Financial Management Pillar

Managerial Level Paper

# P8 – Financial Analysis

22 November 2005 – Tuesday Afternoon 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, make annotations 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). The question requirements for questions in Sections B and C are highlighted in a dotted box. |
| Answer the ONE compulsory question in Section A. This is comprised of seven objective test questions on pages 2 to 4. |
| Answer ALL THREE questions in Section B on pages 6 to 8. |
| Answer TWO of the three questions in Section C on pages 10 to 15. |
| Maths Tables are provided on pages 17 to 19. These 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. |

P8 – Financial Analysis

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SECTION A – 20 MARKS

[the indicative time for answering this Section is 36 minutes]

ANSWER *ALL* SEVEN SUB-QUESTIONS

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*Instructions for answering Section A:*

The answers to the seven sub-questions in Section A should ALL be written in your answer book.

Your answers should be clearly numbered with the sub-question number and then ruled off, so that the markers know which sub-question you are answering. For multiple choice questions, you need only write the sub-question number and the letter of the answer option you have chosen. You do not need to start a new page for each sub-question.

For sub-questions **1.1** and **1.2**, you should show your workings as marks are available for method for these sub-questions.

**Question One**

**1.1** FAL owns 75% of the issued ordinary share capital and 25% of the issued irredeemable preferred shares in PAL. The share capital and accumulated profits of PAL at 31 March 2005, the FAL group's year end, were:

| | $ |
|---|---|
| Ordinary share capital | 60,000 |
| 7% preferred share capital | 20,000 |
| | 80,000 |
| Accumulated profits | 215,000 |
| | 295,000 |

Upon acquisition of FAL's interests in PAL, which took place on 30 September 2004, the fair values of PAL's net assets were the same as book values, with the exception of an item of plant. The carrying value of the plant at 30 September 2004 was $10,200, and its fair value was $15,600. Its estimated remaining useful life at that date was 4 years. Depreciation is charged for each month of ownership. No adjustment was made in PAL's own accounting records for the increase in fair value.

Calculate the minority interest in PAL at 31 March 2005 for inclusion in the group's consolidated balance sheet (to the nearest $).

***(4 marks)***

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**1.2** AB owns a controlling interest in another entity, CD, and exerts significant influence over EF, an entity in which it holds 30% of the ordinary share capital.

During the financial year ended 30 April 2005, EF sold goods to AB valued at $80,000. The cost of the goods to EF was $60,000. 25% of the goods remained in AB's inventory at 30 April 2005.

Which ONE of the following is the correct consolidation adjustment in respect of the inventory?

**A** DR Consolidated reserves $5,000, CR Inventory $5,000

**B** DR Consolidated reserves $1,500, CR Inventory $1,500

**C** DR Consolidated reserves $5,000, CR Investment in Associate $5,000

**D** DR Consolidated reserves $1,500, CR Investment in Associate $1,500

***(3 marks)***

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**1.3** Which ONE of the following describes the method of accounting preferred by IAS 31 *Interests in Joint Ventures* for jointly controlled entities?

**A** Trade investment with disclosure of share of assets by way of note.

**B** The equity method of consolidation.

**C** Proportionate consolidation.

**D** Acquisition accounting with deduction of a minority interest.

***(2 marks)***

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**1.4** IAS 29 *Financial reporting in hyperinflationary economies* lists characteristics of the economic environment of a country which tend to indicate that hyperinflation is a problem.

Identify TWO of these characteristics.

***(4 marks)***

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**1.5** On 1 January 2005, an entity issued a debt instrument with a coupon rate of 3·5% at a par value of $6,000,000. The directly attributable costs of issue were $120,000. The debt instrument is repayable on 31 December 2011 at a premium of $1,100,000.

What is the total amount of the finance cost associated with the debt instrument?

**A** $1,470,000

**B** $1,590,000

**C** $2,570,000

**D** $2,690,000

***(2 marks)***

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TURN OVER

**1.6** XYZ operates a defined benefit pension plan for its employees. The present value of the plan's obligations on 1 September 2004 was \$6,600,000, increasing to \$7,200,000 by the entity's year end on 31 August 2005. Benefits paid to members of the pension plan during the year were \$650,000 and the current service cost for the financial year was \$875,000. The increase in the present value of the pension plan's liabilities for the year was \$540,000.

What was the actuarial gain or loss in respect of the plan's obligations for the year ended 31 August 2005?

**A** Gain of \$165,000

**B** Loss of \$285,000

**C** Gain of \$1,465,000

**D** Loss of \$1,585,000

***(2 marks)***

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**1.7** At its year end, 31 March 2005, entity JBK held 60,000 shares in a listed entity, X. The shares were purchased on 11 February 2005 at a price of 85¢ per share. The market value of the shares on 31 March 2005 was 87·5¢. The investment is categorised as held-for-trading.

Show the journal entries required in respect of both the initial acquisition of the investment and its subsequent remeasurement on 31 March 2005.

***(3 marks)***

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***(Total for Section A = 20 marks)***

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*End of Section A*

*Section B starts on the next page*

TURN OVER

SECTION B – 30 MARKS

[the indicative time for answering this Section is 54 minutes]

ANSWER *ALL* THREE QUESTIONS

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**Question Two**

DCB is a manufacturing and trading entity with several overseas operations. One of its subsidiaries, GFE, operates in a country which experiences relatively high rates of inflation in its currency, the crown. Most entities operating in that country voluntarily present two versions of their financial statements: one at historical cost, and the other incorporating current cost adjustments. GFE complies with this accepted practice.

Extracts from the income statement adjusted for current costs for the year ended 30 September 2005 are as follows:

| | *Crowns 000* | *Crowns 000* |
|---|---|---|
| Historical cost operating profit | | 750 |
| *Current cost adjustments:* | | |
| Cost of sales adjustment | 65 | |
| Depreciation adjustment | 43 | |
| Loss on net monetary position | 16 | |
| | | 124 |
| Current cost operating profit | | 626 |

*Required:*

*(a)* Explain the defects of historical cost accounting in times of increasing prices.

***(4 marks)***

*(b)* Explain how EACH of the three current cost accounting adjustments in GFE's financial statements contributes to the maintenance of capital.

***(6 marks)***

***(Total for Question Two = 10 marks)***

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## Question Three

ABC is currently expanding its portfolio of equity interests in other entities. On 1 January 2005, it made a successful bid for a controlling interest in DEF, paying a combination of shares and cash in order to acquire 80% of DEF's 100,000 issued equity shares. The terms of the acquisition were as follows:

In exchange for each $1 ordinary share purchased, ABC issued one of its own $1 ordinary shares and paid $1·50 in cash. In addition to the consideration paid, ABC agreed to pay a further $1 per share on 1 January 2007, on condition that the profits of DEF for the year ended 31 May 2006 will exceed $6,000,000. ABC's directors consider that it is more likely than not that the additional consideration will be paid. The market value of a $1 share in ABC at 1 January 2005 was $3·50, rising to $3·60 at ABC's 31 May 2005 year end.

Total legal, administrative and share issue costs associated with the acquisition were $60,000: this figure included $20,000 paid to external legal and accounting advisers, an estimated $10,000 in respect of ABC's own administrative overhead and $30,000 in share issue costs.

The carrying value of DEF's net assets at 1 January 2005 was $594,000. Carrying value was regarded as a close approximation to fair value, except in respect of the following:

*1.* The carrying value of DEF's property, plant and equipment at 1 January 2005 was $460,000. Market value at that date was estimated at $530,000.

*2.* DEF had a contingent liability in respect of a major product warranty claim with a fair value of $100,000.

*3.* The cost of reorganising DEF's activities following acquisition was estimated at $75,000.

*4.* DEF's inventories included goods at an advanced stage of work-in-progress with a carrying value of $30,000. The sales value of these goods was estimated at $42,000 and further costs to completion at $6,000.

*Required:*

Calculate goodwill on the acquisition of DEF, in accordance with the requirements of IFRS 3 *Business Combinations,* explaining your treatment of the legal, administrative, share issue and reorganisation costs.

***(Total for Question Three = 10 marks)***

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*Section B continues on the next page*

TURN OVER

## Question Four

At a recent staff seminar on Accounting Standards, a senior member of your firm's accounting staff made the following observation:

> "International Standards have now been adopted in many countries across the world. Unfortunately though, they can never be truly international because US GAAP will continue to dominate accounting in the USA and therefore in many multinational businesses".

*Required:*

Explain the rationale for this observation, illustrating your explanation with examples of significant differences and similarities between US GAAP and International Accounting Standards.

***(Total for Question Four = 10 marks)***

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***(Total for Section B = 30 marks)***

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*End of Section B*

*Section C starts on the next page*

TURN OVER

SECTION C – 50 MARKS

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

ANSWER *TWO* QUESTIONS OUT OF THREE

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## Question Five

You are assistant to the Finance Director (FD) of OPQ, a well-known retailer of music, video and games products. OPQ's profit margins are under increasing pressure because of the entry of online retailers into the market. As part of their response to this challenge, OPQ's directors have decided to invest in entities in the supply chain of their most popular products. They are currently considering the acquisition of the business that supplies some of its best-selling computer games, PJ Gamewriters (PJ). The FD has asked you, as a preliminary step, to examine the most recent financial statements of the entity.

PJ was established in 1999 by twin brothers, Paul and James, who had recently graduated in computing. Their first business success was a simulated empire building game; this has continued to bring in a large proportion of PJ's revenue. However, they have also been successful in a range of other games types such as combat simulations, golf and football management games. The business has grown rapidly from year to year, and by 2005 it employed ten full-time games writers. Manufacture and distribution of the software in various formats is outsourced, and the business operates from office premises in a city centre. PJ bought the freehold of the office premises in 2002, and its estimated market value is now $900,000, nearly $350,000 in excess of the price paid in 2002. Apart from the freehold building, the business owns few non-current assets.

The equity shares in PJ are owned principally by Paul, James and their parents, who provided the initial start-up capital. Paul and James are the sole directors of the business. A small proportion of the shares (around 8%) is owned by five of the senior software writers. PJ is now up for sale as the principal shareholders wish to realise the bulk of their investment in order to pursue other business interests. It is likely that about 90% of the shares will be for sale. The copyrights of the games are owned by PJ, but no value is attributed to them in the financial statements.

PJ's income statement and summarised statement of changes in equity for the year ended 31 July 2005, and balance sheet at that date (all with comparatives) are as follows:

***PJ: Income statement for the year ended 31 July 2005***

| | *2005* | *2004* |
|---|---|---|
| | *$000* | *$000* |
| Revenue | 2,793 | 2,208 |
| Cost of sales (see note below) | (1,270) | (1,040) |
| Gross profit | 1,523 | 1,168 |
| Operating expenses | (415) | (310) |
| Profit from operations | 1,108 | 858 |
| Interest receivable | 7 | 2 |
| Profit before tax | 1,115 | 860 |
| Income tax expense | (331) | (290) |
| Profit for the period | 784 | 570 |

| *Note:* Cost of sales comprises the following: | *2005* | *2004* |
|---|---|---|
| | *$000* | *$000* |
| Games writers' employment costs | 700 | 550 |
| Production costs | 215 | 160 |
| Directors' remuneration | 200 | 200 |
| Other costs | 155 | 130 |
| | 1,270 | 1,040 |

***PJ: Summarised statement of changes in equity for the year ended 31 July 2005***

| | *2005* | *2004* |
|---|---|---|
| | *\$000* | *\$000* |
| Opening balance | 703 | 483 |
| Profit for the period | 784 | 570 |
| Dividends | (500) | (350) |
| Closing balance | 987 | 703 |

***PJ: Balance sheet at 31 July 2005***

| | *2005* | | *2004* | |
|---|---|---|---|---|
| | *\$000* | *\$000* | *\$000* | *\$000* |
| **Non-current assets:** | | | | |
| Property, plant and equipment | | 610 | | 620 |
| **Current assets:** | | | | |
| Inventories | 68 | | 59 | |
| Trade receivables | 460 | | 324 | |
| Cash | 216 | | 20 | |
| | | 744 | | 403 |
| | | 1,354 | | 1,023 |
| **Equity:** | | | | |
| Share capital | 60 | | 60 | |
| Retained earnings | 927 | | 643 | |
| | | 987 | | 703 |
| **Current liabilities:** | | | | |
| Trade and other payables | 36 | | 30 | |
| Income tax | 331 | | 290 | |
| | | 367 | | 320 |
| | | 1,354 | | 1,023 |

*Required:*

*(a)* Prepare a report on the financial performance and position of PJ Gameswriters, calculating and interpreting any relevant accounting ratios.

***(17 marks)***

*(b)* Explain the limitations of your analysis, identifying any supplementary items of information that would be useful.

***(8 marks)***

***(Total for Question Five = 25 marks)***

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## Question Six

Extracts from the consolidated financial statements of the AH Group for the year ended 30 June 2005 are given below:

***AH Group: Consolidated income statement for the year ended 30 June 2005***

| | *2005* |
|---|---|
| | *$000* |
| Revenue | 85,000 |
| Cost of sales | 59,750 |
| Gross profit | 25,250 |
| Operating expenses | 5,650 |
| Profit from operations | 19,600 |
| Finance cost | 1,400 |
| Profit before disposal of property | 18,200 |
| Disposal of property (*note 2*) | 1,250 |
| Profit before tax | 19,450 |
| Income tax | 6,250 |
| Profit for the period | 13,200 |
| | |
| Attributable to: | *$000* |
| Minority interest | 655 |
| Group profit for the year | 12,545 |
| | 13,200 |

***AH Group: Extracts from statement of changes in equity for the year ended 30 June 2005***

| | *Share capital* | *Share premium* | *Consolidated revenue reserves* |
|---|---|---|---|
| | *$000* | *$000* | *$000* |
| Opening balance | 18,000 | 10,000 | 18,340 |
| Issue of share capital | 2,000 | 2,000 | |
| Profit for period | | | 12,545 |
| Dividends | | | (6,000) |
| Closing balance | 20,000 | 12,000 | 24,885 |

***AH Group: Balance sheet, with comparatives, at 30 June 2005***

| | *2005* | | *2004* | |
|---|---|---|---|---|
| ASSETS | *$000* | *$000* | *$000* | *$000* |
| **Non-current assets** | | | | |
| Property, plant and equipment | 50,600 | | 44,050 | |
| Intangible assets (*note 3*) | 6,410 | | 4,160 | |
| | | 57,010 | | 48,210 |
| **Current assets** | | | | |
| Inventories | 33,500 | | 28,750 | |
| Trade receivables | 27,130 | | 26,300 | |
| Cash | 1,870 | | 3,900 | |
| | | 62,500 | | 58,950 |
| | | 119,510 | | 107,160 |
| | | | | |
| EQUITY AND LIABILITIES | | | | |
| **Equity** | | | | |
| Share capital | 20,000 | | 18,000 | |
| Share premium | 12,000 | | 10,000 | |
| Consolidated revenue reserves | 24,885 | | 18,340 | |
| | | 56,885 | | 46,340 |
| **Minority interest** | | 3,625 | | 1,920 |

| | | | | |
|---|---|---|---|---|
| **Non-current liabilities** | | | | |
| Interest-bearing borrowings | | 18,200 | | 19,200 |
| | | | | |
| **Current liabilities** | | | | |
| Trade payables | 33,340 | | 32,810 | |
| Interest payable | 1,360 | | 1,440 | |
| Tax | 6,100 | | 5,450 | |
| | | 40,800 | | 39,700 |
| | | 119,510 | | 107,160 |

*Notes:*

*1.* Several years ago, AH acquired 80% of the issued ordinary shares of its subsidiary, BI. On 1 January 2005, AH acquired 75% of the issued ordinary shares of CJ in exchange for a fresh issue of 2 million of its own $1 ordinary shares (issued at a premium of $1 each) and $2 million in cash. The net assets of CJ at the date of acquisition were assessed as having the following fair values:

| | *$000* |
|---|---|
| Property, plant and equipment | 4,200 |
| Inventories | 1,650 |
| Receivables | 1,300 |
| Cash | 50 |
| Trade payables | (1,950) |
| Tax | (250) |
| | 5,000 |

*2.* During the year, AH disposed of a non-current asset of property for proceeds of $2,250,000. The carrying value of the asset at the date of disposal was $1,000,000. There were no other disposals of non-current assets. Depreciation of $7,950,000 was charged against consolidated profits for the year.

*3.* Intangible assets comprise goodwill on acquisition of BI and CJ (2004: BI only). Goodwill has remained unimpaired since acquisition.

*Required:*

Prepare the consolidated cash flow statement of the AH Group for the financial year ended 30 June 2005 in the form required by IAS 7 *Cash flow statements*, and using the indirect method. Notes to the cash flow statement are NOT required, but full workings should be shown.

***(Total for Question Six = 25 marks)***

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## Question Seven

One of your colleagues has recently inherited investments in several listed entities and she frequently asks for your advice on accounting issues. She has recently received the consolidated financial statements of STV, an entity that provides haulage and freight services in several countries. She has noticed that note 3 to the financial statements is headed "Segment information".

Note 3 explains that STV's primary segment reporting format is business segments of which there are three: in addition to road and air freight, the entity provides secure transportation services for smaller items of high value. STV's *Operating and Financial Review* provides further background information; the secure transport services segment was established only three years ago. This new operation required a sizeable investment in infrastructure which was principally funded through borrowing. However, the segment has experienced rapid revenue growth in that time, and has become a significant competitor in the industry sector.

Extracts from STV's segment report for the year ended 31 August 2005 are as follows:

| | *Road haulage* | | *Air freight* | | *Secure transport* | | *Group* | |
|---|---|---|---|---|---|---|---|---|
| | *2005* | *2004* | *2005* | *2004* | *2005* | *2004* | *2005* | *2004* |
| | *$m* | *$m* | *$m* | *$m* | *$m* | *$m* | *$m* | *$m* |
| **Revenue** | 653 | 642 | 208 | 199 | 98 | 63 | 959 | 904 |
| **Segment result** | 169 | 168 | 68 | 62 | 6 | (16) | 243 | 214 |
| Unallocated corporate expenses | | | | | | | (35) | (37) |
| Operating profit | | | | | | | 208 | 177 |
| Interest expense | | | | | | | (22) | (21) |
| Share of profits of associates | 16 | 12 | | | | | 16 | 12 |
| Profit before tax | | | | | | | 202 | 168 |
| Income tax | | | | | | | (65) | (49) |
| **Profit** | | | | | | | 137 | 119 |
| **Other information** | | | | | | | | |
| Segment assets | 805 | 796 | 306 | 287 | 437 | 422 | 1,548 | 1,505 |
| Investment in equity method associates | 85 | 84 | | | | | 85 | 84 |
| Unallocated corporate assets | | | | | | | 573 | 522 |
| Consolidated total assets | | | | | | | 2,206 | 2,111 |
| Segment liabilities | 345 | 349 | 176 | 178 | 197 | 184 | 718 | 711 |
| Unallocated corporate liabilities | | | | | | | 37 | 12 |
| Consolidated total liabilities | | | | | | | 755 | 723 |

Your colleague finds several aspects of this note confusing:

> "I thought I'd understood what you told me about consolidated financial statements; the idea of aggregating several pieces of information to provide an overall view of the activities of the group makes sense. But the segment report seems to be trying to disaggregate the information all over again: what is the point of doing this? Does this information actually tell me anything useful about STV? I know from talking to you previously that financial information does not always tell us everything we need to know. So, what are the limitations in this statement?"

*Required:*

*(a)* Explain the reasons for including disaggregated information about business segments in the notes to the consolidated financial statements.

***(5 marks)***

*(b)* Analyse and interpret STV's segment disclosures for the benefit of your colleague, explaining your findings in a brief report.

***(12 marks)***

*(c)* Explain the general limitations of segment reporting, illustrating your answer where applicable with references to STV's segment report.

***(8 marks)***

***(Total for Question Seven = 25 marks)***

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

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*End of Question Paper*

*Maths Tables and Formulae are on pages 17 to 19*

TURN OVER

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# MATHS TABLES AND FORMULAE

## 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 | 0705 | 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 | 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 | 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 | 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 | 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:

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

**Perpetuity**
Present value of $1 per annum receivable or payable 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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*Financial Management Pillar*

*Managerial Level*

*P8 – Financial Analysis*

*November 2005*

*Tuesday Afternoon Session*