



Management Accounting Pillar
Strategic Level Paper

P3 – Management Accounting –
Risk and Control Strategy

24 May 2007 – 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 the reading time.
You are strongly advised to carefully read ALL the question requirements before attempting the question concerned (that is, all parts and/or sub-questions). The question requirements are contained in a dotted box.
ALL answers must be written in the answer book. Answers or notes written on the question paper will not be submitted for marking.
Answer the ONE compulsory question in Section A on pages 2 and 3.
Answer TWO questions only from Section B on pages 4 to 11.
Maths Tables and Formulae are provided on pages 13 to 16. These pages are detachable for ease of reference.
The list of verbs as published in the syllabus is given for reference on the inside back cover of this question paper.
Write your candidate number, the paper number and examination subject title in the spaces provided on the front of the answer book. Also write your contact ID and name in the space provided in the right hand margin and seal to close.
Tick the appropriate boxes on the front of the answer book to indicate which questions you have answered.

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

ACB is a stock exchange listed company that designs and assembles small passenger aircraft which it sells to regional airlines throughout the world. ACB is highly regarded by its airline customers for the quality of its aircraft. ACB is also recognised for meeting contractual commitments through on-time delivery. The company generates profits before interest and taxes of about 5% of sales. However, due to the depressed nature of the airline industry and competition from foreign manufacturers, the company has modest growth targets. About 60 aircraft are delivered each year.

Competitive Advantage

The company's competitive advantage is its ability to take a standard aircraft design and customise it to the varying needs of its customers. This includes, for example, changes in engine size, passenger capacity, configuration, and electronic equipment. The cycle time from signed order to delivery is about 18 months.

Pricing and Sales Terms

ACB sets the price of its completed aircraft in the customer's currency. The fixed price is converted to ACB's home currency using exchange rates applicable at the time contracts are signed. Progress payments are made on order and throughout the production process, but the balance of approximately 60% of the selling price of the aircraft is made on delivery to the airline. Any delivery delays are classed as a breach of ACB's contract for which it incurs significant financial penalties.

Production and Supply Chain

The manufacture of all the aircraft components has been subcontracted to about 200 suppliers located across several continents. The cost of purchased components constitutes 70% of the final aircraft selling price. Suppliers are selected on the basis of quality, reliability and cost. Contracts with each supplier include prices established in the supplier's currency and incorporate price increases and anticipated efficiency savings over the next two years. This enables accurate forecasting of material costs by ACB. As each component is produced to satisfy the differing requirements of each aircraft, any delay in receipt of any component will delay final assembly. A distribution company has the contract to transport all components to ACB's factory and a combination of bar-coding and satellite tracking technology enables the precise location of all components to be tracked from despatch through to receipt by ACB.

There are five major production operations at ACB's factory: four relate to component assembly and one to final assembly. The four component assembly operations are fuselage, wings, engines, and electronics. All four component assemblies are brought together in a large hangar where the final aircraft assembly takes place. ACB operates its factory on a just-in-time (JIT) basis to minimise inventory. Production scheduling for each of the four component assembly operations must be integrated so that the final assembly can take place on schedule.

IT Support

ACB uses a sophisticated enterprise resource planning system (ERPS) to manage its supply chain, purchase ordering, production scheduling, accounting and performance management, and customer relationship management. The company also relies on an electronic data interchange (EDI) system to track component purchase orders from their despatch by suppliers to receipt at ACB's factory.

Quality Control

Aircraft manufacture is highly regulated with stringent quality control and safety requirements. ACB has always maintained the highest standards. The government's Aircraft Inspection

Agency makes regular inspections of component and final assembly quality in order to ensure annual re-licensing of ACB as an aircraft manufacturer.

Costing & Pricing

The cost of each aircraft is estimated from a bill of materials for components and a labour routing, both of which take into account the customisation of each aircraft. Price negotiations follow the cost estimation process and discounts are given for quantity and the significance of the customer to ACB in terms of past and anticipated sales.

Overhead costs are traced to products through an activity-based costing system, based on cost drivers established for eight significant business processes. Profits are calculated for each aircraft and each order (which may be for several aircraft) and customer profitability analysis is used to support future sales efforts.

Risk Management and Governance

The company has a Risk Management Group at senior management level that maintains a register of major risks, carries out risk assessments in terms of their likelihood and consequences, identifies appropriate risk responses, and reports to each meeting of the Audit Committee. IT risks and foreign currency exposures require highly specialised attention and responsibility for these risks is delegated to the IT Department and Treasury Department respectively.

The ERPS and EDI systems are managed by the in-house IT department which has long-serving and highly skilled staff who have developed comprehensive operating procedures and business continuity plans. ACB's Treasury department primarily uses matching techniques to offset foreign exchange exposures in each currency but does use forward contracts where exposures in some currencies are deemed unacceptable.

The Board of Directors emphasises strategy and monitors sales and delivery performance. It aims to ensure that sales are spread evenly over different regions so as not to be disproportionately affected by political or economic changes. The general approach to risk management is to have a portfolio of customers, products and suppliers, so as to minimise sensitivity to any one factor that might jeopardise the company's success. The Board reviews assessments made by the Aircraft Inspection Agency and is actively involved in rectifying any problems identified.

The company's Audit Committee, composed of independent directors, monitors the risk assessments made by managers, ensures that internal controls are adequate and approves the company's internal audit plan each year. The Audit Committee also monitors all monthly financial performance information while the internal audit function spends a considerable proportion of its resources ensuring that financial performance information produced by the ERPS is accurate for management decision-making and financial reporting purposes.

Required:

- (a) State the recommended components of any organisation's risk management strategy and evaluate ACB's approach to risk management in terms of those components.
(12 marks)
- (b) Identify the major categories of risk facing ACB and evaluate the controls adopted by ACB in relation to each category.
(28 marks)
- (c) Risk treatment (or risk response) is an important component of risk management strategy. Explain what is meant by risk treatment and its benefits to a Board of Directors.
(10 marks)

(Total for Question One = 50 marks)
(Total for Section A = 50 marks)

SECTION B – 50 MARKS

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

ANSWER TWO QUESTIONS ONLY

Question Two

The PKG High School has 900 pupils, 40 teachers, 10 support staff and a budget of \$3 million per annum, 85% of which represents salary and salary-related costs. The Local Authority¹ for PKG's area is responsible for 34 schools, of which six are high schools. The Local Authority allocates government funding for education to schools based on the number of pupils. It ensures that the government-approved curriculum is taught in all schools in its area with the aim of achieving government targets. All schools, including PKG, are subject to an independent financial audit as well as a scrutiny of their educational provision by the Local Authority, and reports of both are presented to the school Governing Body.

The number of pupils determines the approximate number of teachers, based on class sizes of approximately 30 pupils. The salary costs for teachers are determined nationally and pay scales mean that more experienced teachers receive higher salaries. In addition, some teachers receive school-specific responsibility allowances.

PKG is managed on a day-to-day basis by the Head Teacher. The governance of each school is carried out by a Governing Body comprising the Head Teacher, elected representatives of parents of pupils, and members appointed by the Local Authority. The principles of good corporate governance apply to school Governing Bodies which are accountable to parents and the Local Authority for the performance of the school.

The Governing Body holds the Head Teacher accountable for day-to-day school management, but on certain matters such as building maintenance the Head Teacher will seek expert advice from the Local Authority.

The Governing Body meets quarterly and has as its main responsibilities budgetary management, appointment of staff, and educational standards. The main control mechanisms exercised by the Governing Body include scrutiny of a year-to-date financial report, a quarterly non-financial performance report, teacher recruitment and approval of all purchases over \$1,000. The Head Teacher has expenditure authority below this level.

The financial report (which is updated monthly) is presented to each meeting of the Governing Body. It shows the Local Authority's budget allocation to the school for the year, the expenditure incurred for each month and the year to date, and any unspent balances. Although there is no external financial reporting requirement for the school, the Local Authority will not allow any school to overspend its budget allocation in any financial year.

PKG's budget allocation is only just sufficient to provide adequate educational facilities. Additional funds are always required for teaching resources, building maintenance, and to upgrade computer equipment. The only flexibility the school has in budget management is to limit responsibility allowances and delay teacher recruitment. This increases pupil-contact time for individual teachers however, and forces teachers to undertake preparation, marking and administration after school hours.

¹ NOTE: A Local Authority (or council) carries out services for the local community and levies local taxes (or council tax) to fund most of its operations. Many of the Local Authority functions are regulated by central government and considerable funding also comes from that source. The range of Local Authority services include education, community health, refuse collection, and maintenance of footpaths and public parks.

Required:

- (a) Explain why the review and audit of control systems is important for the Governing Body of a school such as PKG.
(5 marks)
- (b) Evaluate the effectiveness of the Governing Body's control over PKG High School and recommend ways in which it might be improved.
(20 marks)

(Total for Question Two = 25 marks)

Section B continues on the next page

TURN OVER

Question Three

Under international accounting conventions, the rules on accounting for employee benefits are based upon the principle that the cost of providing such benefits should be recognised in the period in which the benefit is earned by the employee, rather than when it is paid or payable. The rules laid down in International Accounting Standard 19 (IAS 19), *Employee Benefits* apply to a wide range of employee benefits of which the most common form is pensions.

A significant number of pension plans are classed as defined benefit plans, under which the pension payable by the organisation on the retirement of an employee is linked to his/her salary. The salary used for the calculation of the benefit may be either an average or a final salary, although final salary is still the most common.

Under IAS 19, a company's balance sheet must record the present value of the future benefits payable, net of the value of the pension fund assets. The discount rate used to arrive at a present value for the liabilities is equal to the interest rate payable on AA rated corporate bonds. The valuations are carried out by actuaries, who are required to make a number of assumptions about current economic conditions, life expectancy, the rate of salary increase over time, and the expected rate of return on the pension fund assets.

In the UK, the requirement to put the value of the pension fund's net assets or liabilities on the face of the balance sheet has resulted in a number of companies reporting pension fund deficits in excess of £1 billion and has led to concerns over a "pensions crisis".

Required:

- (a) A company has a pension fund deficit equal to ten per cent of its market capitalisation. Explain and discuss the nature of the risks posed to **both** the company and its current employees by the existence of such a substantial pension fund deficit.

(10 marks)

The Finance Director of a UK listed company is concerned about the sensitivity of the company's pension fund deficit to changes in life expectancy. If the company's advising actuaries use the most up-to-date life expectancy table, the company's pension deficit will increase by 30%, to approximately 60% of its market capitalisation. The Head of Financial Reporting is therefore considering requesting the actuaries to continue using tables which are now deemed out of date.

Required:

- (b)
- (i) Discuss the proposal to request the actuaries to use out-of-date tables.
- (ii) Identify the internal and external financial reporting controls that could be used to prevent the manipulation of the liability valuation in the manner suggested by the Head of Financial Reporting.

(8 marks)

(7 marks)

(Total for Question Three = 25 marks)

Section B continues on the next page

TURN OVER

Question Four

You work in the new product development division of a USA based global consumer electronics company. You are employed as the accountant responsible for costing and project appraisal of all new product proposals. All costs and revenues are based on information provided by the electronic engineers and marketing staff responsible for each individual project. It is assumed that all development is fully completed prior to initial marketing, and so no redesign costs are allowed once a product is launched. The rapid rate of technological change within the industry has led the company to assume a maximum product life of seven years.

The tables below give details of the company-wide incremental cash flows for two new consumer products. All cash flows are assumed to occur at the year end. Regulatory constraints mean that the company cannot invest in both developments. The company-wide hurdle rate for capital investments is 7·5% per year but the Finance Director is considering introducing risk-adjusted rates, which would give a discount rate of 8·5% per year for Product 1 and 10% per year for Product 2. The net present values generated by each of the products, using both the standard hurdle rate and the risk-adjusted hurdle rates, are also given in the tables.

Product 1 would be manufactured and assembled in China and transferred to company-owned retail outlets in the USA. Product 2 would be assembled in the Czech Republic from components shipped in from Taiwan and then sold to third party distributors across Western Europe.

Product 1	Year(s)	Annual Sales Revenue \$ Million (based on ex factory prices)	Design and Development Costs \$ Million	Annual manufacturing and distribution costs \$ Million
	1	Nil	200	Nil
	2	Nil	400	Nil
	3	280		120
	4 - 7	420		180
NPV at 7·5% p.a.	\$244 million			
NPV at 8·5% p.a.	\$217 million			

Product 2	Year(s)	Annual Sales Revenue \$ Million (based on ex factory prices)	Design and Development Costs \$ Million	Annual manufacturing and distribution costs \$ Million
	1	Nil	6,400	Nil
	2	1,250	Nil	600
	3	2,000	Nil	750
	4 - 6	3,500	Nil	1,200
NPV at 7·5% p.a.	\$430 million			
NPV at 10% p.a.	(\$45 million)			

Required:

- (a) Recommend three ways of improving your company's internal control systems to ensure better management of risks throughout the product life cycle.
- (b) Prepare a memo for your Head of Division recommending which product your company should support. You should clearly explain and justify your recommendations in the context of risk management.

(10 marks)

(15 marks)

(Total for Question Four = 25 marks)

Section B continues on the next page

TURN OVER

Question Five

You are the newly appointed treasurer of VQR Ltd, a medium sized importing and exporting company based in Singapore. The company imports goods from Australia and New Zealand and exports these goods to the United States. A subsidiary company, based in Sydney, Australia, is partly financed by an Australian dollar denominated floating rate bank loan. VQR uses the forward or money markets to hedge its foreign currency risk. Most customers are allowed, and take, three months' credit.

You need to respond to the points raised in the following memo from your Chief Executive Officer:

From: CEO
To: Treasurer
Date: 24th May 2007

I have been reading the financial section of the local business press and note the following in respect of interest rates and other economic data:

<i>Exchange rates</i>	<i>Singapore\$/US\$</i>	<i>Australian\$/US\$</i>
Spot	1.565	1.311
1 month forward	1.562	1.312

	<i>Singapore</i>	<i>USA</i>	<i>Australia</i>
Annual inter-bank offer rate	3.44%	5.38%	6.2%

Annual inflation for Singapore over the next twelve months is forecast at 0.5%, compared with forecast rates of 1.3% for Australia and 1.86% for the USA.

I have a number of questions:

- (i) As interest rates are higher in the USA than here in Singapore, surely the US dollar should be trading forward at a premium to the Singapore dollar, not a discount?
- (ii) The newspaper did not quote a 3 month forward rate. We have recently sold goods to a customer in the USA to the value of US\$ 3 million. What 3 month forward rate of exchange is implied by the information we do have, and therefore what will be the receipt in Singapore dollars in three months' time?
- (iii) Can we save money by buying Australian dollars on the spot market as and when we need them to pay for imports, rather than taking out forward contracts, and are there any disadvantages to this strategy?
- (iv) Would it be in our interest to borrow Singapore dollars and use the proceeds to pay off our Australian dollar loan given that rates of interest in Australia are higher than those in Singapore?

Please respond to these questions by the close of today.

Required:

Produce a response to the CEO.

Note: Your response should include a brief explanation of theories and appropriate calculations to support your discussion. Five marks will be allocated for **explanation** of appropriate theories. The balance of twenty marks is for **application** of those theories and relevant calculations.

(Total for Question Five = 25 marks)

(Total for Section B = 50 marks)

End of question paper

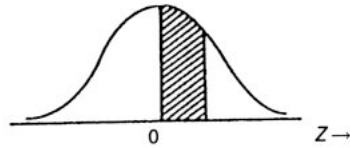
Maths Tables and Formulae are on pages 13 to 16

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	.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 (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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LIST OF VERBS USED IN THE QUESTION REQUIREMENTS

A list of the learning objectives and verbs that appear in the syllabus and in the question requirements for each question in this paper.

It is important that you answer the question according to the definition of the verb.

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

Management Accounting Pillar

Strategic Level Paper

*P3 – Management Accounting - Risk
and Control Strategy*

May 2007

Thursday Morning Session