Financial Pillar

F3 – Financial Strategy

27 May 2010 – Thursday 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 this 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).
ALL answers must be written in the answer book. Answers written on the question paper will **not** be submitted for marking.
You should show all workings as marks are available for the method you use.
The pre-seen case study material is included in this question paper on pages 2 to 6. The unseen case study material, specific to this examination, is provided on pages 8 and 9.
Answer the compulsory question in Section A on page 11. This page is detachable for ease of reference.
Answer TWO of the three questions in Section B on pages 14 to 19.
Maths tables and formulae are provided on pages 21 to 25.
The list of verbs as published in the syllabus is given for reference on page 27.
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.

F3 – Financial Strategy

Aybe

Pre-seen Case Study

Background
Aybe, located in Country C, was formed by the merger of two companies in 2001. It is a listed company which manufactures, markets and distributes a large range of components throughout Europe and the United States of America. Aybe employs approximately 700 people at its three factories in Eastern Europe and supplies products to over 0·5 million customers in 20 countries. Aybe holds stocks of about 100,000 different electronic components.

Aybe is regarded within its industry as being a well-established business. Company Ay had operated successfully for nearly 17 years before its merger with Company Be. Company Ay can therefore trace its history back for 25 years which is a long time in the fast moving electronic component business.

The company is organised into three divisions, the Domestic Electronic Components division (DEC), the Industrial Electronic Components division (IEC) and the Specialist Components division (SC). The Domestic and Industrial Electronic Components divisions supply standard electronic components for domestic and industrial use whereas the Specialist Components division supplies components which are often unique and made to specific customer requirements. Each of the three divisions has its own factory in Country C.

Composition of the Board of Directors
The Board of Directors has three executive directors, the Company Secretary and five non-executive directors. The Chairman is one of the five independent non-executive directors. The executive directors are the Chief Executive, Finance Director and Director of Operations. There is also an Audit Committee, a Remuneration Committee and a Nominations Committee. All three committees are made up entirely of the non-executive directors.

Organisational structure
Aybe is organised along traditional functional/unitary lines. The Board considers continuity to be a very important value. The present structure was established by Company Ay in 1990 and continued after the merger with Company Be. Many of Aybe's competitors have carried out structural reorganisations since then. In 2008, Aybe commissioned a review of its organisational structure from a human resource consultancy. The consultants suggested alternative structures which they thought Aybe could employ to its advantage. However, Aybe's Board felt that continuity was more important and no change to the organisational structure took place.

Product and service delivery
Customers are increasingly seeking assistance from their component suppliers with the design of their products and the associated manufacturing and assembly processes. Aybe's Board views this as a growth area. The Board has recognised that Aybe needs to develop web-based services and tools which can be accessed by customers. The traditional method of listing the company's range of components in a catalogue is becoming less effective because customers are increasingly seeking specially designed custom made components as the electronics industry becomes more sophisticated.

Financial data
Aybe's historical financial record, denominated in C's currency of C$, over the last five years is shown below.

	Year ended 31 December:				
	2009	2008	2007	2006	2005
	C$m	C$m	C$m	C$m	C$m
Revenue	620	600	475	433	360
Operating profit	41	39	35	20	13
Profit for the year	23	21	16	9	5
Earnings per share (C$)	0·128	0·117	0·089	0·050	0·028
Dividend per share (C$)	0·064	0·058	0	0	0

Extracts from the 2009 financial statements are given at Appendix A. There are currently 180 million ordinary shares in issue with a nominal value of C$0·10 each. The share price at 31 December 2009 was C$0·64. No dividend was paid in the three years 2005 to 2007 due to losses sustained in the first few years after the merger in 2001.

Aybe's bank has imposed an overdraft limit of C$10 million and two covenants: (i) that its interest cover must not fall below 5 and (ii) its ratio of non-current liabilities to equity must not increase beyond 0·75:1. Aybe's Finance Director is comfortable with this overdraft limit and the two covenants.

The ordinary shareholding of Aybe is broken down as follows:

	Percentage of ordinary shares held at 31 December 2009
Institutional investors	55
Executive Directors and Company Secretary	10
Employees	5
Individual investors	30

The Executive Directors, Company Secretary and other senior managers are entitled to take part in an Executive Share Option Scheme offered by Aybe.

Performance Review
Aybe's three divisions have been profitable throughout the last five years. The revenue and operating profit of the three divisions of Aybe for 2009 were as follows:

	DEC Division	*IEC Division*	*SC Division*
	C$m	*C$m*	*C$m*
Revenue	212	284	124
Operating profit	14	16	11

Financial objectives of Aybe
The Board has generally taken a cautious approach to providing strategic direction for the company. Most board members feel that this has been appropriate because the company was unprofitable for the three year period after the merger and needed to be turned around. Also, most board members think a cautious approach has been justified given the constrained economic circumstances which have affected Aybe's markets since 2008. While shareholders have been disappointed with Aybe's performance over the last five years, they have remained loyal and supported the Board in its attempts to move the company into profit. The institutional shareholders however are now looking for increased growth and profitability.

TURN OVER

The Board has set the following financial objectives which it considers reflect the caution for which Aybe is well known:

(i) Dividend payout to remain at 50% of profit for the year;
(ii) No further equity shares to be issued over the next five years in order to avoid diluting earnings per share.

Capital budget overspends
Aybe has an internal audit department. The Chief Internal Auditor, who leads this department, reports directly to the Finance Director. Investigation by the Internal Audit department has revealed that managers with responsibility for capital expenditure have often paid little attention to expenditure authorisation levels approved by the Board. They have justified overspending on the grounds that the original budgets were inadequate and in order not to jeopardise the capital projects, the overspends were necessary.

An example of this was the building of an extension to the main factory at the DEC division that was completed in 2009 at a final cost of nearly C$3 million which was almost 50% over budget. The capital budget for the extension was set at the outset and the capital investment appraisal showed a positive net present value. It subsequently became apparent that the site clearance costs and on-going construction expenditure were under-estimated. These estimates were provided by a qualified quantity surveyor who was a contractor to Aybe. The estimates supplied by the quantity surveyor were accurately included in Aybe's capital investment appraisal system which was performed on a spreadsheet. However, no regular checks were carried out to compare the phased budgeted expenditure with actual costs incurred. It came as a surprise to the Board when the Finance Director finally produced the capital expenditure project report which showed the cost of the extension was nearly 50% overspent.

Strategic development
Aybe applies a traditional rational model in carrying out its strategic planning process. This encompasses an annual exercise to review the previous plan, creation of a revenue and capital budget for the next five years and instruction to managers within Aybe to maintain their expenditure within the budget limits approved by the Board.

Debates have taken place within the Board regarding the strategic direction in which Aybe should move. Most board members are generally satisfied that Aybe has been turned around over the last five years and were pleased that the company increased its profit in 2009 even though the global economy slowed down. Aybe benefited from a number of long-term contractual arrangements with customers throughout 2009 which were agreed in previous years. However, many of these are not being renewed due to the current economic climate.

The Board stated in its annual report, published in March 2010, that the overall strategic aim of the company is to:

"Achieve growth and increase shareholder returns by continuing to produce and distribute high quality electronic components and develop our international presence through expansion into new overseas markets."

Aybe's Chief Executive said in the annual report that the strategic aim is clear and straightforward. He said "Aybe will strive to maintain its share of the electronic development, operational, maintenance and repair markets in which it is engaged. This is despite the global economic difficulties which Aybe, along with its competitors, has faced since 2008. Aybe will continue to apply the highest ethical standards in its business activities."

In order to facilitate the achievement of the strategic aim, Aybe's Board has established the following strategic goals:

1. Enhance the provision of products and services which are demanded by customers;
2. Invest in engineering and web-based support for customers;
3. Maintain the search for environmentally friendly products;
4. Pursue options for expansion into new overseas markets.

The Board has also stated that Aybe is a responsible corporate organisation and recognises the social and environmental effects of its operational activities.

Concern over the rate of growth
Aybe's recently appointed Director of Operations and one of its Non-Executive Directors have privately expressed their concern to the Chief Executive at what they perceive to be the very slow growth of the company. While they accept that shareholder expectations should not be raised too high, they feel that the Board is not providing sufficient impetus to move the company forward. They fear that the results for 2010 will be worse than for 2009. They think that Aybe should be much more ambitious and fear that the institutional shareholders in particular, will not remain patient if Aybe does not create stronger earnings growth than has previously been achieved.

Development approaches
The Board has discussed different ways of expanding overseas in order to meet the overall strategic aim. It has, in the past, been reluctant to move from the current approach of exporting components. However the Director of Operations has now begun preparing a plan for the IEC division to open up a trading company in Asia. The DEC division is also establishing a subsidiary in Africa.

TURN OVER

APPENDIX A

Extracts of Aybe's Income Statement and Statement of Financial Position

Income statement for the year ended 31 December 2009

	2009 C$million
Revenue	620
Operating costs	(579)
Finance costs	(4)
Profit before tax	37
Income tax expense	(14)
PROFIT FOR THE YEAR	23

Statement of financial position as at 31 December 2009

	2009 C$million
ASSETS	
Non-current assets	111
Current assets	
Inventories	40
Trade and other receivables	81
Cash and cash equivalents	3
Total current assets	124
Total assets	235
EQUITY AND LIABILITIES	
Equity	
Share capital	18
Share premium	9
Other reserves	8
Retained earnings	75
Total equity	110
Non-current liabilities	
Bank loan (8% interest, repayable 2015)	40
Current liabilities	
Trade and other payables	73
Current tax payable	8
Bank overdraft	4
Total current liabilities	85
Total liabilities	125
Total equity and liabilities	235

End of Pre-seen Material

The unseen material begins on page 8

This page is blank

TURN OVER

SECTION A – 50 MARKS

[Note: the indicative time for answering this section is 90 minutes]

ANSWER THIS QUESTION

Question One

Unseen material for Case Study

Background

Today's date is 27 May 2010.

The Specialist Components division (SC) of Aybe has recently been successful in researching and developing a new state-of-the-art range of products with the help of a research faculty in the USA. These are now ready to be produced. They will be sold in Europe and the USA.

In order to manufacture the new products, major investment is required. Aybe is considering two alternative ways forward:

- Project 1: The complete refit of SC's factory located in the home country, Country C.
- Project 2: Build a factory in the USA in a designated development area where a government grant would be available towards the cost of construction.

The new products will be priced in US$ for all worldwide sales. Each project is to be evaluated over a 5 year time period, referred to internally as the 'planning horizon'. The period commences 1 January 2011.

Note: Only one project will be undertaken.

Project 1 – Factory refit in Country C

The current factory would need to be refitted to accommodate the new product range but would then continue producing the current products alongside the new product range. It is estimated that the disruption to production of the current products would result in a loss of up to three or four months operating profit, that is, approximately C$4million (pre-tax cash loss) in 2011. Specialist consultants from the USA may also be needed to oversee the development and manage the manufacturing process but no figures are available for these costs at this time.

Other information:

- The cost of the factory refit is estimated to be C$35million, payable in 2011. The residual value is estimated to be C$4million at the end of 5 years.
- Pre-tax operating cash flows from the new product line begin in 2012 and annual cash flows are forecast to be:
    - Cash inflows: US$160million a year
    - Cash outflows: C$30million a year.
- Tax relief on the cost of the factory refit is available at a rate of 50% in the first year and then at 25% on a reducing balance basis in subsequent years; balancing charges are charged on any residual values.
- The corporate tax rate in Country C for the period of the project is 25% and the tax is paid in the period in which it arises.
- This project is to be evaluated at an after-tax discount rate of 8%.

Project 2 – New factory in the USA

A possible site for a new factory has been identified in the USA. A significant amount of interest has been expressed in the site by other potential developers. As a precautionary measure, therefore, on 1 May 2010 Aybe paid a fee of US$200,000 for the option of purchasing the full ownership rights of the land at any time up to 1 January 2011 at an agreed price of US$20million. It was considered that eight months would allow sufficient time for Aybe to apply for the necessary planning permission to construct the manufacturing facility on the site and also to carry out a more detailed financial assessment of the proposed investment.

If a new factory were to be built in the USA, Aybe would be eligible for a grant of US$15million in each of the first three years of the project, with the first of the three payments being made at the end of 2012. The grant is a revenue grant towards employee and other operating costs and is not repayable as long as certain conditions are met. Corporate tax is payable on the grant at the standard rate.

The new USA operation would be set up as a separate legal entity which would be a subsidiary company of Aybe.

Other information:

- Assume the land is purchased on 1 January 2011.
- The development cost (excluding land) is estimated as US$120million, with half this sum payable at the end of 2011 and the other half at the end of 2012.
- The residual value of the project at the end of 2015 is estimated as US$40million, including US$20million for the land.
- Net pre-tax operating cash inflows from the new product line begin in 2012 and are forecast to be US$50million per annum (excluding the grant).
- Tax relief on the development cost is at a rate of 100% in the first year and balancing charges are applied to any residual value. No tax relief is available on the purchase of the land.
- For simplicity and for the purposes of this question, assume that the relevant corporate tax rate in the USA is 30% and that tax is paid in the period in which it arises.
- Assume that no further tax is due or refundable in Country C in respect of this project.
- This project is to be evaluated at a higher after-tax discount rate of 11% to reflect the increased risk of a foreign project.

Additional financial information applicable to both projects

- The C$/US$ exchange rate is expected to be C$/US$4.000 on 31 December 2010 (that is, C$1=US$4.000) and the US$ can be assumed to strengthen against C$ by 5% a year in 2011 and subsequent years.
- All cash flows arise at the end of the year, unless otherwise stated.
- Assume cash flows are nominal cash flows, that is, they include assumptions on inflation.

The requirement for Question One is on page 11 which is detachable for ease of reference

TURN OVER

This page is blank

Required:

Assume you are an external consultant engaged by Aybe to evaluate the proposed projects.

Write a report, suitable for presentation to the Directors of Aybe, in which you:

(a) Calculate the Net Present Value (NPV) of each of Project 1 and Project 2 as at 1 January 2011 for the 5 year planning horizon. State any assumptions made.

(17 marks)

(b) Evaluate how other relevant factors such as changes to the planning horizon might affect the choice of project and advise Aybe how to proceed.
Up to 6 marks are available for calculations.

(14 marks)

(c) Advise on the choice of currency if long term borrowings should be required to finance the new USA subsidiary in Project 2.

(5 marks)

(d) Advise the Directors on how to achieve efficient management and control of the implementation of the proposed projects. Your answer should include discussion of the different issues arising for each project.

(11 marks)

Additional marks available for structure and presentation. ***(3 marks)***

(Total for Question One = 50 marks)

(Total for Section A = 50 marks)

End of Section A
Section B starts on page 14

Section B starts on page 14

Section B starts on page 14

TURN OVER

SECTION B

[Note: the indicative time for answering this section is 90 minutes]

ANSWER *TWO* OF THE THREE QUESTIONS – 25 MARKS EACH

Question Two

PIC is a furniture retailing company in a developed country in Asia. It has 15 stores spread around the country. Each store has some freedom to adapt its buying patterns to local market conditions although around 80% of its products must be obtained through central purchasing. Sales receipts are paid to head office on a monthly basis. PIC offers 60-day credit to a few key high-profile and agency customers who account for a substantial proportion of sales by value. However, the majority of customers pay immediately by cash.

The treasurer has observed that working capital levels fluctuate quite substantially from month to month. Based on forecast revenue for next year, the average days and minimum and maximum working capital levels for next year are likely to be as follows:

	Average Days	Minimum A$million	Maximum A$million
Inventories	105	17.26	29.59
Accounts Receivable	15	1.64	3.29
Accounts Payable	60	7.40	14.79

At present PIC follows an aggressive policy for financing net current assets. All fluctuating net current assets and 20% of permanent net current assets are funded by overdraft. PIC currently has an overdraft facility of up to A$20million, secured as a floating charge on the entity's current assets. Interest is charged at 7% (pre-tax) on daily balances. Over the past year PIC has used its maximum overdraft facility. The treasurer thinks this is too risky a policy in present economic conditions and is proposing a more conservative policy where 100% of permanent net current assets and 20% of fluctuating net current assets are financed by medium or long term finance. To achieve this, PIC is proposing to issue a bond, redeemable at par in 5 years' time, with an annual coupon of 8%. Interest would be paid annually at the end of each year. Other similar corporate bonds have a yield to maturity of 9%.

PIC's shares are listed on a secondary market. The market value of the shares is currently A$350 million and its cost of equity is 10%. PIC also has long term debt in issue with a market value of A$100 million at an average pre-tax cost of 8.125%. PIC pays corporate tax at 20%.

The requirement for Question Two is on the opposite page

Required:

(a)

(i) Calculate the short-term and long-term (permanent) financing requirements of PIC under the aggressive policy for financing net current assets that is currently being used and also under the proposed new conservative policy.

(5 marks)

(ii) Calculate the implied issue price per A$100 nominal of the bond being considered by the treasurer.

(3 marks)

(iii) Calculate the weighted average cost of capital (WACC) of PIC at present and discuss, briefly, the likely effect on WACC if PIC changes its policy for financing net current assets.

(4 marks)

(b)

(i) Evaluate PIC's proposal to change from an aggressive to a conservative policy for financing net current assets.

(9 marks)

(ii) Advise PIC, briefly, on alternative approaches to financing net current assets that it should consider.

(4 marks)

(Total for Question Two = 25 marks)

A REPORT FORMAT IS NOT REQUIRED IN THIS QUESTION

Section B continues on the next page

Question Three

XK is a multinational manufacturer of household electrical goods. Its headquarters and main manufacturing base are in the USA. Each manufacturing operation is usually established as a separate wholly-owned subsidiary. The larger electrical appliances tend to carry higher margins and there is a general move away from manufacturing smaller appliances.

Extracts from XK Group's latest statement of financial position at 30 April 2010:

	US$ millions
ASSETS	
Non-current assets	2,250
Current assets	700
Total assets	2,950
EQUITY AND LIABILITIES	
Equity	
Share capital (Common shares of US$1)	375
Retained earnings	1,150
Total equity	1,525
Non-current liabilities	
Secured 7.5% bonds repayable 2020	1,000
Current liabilities	425
Total liabilities	1,425
Total equity and liabilities	2,950

Notes:

- XK's bonds are secured on its non-current assets.
- The current liabilities include overdraft of US$150 million. The conditions of the overdraft require XK to maintain a current ratio of at least 1.5 : 1.
- Group earnings for the year to 30 April 2010 were US$510 million.
- XK pays corporate tax at 25% per annum.
- XK's share price has risen 5% over the past 3 months to its present level of US$8.75. The stock market price index has fallen by 3% in the same period.

The XK Board is discussing the divestment of one of its US subsidiaries, Company Y, which manufactures smaller appliances. Historically, the subsidiary company, Y, has accounted for 6% of group earnings. XK's accountants, with some input from the subsidiary's management team, have determined a net present value (NPV) to be placed on Company Y of US$325million. The Executive Directors of Y believe they can transform the business if they have the freedom to respond to market challenges and are considering a management buy out (MBO).

Financing the MBO:
The financing of the MBO will be by a combination of funding from the Executive Directors of Y, an investment bank and a Venture Capitalist.

The Executive Directors of Y expect to be able to raise US$5million between themselves as equity.

The investment bank will lend a maximum of 90% of the non-current assets of the business secured on those non-current assets, which are valued in the accounts at US$220 million. The interest rate will be 6% and the principal will be repayable in 5 years' time. This rate compares with current prime, or base, rate of 2% and commercial bank secured lending rates of between 3% and 4%.

The venture capitalist will supply the balance of the funding required. The venture capitalist expects a return on its investment averaging 25% per annum (on a compound basis) by 31 March 2015 and requires all earnings to be retained in the business for 5 years. Some of the MBO team are not happy with this requirement.

Required:

(a) Evaluate the interests of the various stakeholder groups in both XK and its subsidiary Company Y, and how these might be affected by the divestment.

(7 marks)

(b) Discuss the economic and market factors that might impact on the negotiations between XK and the various financiers of the divestment (the Executive Directors of Y, the investment bank and the venture capitalist).

(7 marks)

(c) Evaluate the advantages and disadvantages of the proposed buyout structure, and recommend alternative financing structures for the buyout.
Up to 5 marks are available for calculations

(11 marks)

(Total for Question Three = 25 marks)

A REPORT FORMAT IS NOT REQUIRED FOR THIS QUESTION

Section B continues on the next page

Question Four

CIP is a family-controlled company. The family owns 80% of the shares. The remaining 20% is owned by a number of non-family shareholders, none of whom owns more than 1% of the shares in issue. The Board of Directors has convened a special Board meeting to review two investment opportunities and, at the request of the new Finance Director, decide on an appropriate discount rate, or rates, to use in the evaluation of these investments. Each of the two investments being considered is in a non-listed company and will be financed 60% by equity and 40% by debt.

In the past, CIP has used an estimated post-tax weighted average cost of capital of 12% to calculate the net present value (NPV) of all investments. The Managing Director thinks this rate should continue to be used, adjusted if necessary by plus or minus 1% or 2% to reflect greater or lesser risk than the "average" investment.

The Finance Director disagrees and suggests using the capital asset pricing model (CAPM) to determine a discount rate that reflects the systematic risk of each of the proposed investments based on proxy companies that operate in similar businesses. The Finance Director has obtained the betas and debt ratios of two listed companies (Company A and Company B) that could be used as proxies. These are:

	Equity Beta	Debt Beta	Debt ratio (debt: equity)
Company A (proxy for Investment 1)	1.3	0.3	1:3
Company B (proxy for Investment 2)	0.9	0	1:6

Other information:

- The expected annual post-tax return on the market is 8% and the risk-free rate is 3%.
- Assume the debt that CIP raises to finance the investments is risk-free.
- All three companies (CIP, Company A and Company B) pay corporate tax at 25%.
- CIP has one financial objective, which is to increase earnings each year to enable its dividend payment to increase by 4% per annum.

The Managing Director and the other Board members are confused about the terminology being used in the CAPM calculation and do not understand why they are being asked to consider a different method of calculating discount rates for use in evaluating the proposed investments.

The requirement for Question Four is on the opposite page

Required:

(a) Discuss the meaning of the terms "systematic" and "unsystematic" risk and their relationship to a company's equity beta. Include in your answer an appropriate diagram to demonstrate the difference between the two types of risk.

(6 marks)

(b) Using the CAPM and the information given in the scenario about CIP and Companies A and B, calculate for each of CIP's proposed investments:

- An asset beta.
- An appropriate discount rate to be used in the evaluation of the investment.

(6 marks)

(c) Evaluate the benefits and limitations of using each of the following in CIP's appraisal of the two investments:

- CIP's WACC.
- An adjusted WACC as suggested by the Managing Director.
- CAPM-derived rates that use proxy (or surrogate) companies' betas.

(6 marks)

(d) Discuss, briefly, how an asset beta differs from an equity beta and why the former is more appropriate to CIP's investment decision. Include in your discussion some reference to how the use of the CAPM can assist CIP to achieve its financial objective.

(7 marks)

(Total for Question Four = 25 marks)

A REPORT FORMAT IS NOT REQUIRED FOR THIS QUESTION

(Total for Section B = 50 marks)

End of Question Paper

Maths Tables and Formulae are on Pages 21 – 25

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	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	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:

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

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

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

or, without tax:

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

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

$$V_g = V_u + TB$$

(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:

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

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) share capital in a geared entity :

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

(vii) Weighted average cost of capital, k_0 or WACC

$$WACC = k_e\left[\frac{V_E}{V_E + V_D}\right] + k_d\,[1-t]\left[\frac{V_D}{V_E + V_D}\right]$$

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

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

(ix) Ungear ß:

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

(x) Regear ß:

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

(xi) Adjusted discount rate to use in international capital budgeting (International Fisher effect)

$$\frac{1 + \text{annual discount rate B\$}}{1 + \text{annual discount rate A\$}} = \frac{\text{Future spot rate A\$/B\$ in 12 months' time}}{\text{Spot rate A\$/B\$}}$$

where A$/B$ is the number of B$ to each A$

Other formulae

(i) Expectations theory:

$$\text{Future spot rate A\$/B\$} = \text{Spot rate A\$/B\$ x } \frac{1 + \text{nominal country B interest rate}}{1 + \text{nominal country A interest rate}}$$

where:

A\$/B\$ is the number of B\$ to each A\$, and

A\$ is the currency of country A and B\$ is the currency of country B

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

$$\text{Future spot rate A\$B\$} = \text{Spot rate A\$/B\$ x } \frac{1 + \text{country B inflation rate}}{1 + \text{country A inflation rate}}$$

(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:

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

(vi) Value of a right:

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

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
Level 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
Level 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 or purpose of
	Identify	Recognise, establish or select after consideration
	Illustrate	Use an example to describe or explain something
Level 3 APPLICATION		
How you are expected to apply your knowledge.	Apply	Put to practical use
	Calculate	Ascertain or reckon mathematically
	Demonstrate	Prove with certainty or to exhibit by practical means
	Prepare	Make or get ready for use
	Reconcile	Make or prove consistent/compatible
	Solve	Find an answer to
	Tabulate	Arrange in a table
Level 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	Build up or compile
	Discuss	Examine in detail by argument
	Interpret	Translate into intelligible or familiar terms
	Prioritise	Place in order of priority or sequence for action
	Produce	Create or bring into existence
Level 5 EVALUATION		
How are you expected to use your learning to evaluate, make decisions or recommendations.	Advise	Counsel, inform or notify
	Evaluate	Appraise or assess the value of
	Recommend	Advise on a course of action

Financial Pillar

Strategic Level Paper

F3 – Financial Strategy

May 2010

Thursday Morning Session