms.

(8 marks)

(b) Evaluate the benefits that might result from the introduction of the new TMS. Include in your evaluation some reference to the control factors that need to be considered during the implementation stage.

(8 marks)

(c) Advise the Directors of BEN on the following:

- The main purpose of a post-completion audit (PCA):
- What should be covered in a PCA of the TMS project;
- The importance and limitations of a PCA to BEN in the context of the TMS project.

(9 marks)

(Total for Question Three = 25 marks)

A REPORT FORMAT IS NOT REQUIRED IN THIS QUESTION

Section B continues on the next page

Question Four

CM Limited (CM) is a private entity that supplies and distributes equipment to the oil industry in the UK. It is evaluating two potential investments. **Investment 1** would expand its operations in the UK, **Investment 2** would establish a base in Asia that would allow it to market and sell its products to entities in a wider geographical area. The currency in the Asian country is the $.

CM does not wish to undertake both investments at the present time. **Investment 1** would require less capital expenditure than **Investment 2**, but its operating costs would be higher. Profit forecasts for the two investments are as follows:

Year:	**1**	**2**	**3**
Investment 1 – *all figures in £000s*			
Revenue	375	450	575
Production costs (excl. Depreciation)	131	158	201
Depreciation	267	267	266
Profit/(loss) before tax	(23)	25	108
Investment 2 – *all figures in A$000s*			
Revenue	1,300	1,450	1,650
Production costs (excl. Depreciation)	260	290	330
Depreciation	967	967	966
Profit/(loss) before tax	73	193	354

Additional information:

1 The capital expenditure required for **Investment 1** is £1.1 million with an expected residual value at the end of year three of £300,000. The capital cost of I**nvestment 2** will be A$2·9 million with no residual value.

2 CM depreciates the estimated net cost of its assets (initial cost less estimated residual value) straight line over the life of the investment.

3 Tax depreciation is available on the equipment purchased for **Investment 1** at 40% per annum on the reducing balance basis. Capital expenditure for **Investment 2** can be written off for tax purposes in the year in which it is purchased.

4 Corporate tax rate in the UK is 25%. There are tax concessions in the Asian country. The net effect is that CM would pay tax on profits generated in the Asian country at 10%. No additional tax would be payable in the UK. Tax would be refunded or paid on both investments at the end of the year in which the liability arises.

5 **Investment 1** would be financed by internal funds. **Investment 2** would be financed by a combination of internal funds and loans raised overseas.

6 Assume revenue and production costs excluding depreciation equal cash flows.

7 The cash flow forecasts are in nominal terms. The entity's real cost of capital is 8% and inflation is expected to be 2·75% per annum constant in the UK.

8 CM evaluates all its investments over a three-year time horizon.

9 Cash flows are assumed to occur at the end of each year except the initial capital cost which is incurred in year 0.

10 Operating cash flows for **Investment 2** are in A$. The current exchange rate is £1 = A$2. Sterling is expected to weaken against the A$ by 4·5% per annum over the next three years.

11 CM's expected accounting return on investment is 15%, calculated as average profits after tax as a percentage of average investment over the life of the assets.

Required:

(a) For each of the two investments, calculate

(i) The average annual accounting return on investment using average profit after tax and average investment over the life of the assets;

(9 marks)

(ii) The NPV using an appropriate discount rate calculated from the information given in the scenario.

(9 marks)

(**Note:** you should round the calculated discount rate to the nearest whole number).

(Total for Part (a) = 18 marks)

(b) Recommend, with reasons, which, if either, of the investments should be undertaken. Discuss any non-financial factors that might influence the choice of investment.

(7 marks)

(Total for Question Four = 25 marks)

A REPORT FORMAT IS NOT REQUIRED IN THIS QUESTION

Section B continues on the next page

Question Five

MAT is a manufacturer of computer components in a rapidly growing niche market. It is a private entity owned and managed by a small group of people who started the business 10 years ago. Although relatively small, it sells its products world-wide. Customers are invoiced in sterling, although this policy is being reviewed. Raw materials are purchased largely in the UK although some are sourced from overseas and paid for in foreign currencies, typically US$.

As the newly-appointed Financial Manager, you are reviewing MAT's financial records to identify any immediate or longer-term areas of risk that require immediate attention. In particular, the entity's forecast appears to be uncomfortably close to its unsecured overdraft limit of £450,000.

Extracts from last year's results and the forecast for the next financial year are as follows:

	Last year *£000*	*Forecast* *£000*
Non-current assets	3,775	4,325
Current assets		
Accounts receivable	550	950
Inventory	475	575
Cash and marketable securities	250	100
Total current assets	1,275	1,625
Total assets	5,050	5,950
Total equity	3,750	4,050
Non-current liabilities		
Secured bond repayable 2010	850	850
Current liabilities		
Accounts payable	450	625
Bank overdraft	0	425
Total current liabilities	450	1,050
Total equity and liabilities	5,050	5,950
Revenue	4,500	5,750
Cost of goods sold	1,750	2,300
Profit before tax	1,050	1,208

Required:

Prepare a report to the Finance Director of MAT advising on whether the entity could be classified as "overtrading" and recommending financial strategies that could be used to address the situation.

Your advice and recommendations should be based on analysis of the forecast financial position, making whatever assumptions are necessary, and should include brief reference to any additional information that would be useful to MAT at this time.

(Total for Question Five = 25 marks)

(Up to 14 marks are available for calculations)

(Total for Section B = 50 marks)

End of Question Paper

Maths Tables & Formulae are on pages 17-21

[this page is blank]

MATHS TABLES AND FORMULAE

Present value table

Present value of 1.00 unit of currency, that is $(1 + r)^{-n}$ where r = interest rate; n = number of periods until payment or receipt.

Periods (n)	Interest rates (r)									
	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
2	0.980	0.961	0.943	0.925	0.907	0.890	0.873	0.857	0.842	0.826
3	0.971	0.942	0.915	0.889	0.864	0.840	0.816	0.794	0.772	0.751
4	0.961	0.924	0.888	0.855	0.823	0.792	0.763	0.735	0.708	0.683
5	0.951	0.906	0.863	0.822	0.784	0.747	0.713	0.681	0.650	0.621
6	0.942	0.888	0.837	0.790	0.746	0705	0.666	0.630	0.596	0.564
7	0.933	0.871	0.813	0.760	0.711	0.665	0.623	0.583	0.547	0.513
8	0.923	0.853	0.789	0.731	0.677	0.627	0.582	0.540	0.502	0.467
9	0.914	0.837	0.766	0.703	0.645	0.592	0.544	0.500	0.460	0.424
10	0.905	0.820	0.744	0.676	0.614	0.558	0.508	0.463	0.422	0.386
11	0.896	0.804	0.722	0.650	0.585	0.527	0.475	0.429	0.388	0.350
12	0.887	0.788	0.701	0.625	0.557	0.497	0.444	0.397	0.356	0.319
13	0.879	0.773	0.681	0.601	0.530	0.469	0.415	0.368	0.326	0.290
14	0.870	0.758	0.661	0.577	0.505	0.442	0.388	0.340	0.299	0.263
15	0.861	0.743	0.642	0.555	0.481	0.417	0.362	0.315	0.275	0.239
16	0.853	0.728	0.623	0.534	0.458	0.394	0.339	0.292	0.252	0.218
17	0.844	0.714	0.605	0.513	0.436	0.371	0.317	0.270	0.231	0.198
18	0.836	0.700	0.587	0.494	0.416	0.350	0.296	0.250	0.212	0.180
19	0.828	0.686	0.570	0.475	0.396	0.331	0.277	0.232	0.194	0.164
20	0.820	0.673	0.554	0.456	0.377	0.312	0.258	0.215	0.178	0.149

Periods (n)	Interest rates (r)									
	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
2	0.812	0.797	0.783	0.769	0.756	0.743	0.731	0.718	0.706	0.694
3	0.731	0.712	0.693	0.675	0.658	0.641	0.624	0.609	0.593	0.579
4	0.659	0.636	0.613	0.592	0.572	0.552	0.534	0.516	0.499	0.482
5	0.593	0.567	0.543	0.519	0.497	0.476	0.456	0.437	0.419	0.402
6	0.535	0.507	0.480	0.456	0.432	0.410	0.390	0.370	0.352	0.335
7	0.482	0.452	0.425	0.400	0.376	0.354	0.333	0.314	0.296	0.279
8	0.434	0.404	0.376	0.351	0.327	0.305	0.285	0.266	0.249	0.233
9	0.391	0.361	0.333	0.308	0.284	0.263	0.243	0.225	0.209	0.194
10	0.352	0.322	0.295	0.270	0.247	0.227	0.208	0.191	0.176	0.162
11	0.317	0.287	0.261	0.237	0.215	0.195	0.178	0.162	0.148	0.135
12	0.286	0.257	0.231	0.208	0.187	0.168	0.152	0.137	0.124	0.112
13	0.258	0.229	0.204	0.182	0.163	0.145	0.130	0.116	0.104	0.093
14	0.232	0.205	0.181	0.160	0.141	0.125	0.111	0.099	0.088	0.078
15	0.209	0.183	0.160	0.140	0.123	0.108	0.095	0.084	0.079	0.065
16	0.188	0.163	0.141	0.123	0.107	0.093	0.081	0.071	0.062	0.054
17	0.170	0.146	0.125	0.108	0.093	0.080	0.069	0.060	0.052	0.045
18	0.153	0.130	0.111	0.095	0.081	0.069	0.059	0.051	0.044	0.038
19	0.138	0.116	0.098	0.083	0.070	0.060	0.051	0.043	0.037	0.031
20	0.124	0.104	0.087	0.073	0.061	0.051	0.043	0.037	0.031	0.026

Cumulative present value of 1.00 unit of currency per annum

Receivable or Payable at the end of each year for n years $\left[\frac{1-(1+r)^{-n}}{r}\right]$

Periods (n)	Interest rates (r)									
	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
2	1.970	1.942	1.913	1.886	1.859	1.833	1.808	1.783	1.759	1.736
3	2.941	2.884	2.829	2.775	2.723	2.673	2.624	2.577	2.531	2.487
4	3.902	3.808	3.717	3.630	3.546	3.465	3.387	3.312	3.240	3.170
5	4.853	4.713	4.580	4.452	4.329	4.212	4.100	3.993	3.890	3.791
6	5.795	5.601	5.417	5.242	5.076	4.917	4.767	4.623	4.486	4.355
7	6.728	6.472	6.230	6.002	5.786	5.582	5.389	5.206	5.033	4.868
8	7.652	7.325	7.020	6.733	6.463	6.210	5.971	5.747	5.535	5.335
9	8.566	8.162	7.786	7.435	7.108	6.802	6.515	6.247	5.995	5.759
10	9.471	8.983	8.530	8.111	7.722	7.360	7.024	6.710	6.418	6.145
11	10.368	9.787	9.253	8.760	8.306	7.887	7.499	7.139	6.805	6.495
12	11.255	10.575	9.954	9.385	8.863	8.384	7.943	7.536	7.161	6.814
13	12.134	11.348	10.635	9.986	9.394	8.853	8.358	7.904	7.487	7.103
14	13.004	12.106	11.296	10.563	9.899	9.295	8.745	8.244	7.786	7.367
15	13.865	12.849	11.938	11.118	10.380	9.712	9.108	8.559	8.061	7.606
16	14.718	13.578	12.561	11.652	10.838	10.106	9.447	8.851	8.313	7.824
17	15.562	14.292	13.166	12.166	11.274	10.477	9.763	9.122	8.544	8.022
18	16.398	14.992	13.754	12.659	11.690	10.828	10.059	9.372	8.756	8.201
19	17.226	15.679	14.324	13.134	12.085	11.158	10.336	9.604	8.950	8.365
20	18.046	16.351	14.878	13.590	12.462	11.470	10.594	9.818	9.129	8.514

Periods (n)	Interest rates (r)									
	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
2	1.713	1.690	1.668	1.647	1.626	1.605	1.585	1.566	1.547	1.528
3	2.444	2.402	2.361	2.322	2.283	2.246	2.210	2.174	2.140	2.106
4	3.102	3.037	2.974	2.914	2.855	2.798	2.743	2.690	2.639	2.589
5	3.696	3.605	3.517	3.433	3.352	3.274	3.199	3.127	3.058	2.991
6	4.231	4.111	3.998	3.889	3.784	3.685	3.589	3.498	3.410	3.326
7	4.712	4.564	4.423	4.288	4.160	4.039	3.922	3.812	3.706	3.605
8	5.146	4.968	4.799	4.639	4.487	4.344	4.207	4.078	3.954	3.837
9	5.537	5.328	5.132	4.946	4.772	4.607	4.451	4.303	4.163	4.031
10	5.889	5.650	5.426	5.216	5.019	4.833	4.659	4.494	4.339	4.192
11	6.207	5.938	5.687	5.453	5.234	5.029	4.836	4.656	4.486	4.327
12	6.492	6.194	5.918	5.660	5.421	5.197	4.988	7.793	4.611	4.439
13	6.750	6.424	6.122	5.842	5.583	5.342	5.118	4.910	4.715	4.533
14	6.982	6.628	6.302	6.002	5.724	5.468	5.229	5.008	4.802	4.611
15	7.191	6.811	6.462	6.142	5.847	5.575	5.324	5.092	4.876	4.675
16	7.379	6.974	6.604	6.265	5.954	5.668	5.405	5.162	4.938	4.730
17	7.549	7.120	6.729	6.373	6.047	5.749	5.475	5.222	4.990	4.775
18	7.702	7.250	6.840	6.467	6.128	5.818	5.534	5.273	5.033	4.812
19	7.839	7.366	6.938	6.550	6.198	5.877	5.584	5.316	5.070	4.843
20	7.963	7.469	7.025	6.623	6.259	5.929	5.628	5.353	5.101	4.870

FORMULAE

Valuation models

(i) Irredeemable preference shares, paying a constant annual dividend, d, in perpetuity, where P_0 is the ex-div value:

$$P_0 = \frac{d}{k_{pref}}$$

(ii) Ordinary (equity) shares, paying a constant annual dividend, d, in perpetuity, where P_0 is the ex-div value:

$$P_0 = \frac{d}{k_e}$$

(iii) Ordinary (equity) shares, paying an annual dividend, d, growing in perpetuity at a constant rate, g, where P_0 is the ex-div value:

$$P_0 = \frac{d_1}{k_e - g} \qquad \text{or} \qquad P_0 = \frac{d_0[1+g]}{k_e - g}$$

(iv) Irredeemable bonds, paying annual after-tax interest, $i\,[1 - t]$, in perpetuity, where P_0 is the ex-interest value:

$$P_0 = \frac{i[1-t]}{k_{d\,net}}$$

or, without tax:

$$P_0 = \frac{i}{k_d}$$

(v) Total value of the geared firm, V_g (based on MM):

$$V_g = V_u + TB_c$$

(vi) Future value of S, of a sum X, invested for n periods, compounded at r% interest:

$$S = X[1 + r]^n$$

(vii) Present value of 1·00 payable or receivable in n years, discounted at r% per annum:

$$PV = \frac{1}{[1+r]^n}$$

(viii) Present value of an annuity of 1·00 per annum, receivable or payable for n years, commencing in one year, discounted at r% per annum:

$$PV = \frac{1}{r}\left[1 - \frac{1}{[1+r]^n}\right]$$

(ix) Present value of 1·00 per annum, payable or receivable in perpetuity, commencing in one year, discounted at r% per annum:

$$PV = \frac{1}{r}$$

(x) Present value of 1·00 per annum, receivable or payable, commencing in one year, growing in perpetuity at a constant rate of g% per annum, discounted at r% per annum:

$$PV = \frac{1}{r - g}$$

FORMULAE CONTINUE ON THE NEXT PAGE

Cost of capital

(i) Cost of irredeemable preference shares, paying an annual dividend, d, in perpetuity, and having a current ex-div price P_0:

$$k_{\text{pref}} = \frac{d}{P_0}$$

(ii) Cost of irredeemable bonds, paying annual net interest, $i\,[1 - t]$, and having a current ex-interest price P_0:

$$k_{d\,\text{net}} = \frac{i[1 - t]}{P_0}$$

(iii) Cost of ordinary (equity) shares, paying an annual dividend, d, in perpetuity, and having a current ex-div price P_0:

$$k_{\text{e}} = \frac{d}{P_0}$$

(iv) Cost of ordinary (equity) shares, having a current ex-div price, P_0, having just paid a dividend, d_0, with the dividend growing in perpetuity by a constant g% per annum:

$$k_{\text{e}} = \frac{d_1}{P_0} + g \qquad \text{or} \qquad k_{\text{e}} = \frac{d_0[1 + g]}{P_0} + g$$

(v) Cost of ordinary (equity) shares, using the CAPM:

$$k_{\text{e}} = R_f + [R_m - R_f]ß$$

(vi) Cost of ordinary (equity) shares in a geared firm (no tax):

$$k_{eg} = k_0 + [k_o - k_d]\,\frac{V_D}{V_E}$$

(vii) Cost of ordinary (equity) share capital in a geared firm (with tax):

$$k_{eg} = k_{eu} + [k_{eu} - k_d]\,\frac{V_D\,[1 - t]}{V_E}$$

(viii) Weighted average cost of capital, k_0:

$$k_0 = k_{\text{eg}}\left[\frac{V_E}{V_E + V_D}\right] + k_d\left[\frac{V_D}{V_E + V_D}\right]$$

(ix) Adjusted cost of capital (MM formula):

$$K_{adj} = k_{eu}\,[1 - tL] \qquad \text{or} \qquad r^* = r[1 - T^*L]$$

In the following formulae, $ß_u$ is used for an ungeared ß and $ß_g$ is used for a geared ß:

(x) $ß_u$ from $ß_g$, taking $ß_d$ as zero (no tax):

$$ß_u = ß_g\left[\frac{V_E}{V_E + V_D}\right]$$

(xi) If $ß_d$ is not zero:

$$ß_u = ß_g\left[\frac{V_E}{V_E + V_D}\right] + ß_d\left[\frac{V_D}{V_D + V_E}\right]$$

(xii) $ß_u$ from $ß_g$, taking $ß_d$ as zero (with tax):

$$ß_u = ß_g\left[\frac{V_E}{V_E + V_D\,[1 - t]}\right]$$

(xiii) Adjusted discount rate to use in international capital budgeting using interest rate parity:

$$\frac{1 + \text{annual discount rate C\$}}{1 + \text{annual discount rate euro}} = \frac{\text{Exchange rate in 12 months' time C\$/euro}}{\text{Spot rate C\$/euro}}$$

Other formulae

(i) Interest rate parity (international Fisher effect):

$$\text{Forward rate US\$/£} = \text{Spot US\$/£} \times \frac{1 + \text{nominal US interest rate}}{1 + \text{nominal UK interest rate}}$$

(ii) Purchasing power parity (law of one price):

$$\text{Forward rate US\$/£} = \text{Spot US\$/£} \times \frac{1 + \text{US inflation rate}}{1 + \text{UK inflation rate}}$$

(iii) Link between nominal (money) and real interest rates:

$$[1 + \text{nominal (money) rate}] = [1 + \text{real interest rate}][1 + \text{inflation rate}]$$

(iv) Equivalent annual cost:

$$\text{Equivalent annual cost} = \frac{PV \text{ of costs over } n \text{ years}}{n \text{ year annuity factor}}$$

(v) Theoretical ex-rights price:

$$\text{TERP} = \frac{1}{N + 1} [(N \times \text{cum rights price}) + \text{issue price}]$$

(vi) Value of a right:

$$\text{Value of a right} = \frac{\text{Rights on price} - \text{issue price}}{N + 1}$$

or

$$\frac{\text{Theoretical ex rights price} - \text{issue price}}{N}$$

where N = number of rights required to buy one share.

[this page is blank]

LIST OF VERBS USED IN THE QUESTION REQUIREMENTS

A list of the learning objectives and verbs that appear in the syllabus and in the question requirements for each question in this paper.

It is important that you answer the question according to the definition of the verb.

LEARNING OBJECTIVE	VERBS USED	DEFINITION
1 KNOWLEDGE		
What you are expected to know.	List	Make a list of
	State	Express, fully or clearly, the details of/facts of
	Define	Give the exact meaning of
2 COMPREHENSION		
What you are expected to understand.	Describe	Communicate the key features
	Distinguish	Highlight the differences between
	Explain	Make clear or intelligible/State the meaning of
	Identify	Recognise, establish or select after consideration
	Illustrate	Use an example to describe or explain something
3 APPLICATION		
How you are expected to apply your knowledge.	Apply	To put to practical use
	Calculate/compute	To ascertain or reckon mathematically
	Demonstrate	To prove with certainty or to exhibit by practical means
	Prepare	To make or get ready for use
	Reconcile	To make or prove consistent/compatible
	Solve	Find an answer to
	Tabulate	Arrange in a table
4 ANALYSIS		
How are you expected to analyse the detail of what you have learned.	Analyse	Examine in detail the structure of
	Categorise	Place into a defined class or division
	Compare and contrast	Show the similarities and/or differences between
	Construct	To build up or compile
	Discuss	To examine in detail by argument
	Interpret	To translate into intelligible or familiar terms
	Produce	To create or bring into existence
5 EVALUATION		
How are you expected to use your learning to evaluate, make decisions or recommendations.	Advise	To counsel, inform or notify
	Evaluate	To appraise or assess the value of
	Recommend	To advise on a course of action

Financial Management Pillar

Strategic Level Paper

P9 – Management Accounting – Financial Strategy

May 2008

Wednesday Morning Session