



Management Accounting Pillar

Strategic Level Paper

## P3 – Management Accounting – Risk and Control Strategy

23 November 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**

TURN OVER

## SECTION A – 50 MARKS

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

### ANSWER THIS QUESTION

#### Question One

BLU is a stock market listed manufacturing company that has historically invested in computer numerical control (CNC) equipment to manufacture a range of electronic components for the telecommunications industry. BLU's strategic objective is to increase shareholder value through an annual increase in sales revenue of 15% and an annual increase in after-tax profits of 17.5%, both of which have been achieved over the past three years. This objective is strongly promoted within BLU and senior management bonuses are linked to the achievement of those targets.

In early 2006, the following financial justification was presented to the Board of Directors of BLU to support a proposal for capital investment in new CNC manufacturing equipment:

#### Projected cash flows for new equipment

	2007	2008	2009	2010	2011
<i>all figures in £000</i>					
Additional sales income	12,000	13,000	14,000	15,000	16,000
Additional variable costs	3,600	3,900	4,200	4,500	4,800
Additional fixed costs	1,500	1,500	1,500	1,500	1,500
Additional operating profit	6,900	7,600	8,300	9,000	9,700
Less taxation		2,070	2,280	2,490	2,700
Additional operating cash flow	6,900	5,530	6,020	6,510	7,000
Less additional working capital	1,000	300	400	500	600
Additional cash flow	5,900	5,230	5,620	6,010	6,400
Cost of capital	15%				
Present value of future cash flows	19,398				
Less capital cost of new equipment	17,500				
Net present value	1,898				

It is company policy to evaluate investments over the first five years only.

In March 2006, the Board approved the capital investment as it met its minimum criterion of a positive NPV using a cost of capital of 15%. There was one other project that was competing for funds at that time. This was for a new distribution system. However, this project was rejected by the Board because the NPV was lower than that of the CNC equipment.

Later in 2006, the audit committee asked a firm of consultants to review BLU's capital investment approval process and the information system that informs that process. As part of the first stage of the consultants' review, a draft report has been received by the Board that describes the process but as yet does not make any recommendations. The following are extracts from the consultants' draft report:

- BLU has a Market Research Department that looks at economic, industry and competitive factors affecting the market demand for its products in order to forecast market growth and likely market share during BLU's strategic planning horizon of five years. As part of its assessment, the Market Research Department asks the Sales Department to liaise with its largest customers to determine their likely requirements. The Sales Department forecasts sales based on its own knowledge of its market, including information from existing customers and its plan to win new customers. Having collated the available information, the Market Research Department provides the Production Department with annually updated forecasts of market demand for the next five years.

- The Production Department compares the Market Research Department's forecasts with its production capacity based on past experience of volumes, product mix, and cycle times. The Production Department then determines the 'capacity gap' over the next five years, which it defines as the difference between the capacity required to satisfy forecasts of market demand and its existing practical capacity.
- Based on the capacity gap, the Production Department conducts a search for new CNC manufacturing equipment that will satisfy projected sales. A range of alternative suppliers is considered and prices for the equipment are compared, after which the Production Department identifies the supplier and the equipment deemed most suitable to bridge the capacity gap. The capital costs of new equipment and the capacity of this new equipment are calculated by the Production Department.
- The Finance Department accepts the forecasts of market demand from the Market Research Department and the cost and capacity information from the Production Department. It then uses historical cost information to update standard costs of labour and materials, with advice from the Human Resources and Purchasing Departments respectively about likely increases in the price of labour and materials. The Finance Department makes its own assessments about the additional working capital requirement.
- The Finance Department then completes a discounted cash flow calculation to assess the investment in new capital equipment, which is then presented to the Board of Directors as part of the annual budget cycle. BLU uses a cost of capital of 15% for the assessment of new capital expenditure proposals. This is the benchmark figure used by the Board, which has been in use for several years. Proposals that show a positive net present value are likely to be approved and where there are competing proposals for limited capital funds, the project with the highest NPV is usually selected. The Board's capital investment approval criteria are well known by BLU's managers.

*Required:*

**Note: No calculations are required to answer this question.**

- (a) Analyse the risks facing BLU in relation to
- its investment appraisal and approval process; and
  - the information system feeding that process.
- (20 marks)*
- (b) Explain how, as an internal auditor, you would plan an audit of BLU's existing capital investment process (and the information system feeding that process), highlighting those elements of the process that you would pay particular attention to under a risk-based approach.
- (10 marks)*
- (c) Recommend to the Board of BLU the internal controls that should be introduced to improve BLU's capital investment process (including the information system feeding that process) and explain the benefits of your recommended controls.
- (20 marks)*

*(Total for Question One = 50 marks)*

*(Total for Section A = 50 marks)*

TURN OVER

SECTION B – 50 MARKS

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

ANSWER TWO QUESTIONS ONLY

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**Question Two**

STU is a large distribution business which provides logistical support to large retail chains. A significant problem currently faced by STU is the number of legacy systems<sup>1</sup> in use throughout the organisation. The various legacy systems, each of which tends to be used by a single business function, hold data that is inconsistent with other systems, leading to an inconsistent approach to decision making across the business. The problem is made worse by many managers having developed their own PC-based databases and spreadsheets because of the lack of suitable information produced by the legacy systems.

STU's Board of Directors has recently approved the feasibility study presented by the Finance Director for the in-house development of a new Strategic Enterprise Management (SEM) system. The SEM system will use real-time data entry to collect transaction data from remote sites to maintain a data warehouse storing all business information which can then be accessed by various analytical tools to support strategic decision making. The SEM system will be developed and implemented over a three year period within a budget approved by the Board. Three phases have been identified: design of the new system; development of the software; and delivery of the finished system into business units. The Board considers that designing, developing and delivering the SEM system will be crucial to business growth plans in a competitive environment.

<sup>1</sup>Note: A legacy system is a computer system which continues to be used because the information it provides is critical to a business. However, the high cost of replacing or redesigning the system has led to it being retained by the business. It is typically an older design, is not compatible with more up-to-date software, and because of its age, provides information that is not as complete or reliable as it should be.

**Required:**

- (a) Assuming that you are STU's Head of Internal Audit, recommend the actions that should be taken in connection with the design, development and delivery of the SEM system. **(13 marks)**
- (b) Advise the audit committee of STU about
- (i) possible approaches to auditing computer systems; and
  - (ii) the controls that should exist in an IT environment. **(12 marks)**

**(Total for Question Two = 25 Marks)**

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*Section B continues on the opposite page*

### Question Three

The following information relates to two companies based in the United States of America, both of which are listed on the New York stock exchange. Each company had an annual turnover of approximately \$800 million in 2005.

#### Company A

This company sells into a mix of business-to-business and end-user markets across a total of 15 countries in North America and Europe. Business-to-business sales predominate and 40% of turnover comes from two key European customers.

Manufacturing, assembly and delivery is managed geographically rather than by product type, via three separate subsidiaries with their own CEO based in Canada, France and the UK respectively. Research and all Treasury operations for the arrangement of loan finance and hedging of foreign exchange risk are both fully centralised.

The company has a diverse shareholder base that includes two major pension funds, one of which has a representative entitled to be present as an observer at the board meetings of Company A.

#### Company B

This company operates in the same product market as Company A, but earns most of its income from end user sales, many of which are initiated by on-line direct orders. 80% of the internet sales originate in the United States of America. Company's B's largest single customer, a Canadian company, represents 15% of its annual sales revenue, but no other customer exceeds 1% of total sales. Research and sales facilities are based at the US headquarters, but manufacturing and assembly is all undertaken by separate subsidiaries in China, where the company also has a joint venture business that manages all the global distribution. Treasury operations are fully decentralised, but run as cost rather than profit centres.

The company was started ten years ago, and the Board of Directors remains dominated by members of the founding family. The CEO and the Finance Director are husband and wife, and together own 35% of the company's shares.

#### *Required:*

Using the information contained in the above scenario to develop your arguments, answer each of the following questions:

- (a) Discuss how decisions about company structure, market types and location can impact upon the risk profile of a company. *(12 marks)*
- (b) Compare and contrast the risks associated with the differing approaches to the Treasury function adopted by the two companies in the above scenario. *(4 marks)*
- (c) For **either** Company A **or** Company B as described in the scenario, taking into account its current structure and size, recommend **one** example of **each** of financial, non-financial quantitative, and non-financial qualitative controls that may be useful tools in monitoring exposure to either strategic or operational risks. You should briefly justify your choices. *(9 marks)*

*(Total for Question Three = 25 marks)*

TURN OVER

#### Question Four

MNO is a UK based company that has delivered goods, invoiced at \$1,800,000 US dollars to a customer in Singapore. Payment is due in three months' time, that is, in February 2007. The finance director of MNO is concerned about the potential exchange risk resulting from the transaction and wishes to hedge the risk in either the futures or the options market.

The current spot rate is \$1.695/£. A three month futures contract is quoted at \$1.690/£, and the contract size for \$/£ futures contracts is £62,500.

A three month put option is available at a price of \$1.675.

**Required:**

- (a) Assuming that the spot rate and the futures rate turn out to be the same in February 2007, indicating that there is no basis risk, identify the lowest cost way of hedging the exchange rate risk (using either futures or options) where the exchange rate at the time of payment is:

- (i) \$1.665/£
- (ii) \$1.720/£

Note: Your answer should show all the calculations used to reach your answer, including the extent (if any) of the uncovered risk.

*(10 marks)*

- (b) Briefly discuss the problems of using futures contracts to hedge exchange rate risks.

*(6 marks)*

- (c) Identify and explain the key reasons why small versus large companies may differ in terms of both the extent of foreign exchange and interest rate hedging that is undertaken, and the tools used by management for such purposes.

*(9 marks)*

*(Total for Question Four = 25 marks)*

*Section B continues on the opposite page*

### Question Five

*Required:*

Write a report advising the Board of Directors of a stock market listed company on:

- the key responsibilities of Board members in relation to ensuring the effectiveness of internal controls;
- the methods used to assess such effectiveness; and
- the regulations that govern the reporting to the stock market of the results of internal control reviews.

*An indicative mark allocation for the three points above are 5, 10 and 5 marks respectively.*

*(Total for Question Five = 25 marks)  
(includes 5 marks for report format and style)*

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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*

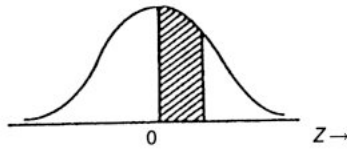
TURN OVER

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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*

*November 2006*

*Thursday Morning Session*