



Management Accounting Pillar

Strategic Level Paper

## P3 – Management Accounting – Risk and Control Strategy

25 May 2006 – Thursday Morning Session

### ***Instructions to candidates***

You are allowed three hours to answer this question paper.
You are allowed 20 minutes reading time <b>before the examination begins</b> during which you should read the question paper, and if you wish, make annotations on the question paper. However, you will <b>not</b> be allowed, <b>under any circumstances</b> , 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). The question requirements are contained in a dotted box.
Answer the ONE compulsory question in Section A on pages 2 and 3.
Answer TWO questions only from Section B on pages 4 to 7.
Maths Tables and Formulae are provided on pages 9 to 12. These pages are detachable for ease of reference.
Write your full examination number, paper number and the examination subject title in the spaces provided on the front of the examination 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 – Risk and Control Strategy**

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## SECTION A – 50 MARKS

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

### ANSWER THIS QUESTION

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#### Question One

The GHI Group is a major listed travel company based in the UK, with a market capitalisation of £200 million, that specialises in the provision of budget-priced short and long haul package holidays targeted at the family market. The term “package holiday” means that all flights, accommodation and overseas transfers are organised and booked by the tour operator on behalf of the customer.

The GHI Group encompasses a number of separate companies that include a charter airline, a chain of retail travel outlets, and several specialist tour operators who provide package holidays. Each subsidiary is expected to be profit generating, and each company’s performance is measured by its residual income. The capital charges for each company are risk adjusted, and new investments are required to achieve a base hurdle rate of 10% before adjustment for risk.

The package holiday market is highly competitive, with fewer than five main players all trying to gain market share in an environment in which margins are continually threatened. The key threats include rising fuel prices, last minute discounting and the growth of the “self managed” holiday, where individuals by-pass the travel retailers and use the Internet to book low cost flights and hotel rooms directly with the service providers. Also, customer requirements regarding product design and quality are continuously changing, thereby increasing the pressure on travel companies to devise appropriate strategies to maintain profitability.

Sales of long haul packages to North America are relatively static, but the number of people travelling to South East Asian destinations has fallen substantially following the 2004 tsunami disaster. Africa, New Zealand, Australia and certain parts of the Caribbean are the only long haul growth areas, but such growth is from a small base. Sales within the European region are shifting in favour of Eastern Mediterranean destinations such as Cyprus and Turkey as the traditional resorts of Spain and the Balearic Islands fall out of favour. Short “city breaks” are also growing rapidly in popularity, reflecting higher spending power particularly amongst the over 50s.

The shift in patterns of demand has created some problems for GHI in a number of Eastern Mediterranean resorts over the last two summer seasons. There are not many hotels that meet the specified quality standards, and consequently there is fierce competition amongst travel operators to reserve rooms in them. In 2002 GHI took out a three year contract (2003-2005 inclusive) for 10,000 beds in four major hotels over the peak holiday season of mid July – end of August. The contract terms required GHI to pay a 20% refundable deposit at the start of each calendar year, in return for the right to cancel unwanted rooms without penalty at just one week’s notice. These contract terms were selected in preference to an alternative which required a 5% guarantee payment at the start of the calendar year, but with two weeks notice for all cancellations, and the payment of a flat fee of £20 per week per cancelled room.

On three occasions in 2003, and six occasions in 2004, approximately 150 holidaymakers booked through GHI arrived at their hotels only to find that their rooms were already occupied by clients from a rival company. GHI’s resort representative had severe problems relocating their customers, and over half of them were forced to move to inland hotels because all of the beach resorts were fully booked. The total compensation paid out by GHI to dissatisfied customers amounted to £135,000 in 2003 and £288,000 in 2004, and these payments were categorised as exceptional costs in the published accounts.

The problems encountered by GHI received extensive coverage in the UK media, a popular television travel programme provided assistance to holidaymakers to compile compensation claims. As a result of all of this adverse publicity, GHI decided in early 2005 to invest £8 million

in purchasing two new hotels in the affected resorts. Sales forecasts indicate demand will grow at approximately 15% per year in the relevant resorts over the next five years. It is anticipated that the hotels will supply 70% of the group's accommodation requirements for the 2006 season. The package holidays to the GHI owned hotels will be sold as premium all-inclusive deals that include all food, soft drinks and local beers, wines and spirits. Such all-inclusive deals are not currently offered by other hotels in the target resorts.

**Required:**

- (a) Identify and briefly discuss two risks that are likely to be faced by the GHI Group under each of the following categories:
- Financial
  - Political
  - Environmental
  - Economic
- (16 marks)**
- (b) Identify and evaluate risk impact upon GHI's financial statements and cash flow management of choosing to purchase its own overseas hotel properties as opposed to block booking rooms from local suppliers under the terms of the 2003 - 2005 contract.
- (15 marks)**
- (c) Identify and comment upon the changes in risks to GHI Group that might arise from the decision to sell premium all-inclusive deals, and suggest methods by which these risks might be monitored and controlled.
- (8 marks)**
- (d) Explain, using the investment in the new hotels as an example, how strategic decisions can simultaneously affect both performance measurement and capital allocation across a number of different companies within a group such as GHI.
- (6 marks)**
- (e) List the tasks that the internal audit department of GHI should have performed to ensure that the risks associated with the new hotel purchases are managed effectively. You should assume that its involvement commenced immediately the strategic decision was made to purchase overseas property - in other words, prior to identification of target sites.
- (5 marks)**

**(Total for Question One = 50 marks)**

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**(Total for Section A = 50 marks)**

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**End of Section A. Section B starts on page 4**

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SECTION B – 50 MARKS

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

ANSWER TWO QUESTIONS ONLY

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**Question Two**

- (a) Warren Buffett, the stock market investor, views derivatives as a “time bomb”, but many corporate treasurers clearly perceive them as very useful tools for reducing risk.

*Required:*

Explain and discuss the reasons for such divergent viewpoints.

*(13 marks)*

The International Accounting Standard on Financial Instrument Recognition and Measurement (IAS 39) includes a fair value option that permits a company to designate certain types of financial instruments as ones to be measured at fair value on initial recognition, with changes in fair value recognised in profit or loss. The designation is irrevocable. Additionally, all financial assets and liabilities held for trading are measured at fair value with the associated changes in value passing through profit and loss.

This method of accounting is defended on the grounds that it ensures that the disclosures better reflect the risks that are being taken, thereby improving the information available to the stock market.

*Required:*

- (b) Explain the additional risks arising from these rules that may be faced by companies which choose to exercise the fair value option and/or regularly trade derivatives for profit.

*(5 marks)*

- (c) An investor owns a portfolio of shares that has varied in value over the last twelve months between £1.5 million and £1.8 million. All stock is highly liquid and can be sold within one day. The daily profit and loss distribution is assumed to be normally distributed with a mean of zero and a standard deviation of £60,000.

*Required:*

- (i) Explain the meaning of the term “value at risk” from the perspective of a fund manager.

*(4 marks)*

- (ii) Calculate and comment upon the value at risk of the portfolio, assuming a 95% confidence level and a one day holding period.

*(3 marks)*

*(Total for Question Two = 25 marks)*

### Question Three

LMN is a charity that provides low-cost housing for people on low incomes. The government has privatized much of the home building, maintenance and management in this sector. The sector is heavily regulated and receives some government money but there are significant funds borrowed from banks to invest in new housing developments, on the security of future rent receipts. Government agencies subsidise much of the rental cost for low-income residents.

The board and senior management have identified the major risks to LMN as: having insufficient housing stock of a suitable type to meet the needs of local people on low incomes; making poor property investment decisions; having dissatisfied tenants due to inadequate property maintenance; failing to comply with the requirements of the regulator; having a poor credit rating with lenders; poor cost control; incurring bad debts for rental; and having vacant properties that are not earning income. LMN has produced a risk register as part of its risk management process. For each of more than 200 individual risks, the risk register identifies a description of the risk and the (high, medium or low) likelihood of the risk eventuating and the (high, medium or low) consequences for the organisation if the risk does eventuate.

The management of LMN is carried out by professionally qualified housing executives with wide experience in property development, housing management and maintenance, and financial management. The board of LMN is composed of volunteers with wide experience and an interest in social welfare. The board is representative of the community, tenants and the local authority, any of whom may be shareholders (shareholdings are nominal and the company pays no dividends). The local authority has overall responsibility for housing and social welfare in the area. The audit committee of the board of LMN, which has responsibility for risk management as well as internal control, wants to move towards a system of internal controls that are more closely related to risks identified in the risk register.

**Required:**

For an organisation like LMN:

- (a) Discuss the purposes and importance of risk management and its relationship with the internal control system. *(8 marks)*
- (b) Explain the importance of a management review of controls for the audit committee. *(5 marks)*
- (c) Discuss the principles of good corporate governance as they apply to the Board's role
- (i) in conducting a review of internal controls; and
  - (ii) reporting on compliance.

*(12 marks)*

Illustrate your answer with examples from the scenario.

*(Total for Question Three = 25 marks)*

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*Section B continues on the next page*

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#### Question Four

HIJ is a new company that provides professional services to small businesses. Apart from the Principal, a qualified accountant who owns 100% of the business, there are four professionally qualified and two support staff. The business model adopted by HIJ is to charge an annually-negotiated fixed monthly retainer to its clients in return for advice and assistance in relation to budgeting, costing, cash management, receivables and inventory control, and monthly and annual management reporting. The work involves weekly visits to each client by a member of staff and a monthly review between HIJ's Principal and the chief executive of the client company. In delivering its client services, HIJ makes extensive use of specialist accounting software.

The Principal continually carries out marketing activity to identify and win new clients. This involves advertising, production of brochures and attending conferences, exhibitions, and various business events where potential clients may be located.

The management of HIJ by its Principal is based on strict cost control, maximising the chargeable hours of staff and ensuring that the retainers charged are sufficient to cover the hours worked for each client over the financial year.

*Required:*

- (a) Recommend management controls that would be appropriate for the Principal to have in place for HIJ. *(12 marks)*
- (b) Discuss the need for various types of audit that are appropriate for HIJ. *(8 marks)*
- (c) Discuss the costs and benefits for HIJ that are likely to arise from a system of internal controls *(5 marks)*

*(Total for Question Four = 25 marks)*

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*Section B continues on the opposite page*

### Question Five

CDE is a manufacturer of almost one hundred different automotive components that are sold in both large and small quantities on a just-in-time (JIT) basis to the major vehicle assemblers. Business is highly competitive and price sensitive. The company is listed on the stock exchange but CDE's share performance has not matched that of its main competitors.

CDE's management accounting system uses a manufacturing resource planning (MRPII) system to control production scheduling, inventory movements and stock control, and labour and machine utilisation. The accounting department carries out a detailed annual budgeting exercise, determines standard costs for labour and materials, and allocates production overhead on the basis of machine utilisation. Strict accounting controls over labour and material costs are managed by the detailed recording of operator and machine timesheets and raw material movements, and by calculating and investigating all significant variances.

While the information from the MRPII system is useful to management, there is an absence of integrated data about customer requirements and suppliers. Some information is contained within spreadsheets and databases held by the Sales and Purchasing departments respectively. One result of this lack of integration is that inventories are higher than they should be in a JIT environment.

The managers of CDE (representing functional areas of sales, production, purchasing, finance and administration) believe that, while costs are strictly controlled, the cost of the accounting department is excessive and significant savings need to be made, even at the expense of data accuracy. Managers believe that there may not be optimum use of the production capacity to generate profits and cash flow and improve shareholder value. CDE's management wants to carry out sensitivity and other analyses of strategic alternatives, but this is difficult when the existing management accounting system is focused on control rather than on decision support.

*Required:*

(a)

- (i) Outline the different types of information system available to manufacturing firms like CDE; and
- (ii) Recommend with reasons the information system that would be appropriate to CDE's needs.

*(10 marks)*

(b) Given the business environment that CDE faces, and the desire of management to reduce the cost of accounting,

- (i) critically evaluate the relevance of the current management accounting system; and
- (ii) recommend how the system should be improved.

*(15 marks)*

*(Total for Question Five = 25 marks)*

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*(Total for Section B = 50 marks)*

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*End of question paper  
Maths Tables and Formulae are on pages 9 to 12*

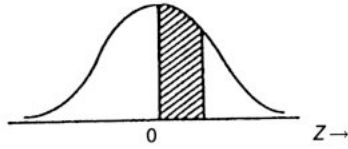
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**AREA UNDER THE NORMAL CURVE**

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	<b>.49865</b>	.4987	.4987	.4988	.4988	.4989	.4989	.4989	.4990	.4990
3.1	<b>.49903</b>	.4991	.4991	.4991	.4992	.4992	.4992	.4992	.4993	.4993
3.2	<b>.49931</b>	.4993	.4994	.4994	.4994	.4994	.4994	.4995	.4995	.4995
3.3	<b>.49952</b>	.4995	.4995	.4996	.4996	.4996	.4996	.4996	.4996	.4997
3.4	<b>.49966</b>	.4997	.4997	.4997	.4997	.4997	.4997	.4997	.4997	.4998
3.5	<b>.49977</b>									

## 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 ( $n$ )	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 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	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

### 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:

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

### Perpetuity

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

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

### 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:

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

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*Management Accounting Pillar*

*Strategic Level Paper*

*P3 – Management Accounting - Risk  
and Control Strategy*

*May 2006*

*Thursday Morning Session*