



Financial Management Pillar
Strategic Level Paper
**P9 – Management Accounting –
Financial Strategy**
23 May 2007 – 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 15.
Maths Tables and Formulae are provided on pages 17 to 21. These 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

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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

SANDYFOOT

Background

Sandyfoot College of Higher Education (Sandyfoot) is a long-established, privately-owned college in an English-speaking country – Esco. It competes effectively with public sector universities, but on a narrower range of subjects. It operates using commercial principles although it is established as an educational trust in order to be exempt from Esco taxation.

The new Chief Executive believes the college should be more aggressive in its expansion strategy in order to meet its long-term objectives of offering the same range of courses as its main public sector rivals and developing its student market internationally. He has commissioned and received a study of a potential investment overseas, but many of his senior managers and teaching staff would prefer expansion at home first. The college does not have the resources, financial or non-financial, to expand on both fronts at the same time.

Investment opportunities

Details about the two alternatives are as follows:

Alternative 1 – “New Build” in the home country – Esco

In the present facilities there is little scope for increasing student numbers or the range of courses offered. Suitable development land for expansion has been identified a few miles away. Sandyfoot has already opened discussions with the seller of the land and the local authority has been approached about outline planning permission. The land is in an area being considered by the Esco government as a development area. If this is approved there will be some financial assistance available to a purchaser such as Sandyfoot. However, a decision is not expected for at least six months.

A disadvantage of this investment is the travelling that staff would be required to do between sites, as the proposed new site is not large enough to accommodate all operations, old and new. A major advantage is that it increases the catchment area for part-time students. An estimate of the additional fees from these students has been included in the figures given below.

There has been a lot of interest in the land that is for sale and Sandyfoot has paid a non-refundable deposit of Esco \$50,000 pending the outcome of its investment evaluation. The seller requires a decision within six months.

Alternative 2 – “New Build” in a Middle Eastern Country – Midco

Sandyfoot already attracts a number of full-time students from Midco and teaching staff have taught short courses there. The government of Midco is very keen to attract inward investment although it generally insists on some involvement in the investment and puts certain restrictions in contracts. For example, the government would insist on approving all courses to be taught before they could be marketed.

A suitable site is available for Sandyfoot on the basis of a long-term leasehold, with an option to acquire the freehold at an unspecified price in 15 years' time. There will be break clauses in the contract at five-year intervals whereby either party can terminate the agreement. Should Sandyfoot wish to withdraw, the entity will not be entitled to any refund of the lease premium.

Teaching would be done by a combination of local (Midco) tutors and tutors from Esco on two or three year contracts to work in Midco.

A disadvantage would be the introduction of foreign exchange risk into the college's finances. To require fee payments in Esco \$ would be a negative factor to many students. The US\$ is widely used in Midco, so Sandyfoot has decided to request fee payments in US\$. All payments in Midco, with the exception of the capital costs, can also be made in US\$.

Cash flows for both alternatives

<i>Capital costs</i>	<i>Alternative 1</i>	<i>Alternative 2</i>
	<i>Esco \$000</i>	<i>Midco \$000</i>
Freehold capital cost of land	6,000	
Purchase of 15 year lease		20,000
Building costs	3,000	10,000
Equipment costs	1,000	5,000

Freehold land is not depreciated. Buildings and equipment for Alternative 1 will be depreciated straight line over 20 years. The total capital costs of Alternative 2 will be written off over the period of the lease. Refurbishment of buildings and replacement of equipment will be needed within the life of both investments, but these costs have not as yet been identified and have been excluded from the evaluation.

<i>Operating cash flows</i>	<i>Alternative 1</i>			<i>Alternative 2</i>		
	<i>Esco \$000</i>			<i>US \$000</i>		
	<i>Year 1</i>	<i>Year 2</i>	<i>Year 3</i>	<i>Year 1</i>	<i>Year 2</i>	<i>Year 3</i>
Fees	1,750	2,250	2,700	4,650	5,350	6,450

Other information

- In Alternative 1, fees and costs are expected to increase by 3% per annum from year 4 indefinitely. This is approximately the expected rate of inflation in Esco.
- Current spot rates are Esco \$1 = Midco \$6.5 and Esco \$1 = US \$1.8. Risk-free interest rates are currently 4% in Esco and 5% in the US. These rates are likely to be maintained until year 3.
- In Midco, there is no official interest rate and no forecast of inflation. The Sandyfoot directors therefore assume, for convenience, that in Alternative 2 the fees receivable in year 3 in Esco \$ terms will remain constant, in nominal terms, until year 15.
- Cash operating costs are assumed to be 60% of fees received each year in both alternatives.
- Assume all capital costs are incurred in year 0 and all operating cash flows are received or incurred at the end of each year.
- A survey of the land in Esco has been undertaken at a cost of Esco \$10,000. A report on the Midco investment has been undertaken at a cost of Esco \$20,000.
- If Alternative 1 is chosen, there will be an opportunity cost to the investment of lecturers' "lost" time in travelling between sites. This is estimated at 1% of fees each year.
- If the investment in Midco goes ahead, fees on existing programmes in Esco are likely to fall by Esco \$250,000 per annum for the duration of the investment.
- Sandyfoot has not made an investment on this scale before, but for the investment in Esco (Alternative 1) the directors believe, with justification, that 12% would be an adequate return to reflect the risks involved. A premium on the Esco rate of +4% is considered appropriate for the investment in Midco (Alternative 2).

The question continues, with its requirements, on page 5, which is detachable for ease of reference

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Method of funding

Sandyfoot has accumulated cash reserves of Esco \$3 million. The remaining capital costs will be funded by long-term borrowings.

If Alternative 1 is chosen, it will be funded by a 20 year commercial mortgage secured on the land and buildings. Interest will be fixed at 9% per annum, payable annually. Sandyfoot currently has no other long-term borrowings.

If Alternative 2 is chosen, it will be funded by one of the following methods:

- (i) A 15-year commercial loan taken out in Esco \$ at 10% per annum interest, capital repayable at the end of the term;
- (ii) A 15-year interest-free, non-repayable Midco \$ government loan, but for the duration of the loan the Midco government would take a “dividend” each year equivalent to 20% of the *profits* earned in Midco;
- (iii) A euro-denominated Eurobond. Borrowing rates in this market appear very favourable at the present time and are below the rates for both Esco\$ bonds and US\$ bonds. This option has not been investigated further at present.

Required:

- (a) Calculate the net present value (NPV) in Esco \$ for the **two** alternative investments, using the cash flows and discount rates given in the scenario.

(17 marks)

- (b) Assume you are the Financial Manager for Sandyfoot. Prepare a report to the Chief Executive evaluating the investment decision and its funding. Your report should include the following sections:

- (i) An evaluation of the two investments, including discussion of the key risk factors Sandyfoot should consider, the choice of discount rates used in the evaluation, and the real option features that are implied in the two investments. Discuss how these option features might impact on the investment decision being made.

(14 marks)

- (ii) A discussion of the advantages and disadvantages of the three methods of funding outlined in the scenario for Alternative 2. Use appropriate calculations, where possible, to support your arguments.

(11 marks)

- (iii) Recommendations about the choice of investment alternative and, if relevant, the method of funding.

(5 marks)

(Total for part (b) = 30 marks)

Additional marks for structure and presentation.

(3 marks)

(Total for Question One = 50 marks)

(Total for Section A = 50 marks)

End of Section A

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[Section B starts on the next page]

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SECTION B – 50 MARKS

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

ANSWER TWO ONLY OF THE FOUR QUESTIONS

Question Two

LEE is a manufacturing entity located in Newland, a country with the dollar (\$) as its currency. LOR is a leasing entity that is also located in Newland.

LEE plans to replace a key piece of machinery and is initially considering the following two approaches:

- Alternative 1 – purchase the machinery, financed by borrowing for a five-year term;
- Alternative 2 – lease the machinery from LOR on a five-year operating lease.

The machinery and maintenance costs

The machinery has a useful life of approximately 10 years, but LEE is aware that the industry is facing a period of intense competition and the machinery may not be needed in five years' time. It would cost LEE \$5,000 to buy the machinery, but LOR has greater purchasing power and could acquire the machinery for \$4,000.

Maintenance costs are estimated to be \$60 in each of years 1 to 3 and \$100 in each of years 4 and 5, arising at the *end* of the year.

Alternative 1 – purchase financed by borrowing for a five year term

\$ interbank borrowing rates in Newland are currently 5.5% per annum. LEE can borrow at interbank rates plus a margin of 1.7% and expects \$ interbank rates to remain constant over the five year period. It has estimated that the machinery could be sold for \$2,000 at the end of five years.

Alternative 2 – five year operating lease

Under the operating lease, LOR would be responsible for maintenance costs and would charge LEE lease rentals of \$850 annually *in advance* for five years.

LOR knows that LEE is keen to lease rather than buy the machine and wants to take advantage of this position by increasing the rentals on the operating lease. However, it does not want to lose LEE's custom and requires advice on how high a lease rental LEE would be likely to accept.

Tax regulations

Newland's tax rules for operating leases give the lessor tax depreciation allowances on the asset and give the lessee full tax relief on the lease payments. Tax depreciation allowances are available to the purchaser of a business asset at 25% per annum on a reducing balance basis. The business tax rate is 30% and tax should be assumed to arise at the end of each year and be paid one year later.

Alternative 3 – late proposal by production manager

During the evaluation process for Alternatives 1 and 2, the production manager suggested that another lease structure should also be considered, to be referred to as "Alternative 3". No figures are available at present to enable a numerical evaluation to be carried out for Alternative 3. The basic structure would be a five-year lease with the option to renew at the end of the five-year term for an additional five-year term at negligible rental. LEE would be responsible for maintenance costs.

The requirement for Question Two is on the opposite page

Required:

(a)

- (i) Use discounted cash flow analysis to evaluate and compare the cost to LEE of each of Alternatives 1 and 2.

(9 marks)

- (ii) Advise LOR on the highest lease rentals that LEE would be likely to accept under Alternative 2.

(4 marks)

(Total for part (a) = 13 marks)

(b)

Discuss both the financial and non-financial factors that might affect LEE's choice between Alternatives 1, 2 and 3. No further calculations are required in part (b).

(12 marks)

(Total for Question Two = 25 marks)

Section B continues on the next page

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Question Three

STR is a well-established marketing consultancy in a country with a low interest rate. STR is a successful business which has experienced rapid growth in recent years. There are 20 million \$1 ordinary shares in issue. These ordinary shares are quoted on a recognised stock exchange and 40% are owned by the founders of the business. Dividends were 40 cents per share in 2003 and grew by 5% per annum between 2003 and 2006. This pattern is expected to continue beyond 2006. Dividends are paid in the year in which they are declared.

Extracts from the financial statements for the past three years are as follows:

	2004 \$million	2005 \$million	2006 \$million
Profit before tax	21.6	24.4	26.7
Tax expense	7.7	2.6	4.3
Net cash generated after deducting interest, tax and net capital expenditure, but excluding ordinary dividends	19.2	(7.1)	18.8

Additional information:

- The opening cash balance in 2004 for cash and cash equivalents was \$6 million;
- The opening book value of equity in 2004 was \$60 million;
- Long-term borrowings remained at \$50 million throughout the three years and the annual gross interest cost on the borrowings was \$1 million;
- There were a number of disposals of non-current assets in 2004 and an exceptionally high level of capital expenditure in 2005.

The directors have noticed the build-up of cash and cash equivalents. They are concerned that this might not be in the best interest of the shareholders and could have an adverse effect on the share price. Various proposals have been made to reduce the level of cash and cash equivalents.

The requirement for Question Three is on the opposite page

Required:

(a)

Calculate the following financial information for STR for each of the years 2004 to 2006:

- Closing cash balance;
- Closing book value of equity.

(3 marks)

(b)

Analyse and discuss the financial performance of the entity from the viewpoint of both the lenders and shareholders, referring to the information calculated in part (a) above and making appropriate additional calculations. Up to 6 marks are available for calculations.

(10 marks)

(c)

- (i) Discuss the comparative advantages and disadvantages of a share repurchase versus a one-off dividend payment.

(7 marks)

- (ii) Advise the directors of STR on alternative financial strategies that they could consider that would reduce the level of surplus cash.

(5 marks)

(Total for part (c) = 12 marks)

(Total for Question Three = 25 marks)

Section B continues on the next page

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Question Four

Country Y

Country Y is a large industrialised country with strong motor vehicle and construction industries. The glass industry supplies glass to these industries as well as to specialist users of glass such as contact lens manufacturers. There are five major glass manufacturing entities, each with market coverage in Country Y of between 5% and 40%.

Entity Q

Entity Q is a quoted entity and a major player in the glass industry. It has a market share in Country Y of approximately 35%. It is an old, well-established entity with a number of factories used to manufacture glass both locally and abroad. It has a stable, but unexciting, growth rate of 3% per annum and is facing increasing competition from new glass manufacturing entities setting up in its key markets. However, Q's high earnings levels of earlier years have resulted in relatively low levels of debt.

The head office building of Q is in the far north of Country Y in a remote geographical area. It is a considerable distance from the capital city and major centres of population in the south of the country. The building is much larger than the entity requires and several floors are unoccupied.

The management team of Q is highly experienced; the majority of the senior managers have worked for Q for the whole of their working lives.

The computer systems of Q were written especially for the entity, but are in need of replacement in favour of something more flexible and adaptable to changing circumstances.

Entity Z

Entity Z, with a market share in Country Y of 10%, is a comparatively new and small, but fast growing unquoted family-owned entity. It specialises in certain niche markets for high security and extra heat resistant glass. The patents for this specialist glass were developed by the founder owner who now acts as Managing Director. The development of the business has largely been funded by high levels of borrowings at rates of interest well above standard market rates. In addition, the directors have often been required to provide personal guarantees against personal assets.

The management team of Z works in the capital city of Country Y, which is in the more prosperous southern part of the country. Z has a manufacturing base on the outskirts of the capital city.

The management team of Z is enthusiastic to grow the business, but is continually frustrated by a lack of financial and human resources and marketing network that would enable Z to expand into international markets. Also, on a personal level, many of the senior managers own a substantial number of shares in Z and are keen to realise some of their capital gains and become financially more secure.

The computer systems of Z consist of a basic accounting package and an internal network of PCs. Spreadsheet packages are widely used for budgeting and other financial reporting.

Takeover bid

The directors of Q have approached the directors of Z with a view to making a takeover bid for Z. A condition of the bid would be the retention of the current management team of Z, who have vital knowledge of the specialist manufacturing techniques required to manufacture the product range of Z. The directors of Z have been initially quite positive about the bid.

Both parties are concerned that the deal may be referred to Country Y's Competition Directorate, which regulates the country's competition policy, for approval and that conditions may be imposed that could make the takeover less attractive.

The requirement for Question Four is on the opposite page

Required:

- (a) Explain the role of competition authorities such as Country Y's Competition Directorate. (6 marks)
- (b) Advise the directors of Q and Z on the potential problems of merging the management structure and systems of the two entities and how these could be minimised. (9 marks)
- (c) Discuss whether the choice of capital structure for the new combined entity is likely to affect the overall value of the entity. Include references to Modigliani and Miller's (MM's) theory of capital structure in your answer. (10 marks)

(Total for Question Four = 25 marks)

Section B continues on the next page

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Question Five

GG, a large engineering and project management group, has announced plans to sell its wholly-owned telecommunications subsidiary, BB, so that it can concentrate on its core business of major infrastructure developments.

HH, an entity with diverse business interests, has expressed an interest in making a bid for BB, but the directors of HH are aware that there are likely to be several other interested parties.

News of the possible sale has been well received in the financial markets and GG has seen its share price rise by 15% in the last two months. HH expects to be able to use its good reputation and strong market presence to enhance the prospects of BB by improving BB's annual earnings by 10% from the date of acquisition.

Financial information as at today, 23 May 2007, ignoring any potential synergistic benefits arising from the possible acquisition of BB by HH:

- Profit after tax for BB for the year ended 30 April 2007 is estimated as \$1 million;
- BB's profit after tax has increased by 7% each year in recent years and this trend is expected to continue;
- The gearing level of BB can be assumed to be the same as for GG;
- The business tax rate is 30%;
- Estimated post-tax return on the market is 8% and the risk free rate is 3% and these rates are not expected to change in the foreseeable future;
- Assume a debt beta of zero;

	<i>HH</i>	<i>GG</i>	<i>Proxy entity for BB in the same industry</i>
Number of ordinary shares in issue	8 million	4 million	—
Current share price	613 cents	800 cents	—
P/E ratios today	11	14	13
Dividend payout	40%	50%	50%
Equity beta	1.1	1.4	1.4
Gearing (debt : equity at market values)	1 : 2	1 : 2.5	1 : 4
Forecast earnings growth	5%	6%	—

The requirement for Question Five is on the opposite page

Required:

- (a) Calculate an appropriate cost of equity for BB based on the data provided for the proxy entity. (3 marks)

(b)

- (i) Calculate a range of values for BB both before and after any potential synergistic benefits to HH of the acquisition. (8 marks)

- (ii) Discuss your results in (b) (i) and advise the directors of HH on a suitable initial cash offer for BB. (7 marks)

(Total for part (b) = 15 marks)

- (c) Advise the directors of GG on both the potential benefits and potential drawbacks arising from the divestment of its subsidiary, BB. (7 marks)

(Total for Question Five = 25 marks)

(Total for Section B = 50 marks)

End of Question Paper

Maths Tables & Formulae are on pages 17-21

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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	0.705	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	4.793	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:

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

- (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:

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

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

$$P_0 = \frac{i[1 - t]}{k_{\text{dnet}}}$$

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 :

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

- (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:

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

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

$$k_e = R_f + [R_m - R_f]\beta$$

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

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

- (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 :

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

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

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

In the following formulae, β_u is used for an ungeared β and β_g is used for a geared β :

- (x) β_u from β_g , taking β_d as zero (no tax):

$$\beta_u = \beta_g \left[\frac{V_E}{V_E + V_D} \right]$$

- (xi) If β_d is not zero:

$$\beta_u = \beta_g \left[\frac{V_E}{V_E + V_D} \right] + \beta_d \left[\frac{V_D}{V_D + V_E} \right]$$

- (xii) β_u from β_g , taking β_d as zero (with tax):

$$\beta_u = \beta_g \left[\frac{V_E}{V_E + V_D [1 - t]} \right]$$

- (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:

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

- (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.

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

Financial Management Pillar

Strategic Level Paper

*P9 – Management Accounting –
Financial Strategy*

May 2007

Wednesday Morning Session