Performance Pillar

P3 – Performance Strategy

26 May 2010 – 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 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 page 8 and 9.
Answer the compulsory question in Section A on page 9. This page is detachable for ease of reference
Answer TWO of the three questions in Section B on pages 12 to 15.
Maths tables and formulae are provided on pages 17 to 20.
The list of verbs as published in the syllabus is given for reference on page 23.
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.

P3 – Performance Strategy

TURN OVER

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 C$m	2008 C$m	2007 C$m	2006 C$m	2005 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 C$m	*IEC Division C$m*	*SC Division 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

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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 9, WHICH IS DETACHABLE FOR EASE OF REFERENCE

Question One

Unseen case material

DEC: New subsidiary
Following Aybe's desire to expand overseas, DEC has established a subsidiary in a central African country. The subsidiary manufactures products to be sold within that country and for export to neighbouring countries. The products manufactured in the African factory use components and raw materials that are purchased directly from DEC (in Aybe's home country). Payments for the components and raw materials will be made to DEC in the currency of the African subsidiary but DEC's accountant is concerned about the high level of inflation in the African country and the consequent impact on future receipts. He is particularly worried because it has been stated that the subsidiary will only make three payments each year for components and materials and therefore each payment will be for a high value. Profits from the subsidiary will be remitted to DEC on request and in accordance with any exchange control regulations of the African country.

The African factory was developed with a government-owned joint venture partner. All new foreign companies entering the African country are required to establish joint ventures in this way. This stipulation means that the African government effectively dictates the terms of the investment to the foreign investor.

DEC has just received payment for all of the shipments to the African subsidiary to date (as stated earlier, the subsidiary will in future only make three payments each year). The accountant has noticed that the amount remitted was in excess of the invoice value of the goods sent to the subsidiary. Initial investigations show that the prices were inflated on the invoices by a manager in DEC at the headquarters in Aybe who was attempting to increase his profit-related bonus.

The factory has just started selling its output within its home country but sales volumes are low. Export sales to other African countries have not yet commenced and forecasts for future export sales have yet to be produced. The product range offered by the African subsidiary is similar to DEC's European range.

The information systems within the African subsidiary are not fully developed. The priority was to set up control systems for inventory and production. These systems became operational within the last month. Consequently the sales staff in the subsidiary are already benefiting from knowledge of inventory levels and are able to provide accurate information to customers about product availability. However due to over-optimistic initial sales forecasts, significant levels of inventory have accumulated. The African sales staff are concerned that the shortfall in sales is having an adverse impact on their bonuses because they are not meeting their targets.

African sales staff are reluctant to offer discounts to promote sales and reduce the excessive inventory. Their bonuses, which make up the majority of their remuneration packages, are based on average profit per unit sold and sales volumes.

This information system problem referred to above is not the only issue affecting DEC's information systems in recent years. A factory extension previously referred to under "Capital budget overspends" (see page 4) was 50% overspent party due to lack of regular checks of budget to actual costs.

DEC: New service
The DEC Division in Europe and its African subsidiary have started to offer a new service in response to pressure from environmental campaigners. Up to five years ago, many of the components sold by DEC contained toxic materials. Recent legislation in Europe and the African country requires components to be recycled in specific ways to minimise any environmental damage. DEC has told customers that when they purchase new components they can give the old components to DEC and then the company will recycle them in accordance with the new legislation.

This service has provided some good publicity for DEC and has featured in its recent social and environmental report. However, a review of DEC's recycling procedures by Internal Audit Department identified that many components, including some that contain toxic materials, are simply thrown away by DEC staff rather than being recycled.

Required:

(a) Identify and evaluate FIVE risks affecting DEC's new African subsidiary.

(15 marks)

(b) Discuss, in respect of the extension to the factory and the new African subsidiary, the strengths and weaknesses of DEC's management information system.

(9 marks)

(c)

(i) Discuss the methods DEC and the African subisidary could use to mitigate the foreign exchange risk when trading with other foreign countries.

(10 marks)

(ii) Discuss the accounting implications for both DEC and the African subsidiary of each method identified in (i).

(6 marks)

(d) Discuss the safeguards that should exist within any company to prevent the unethical manipulation of transactions. (You should refer to examples from DEC in your answer.)

(10 marks)

(Total for Question One = 50 marks)

(Total for Section A = 50 marks)

Section B starts on page 12

TURN OVER

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SECTION B – 50 MARKS

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

ANSWER *TWO* OF THE THREE QUESTIONS

Question Two

Introduction

The B Bank is a large international bank. It employs 6,000 staff in 250 branches and has approximately 500,000 borrowers and over 1,500,000 savers. The bank, which was founded in 1856, has an excellent reputation for good customer service. The bank's share price has increased, on average, by 12% in each of the last 10 years.

Directors' remuneration

There has been much adverse media coverage in many countries, including B Bank's home country, about the alleged excessive bonuses received by the directors of banks. A meeting of central bank governors from many nations failed to reach agreement on how to limit the size of directors' bonuses. The governor of the central bank in B Bank's home country is particularly concerned about this issue, and consequently put forward the following proposal:

"Directors of banks will be asked to pay a fee to the bank for the privilege of being a director. This fee will be set by the remuneration committee of each bank. Directors will be paid a bonus based solely on appropriate profit and growth indicators. The more the bank succeeds, the higher will be the bonus. This proposal directly links performance of the bank to directors' pay. I see this as a more realistic option than simply limiting salaries or bonuses by statute as proposed at the recent central bank governors' conference."

B Bank board and strategy

The constitution of the board of B Bank is in accordance with the internationally agreed code of corporate governance.

Overall board strategy has been to set targets based on previous (profitable) experience, with increased emphasis on those areas where higher potential profits can be made such as mortgage lending (this is discussed below). The bank's executive information systems are able to compute relative product profitability, which supports this strategy. This strategy generated substantial profits in recent years. The last major strategy review took place four years ago. Non-executive directors do not normally query the decisions of the executive directors.

In recent years, the profile of the major shareholders of the bank has moved. Traditionally the major shareholders were pension funds and other longer term investors but now these are overshadowed by hedge funds seeking to improve their short-term financial returns.

One of the major sources of revenue for the bank is interest obtained on lending money against securities such as houses (termed a "mortgage" in many countries) with repayments being due over periods varying between 15 and 25 years. Partly as a result of intense competition in the mortgage market, the values of the mortgages advanced by B Bank regularly exceed the value of the properties, for example B Bank has made advances of up to 125% of a property's value. Internal reports to the board estimate that property prices will reverse recent trends and will rise by 7% per annum for at least the next 10 years, with general and wage inflation at 2%. B Bank intends to continue to obtain finance to support new mortgages with loans from the short-term money-markets.

Required

(a) Evaluate the proposal made by the governor of the central bank.

(10 marks)

(b) Evaluate the risk management strategy in B Bank (except for consideration of directors' remuneration). Your evaluation should include recommendations for changes that will lower the bank's exposure to risk.

(15 marks)

(Total for Question Two = 25 marks)

Section B continues on the next page

TURN OVER

Question Three

N is based in the UK. The company manufactures advanced braking systems for trains. N has just sold a test system with a value of US$1,755,250 to L, a company based in the USA. L insisted on being invoiced in US$; N agreed to this request in an attempt to generate goodwill with its new customer. The directors of N hope to obtain significant sales with L in the future if the test system is found to meet that company's requirements. Payment is due in 90 days.

This is N's first significant overseas order. The Management Accountant has taken advice on hedging the transaction risk and concluded that a forward contract is the best method available.

Information relevant to this decision:

- Current spot rates £1 = US$1·6000 – 1·6050.
- There is a three month discount forward of 2·30 cents – 2·50 cents.
- The actual spot rate 90 days later was £1 = US$1·6585 – 1·6635.

Required:

(a)

(i) Discuss the advantages and disadvantages of the use of a forward contract by N, and

(8 marks)

(ii) Calculate for N whether, in retrospect, purchasing a forward contract was actually beneficial for the company.

(4 marks)

(b)

(i) Explain why N's competitive position could be exposed to movements on the US$.

(4 marks)

(ii) Discuss why exposure to economic risk as a result of exchange rate fluctuations is hard to quantify.

(9 marks)

(Total for Question Three = 25 marks)

Question Four

K is a provider of music downloads on the Internet (also called MP3 downloads). K is based in a European country.

The company's financial statements are ready for statutory audit and the external auditors have just commenced work.

The company has an electronic library of 19 million different songs in 23 different languages which are available for downloading or listening to online.

Customers register online with K for a fee of $10 a month. This fee allows customers to listen to songs online at any time during that month and also gives the right to download 10 songs each month to their own MP3 players. Additional songs can be downloaded for $1 each.

When K's customers register they must enter into an agreement that permits K to collect the monthly fee from their credit card accounts. Customers who wish to cancel their agreement can do so at any time using a link on K's website. A member of K's administration staff then has to cancel the monthly payment from the customers' credit cards. Customers cannot cancel their monthly payments by contacting their credit card providers directly. This arrangement is standard practice in the provision of online services. It simplifies the relationships between customers, online vendors and credit card companies.

K purchases the rights to distribute and sell some songs outright (normally songs more than 10 years old). This is a flat fee paid by K. Other songs are paid for by K on a royalty basis: the artists are paid a fee of 25 cents every time one of their songs is downloaded by one of K's customers (irrespective of whether it is one of the 10 songs per month allowed in the monthly fee or an additional purchase).

K's music library, website, customer information and all financial accounting systems are maintained on K's own computer systems, which are located at K's head office.

Required:

(a) Discuss FIVE factors that the external auditors should consider when performing a risk assessment of K's IT systems.

(15 marks)

(b) K has been told by a major credit card company that several hundred of its customers had complained that fraudulent charges had been made to their credit card accounts for downloads from K's site. Initial investigations in K have been unable to determine either the validity of these claims or why additional charges may have been made.

Evaluate the risks to K of such complaints explaining how those risks could be alleviated.

(10 marks)

(Total for Question Four = 25 marks)

(Total for Section B = 50 marks)

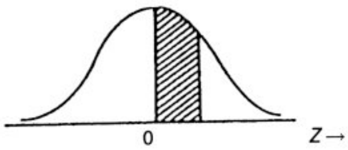
End of question paper

End of question paper

Maths tables and formulae are on pages 17 to 20

AREA UNDER THE NORMAL CURVE

This table gives the area under the normal curve between the mean and a point Z standard deviations above the mean. The corresponding area for deviations below the mean can be found by symmetry.



$Z = \frac{(x-\mu)}{\sigma}$	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.0	.0000	.0040	.0080	.0120	.0159	.0199	.0239	.0279	.0319	.0359
0.1	.0398	.0438	.0478	.0517	.0557	.0596	.0636	.0675	.0714	.0753
0.2	.0793	.0832	.0871	.0910	.0948	.0987	.1026	.1064	.1103	.1141
0.3	.1179	.1217	.1255	.1293	.1331	.1368	.1406	.1443	.1480	.1517
0.4	.1554	.1591	.1628	.1664	.1700	.1736	.1772	.1808	.1844	.1879
0.5	.1915	.1950	.1985	.2019	.2054	.2088	.2123	.2157	.2190	.2224
0.6	.2257	.2291	.2324	.2357	.2389	.2422	.2454	.2486	.2518	.2549
0.7	.2580	.2611	.2642	.2673	.2704	.2734	.2764	.2794	.2823	.2852
0.8	.2881	.2910	.2939	.2967	.2995	.3023	.3051	.3078	.3106	.3133
0.9	.3159	.3186	.3212	.3238	.3264	.3289	.3315	.3340	.3365	.3389
1.0	.3413	.3438	.3461	.3485	.3508	.3531	.3554	.3577	.3599	.3621
1.1	.3643	.3665	.3686	.3708	.3729	.3749	.3770	.3790	.3810	.3830
1.2	.3849	.3869	.3888	.3907	.3925	.3944	.3962	.3980	.3997	.4015
1.3	.4032	.4049	.4066	.4082	.4099	.4115	.4131	.4147	.4162	.4177
1.4	.4192	.4207	.4222	.4236	.4251	.4265	.4279	.4292	.4306	.4319
1.5	.4332	.4345	.4357	.4370	.4382	.4394	.4406	.4418	.4430	.4441
1.6	.4452	.4463	.4474	.4485	.4495	.4505	.4515	.4525	.4535	.4545
1.7	.4554	.4564	.4573	.4582	.4591	.4599	.4608	.4616	.4625	.4633
1.8	.4641	.4649	.4656	.4664	.4671	.4678	.4686	.4693	.4699	.4706
1.9	.4713	.4719	.4726	.4732	.4738	.4744	.4750	.4756	.4762	.4767
2.0	.4772	.4778	.4783	.4788	.4793	.4798	.4803	.4808	.4812	.4817
2.1	.4821	.4826	.4830	.4834	.4838	.4842	.4846	.4850	.4854	.4857
2.2	.4861	.4865	.4868	.4871	.4875	.4878	.4881	.4884	.4887	.4890
2.3	.4893	.4896	.4898	.4901	.4904	.4906	.4909	.4911	.4913	.4916
2.4	.4918	.4920	.4922	.4925	.4927	.4929	.4931	.4932	.4934	.4936
2.5	.4938	.4940	.4941	.4943	.4945	.4946	.4948	.4949	.4951	.4952
2.6	.4953	.4955	.4956	.4957	.4959	.4960	.4961	.4962	.4963	.4964
2.7	.4965	.4966	.4967	.4968	.4969	.4970	.4971	.4972	.4973	.4974
2.8	.4974	.4975	.4976	.4977	.4977	.4978	.4979	.4980	.4980	.4981
2.9	.4981	.4982	.4983	.4983	.4984	.4984	.4985	.4985	.4986	.4986
3.0	**.49865**	.4987	.4987	.4988	.4988	.4989	.4989	.4989	,4990	,4990
3.1	**.49903**	.4991	.4991	.4991	.4992	.4992	.4992	.4992	.4993	.4993
3.2	**.49931**	.4993	.4994	.4994	.4994	.4994	.4994	.4995	.4995	.4995
3.3	**.49952**	.4995	.4995	.4996	.4996	.4996	.4996	.4996	.4996	.4997
3.4	**.49966**	.4997	.4997	.4997	.4997	.4997	.4997	.4997	.4997	.4998
3.5	**.49977**									

PRESENT VALUE TABLE

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

Periods	Interest rates (r)									
(n)	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%
1	0.990	0.980	0.971	0.962	0.952	0.943	0.935	0.926	0.917	0.909
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	Interest rates (r)									
(n)	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%
1	0.901	0.893	0.885	0.877	0.870	0.862	0.855	0.847	0.840	0.833
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 per annum, Receivable or Payable at the end of each year for *n* years $\frac{1-(1+r)^{-n}}{r}$

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

Annuity
Present value of an annuity of £1 per annum receivable or payable for *n* years, commencing in one year, discounted at *r*% per annum:

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

Perpetuity
Present value of £1 per annum, payable or receivable in perpetuity, commencing in one year, discounted at *r*% per annum:

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

Growing Perpetuity
Present value of £1 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:

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

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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
Level 1 - KNOWLEDGE		
What you are expected to know.	List	Make a list of
	State	Express, fully or clearly, the details/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

Performance Pillar

Strategic Level Paper

P3 – Performance Strategy

May 2010

Wednesday Morning Session