ACCA INTERIM ASSESSMENT

Financial Management

December 2011

Paper F9

Time allowed
Reading and planning: 15 minutes;
Writing: 3 hours

ALL FOUR questions are compulsory and MUST be attempted

Formulae Sheet, Present Value and Annuity Tables are on pages 3, 4 and 5.

Do NOT open this paper until instructed by the supervisor.

During reading and planning time only the question paper may be annotated. You must NOT write in your answer booklet until instructed by the supervisor.

This question paper must not be removed from the examination hall.

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Formulae Sheet

Economic order quantity

$$= \sqrt{\frac{2C_oD}{C_H}}$$

Miller-Orr Model

$$\text{Return point} = \text{Lower limit} + (\frac{1}{3} \times \text{spread})$$

$$\text{Spread} = 3\left(\frac{\frac{3}{4} \times \text{Transaction cost} \times \text{Variance of cash flows}}{\text{Interest rate}}\right)^{\frac{1}{3}}$$

The Capital Asset Pricing Model

$$E(r)_j = R_f + \beta_j (E(r_m) - R_f)$$

The asset beta formula

$$\beta_a = \left(\frac{V_e}{(V_e + V_d(1-T))} \; \beta_e\right) + \left(\frac{V_d(1-T)}{(V_e + V_d(1-T))} \; \beta_d\right)$$

The Growth Model

$$P_0 = \frac{Do(1+g)}{(r_e - g)}$$

Gordon's growth approximation

$$g = br_e$$

The weighted average cost of capital

$$\text{WACC} = \left(\frac{V_e}{V_e + V_d}\right) k_e + \left(\frac{V_d}{V_e + V_d}\right) k_d(1-T)$$

The Fisher formula

$$(1 + i) = (1 + r)(1 + h)$$

Purchasing power parity and interest rate parity

$$S_1 = S_0 \times \frac{(1+h_c)}{(1+h_b)} \qquad F_0 = S_0 \times \frac{(1+i_c)}{(1+i_b)}$$

Present Value Table

Present value of 1 i.e. $(1 + r)^{-n}$

Where   r = discount rate

           n = number of periods until payment

Periods (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	1
2	0.980	0.961	0.943	0.925	0.907	0.890	0.873	0.857	0.842	0.826	2
3	0.971	0.942	0.915	0.889	0.864	0.840	0.816	0.794	0.772	0.751	3
4	0.961	0.924	0.888	0.855	0.823	0.792	0.763	0.735	0.708	0.683	4
5	0.951	0.906	0.863	0.822	0.784	0.747	0.713	0.681	0.650	0.621	5
6	0.942	0.888	0.837	0.790	0.746	0.705	0.666	0.630	0.596	0.564	6
7	0.933	0.871	0.813	0.760	0.711	0.665	0.623	0.583	0.547	0.513	7
8	0.923	0.853	0.789	0.731	0.677	0.627	0.582	0.540	0.502	0.467	8
9	0.914	0.837	0.766	0.703	0.645	0.592	0.544	0.500	0.460	0.424	9
10	0.905	0.820	0.744	0.676	0.614	0.558	0.508	0.463	0.422	0.386	10
11	0.896	0.804	0.722	0.650	0.585	0.527	0.475	0.429	0.388	0.350	11
12	0.887	0.788	0.701	0.625	0.557	0.497	0.444	0.397	0.356	0.319	12
13	0.879	0.773	0.681	0.601	0.530	0.469	0.415	0.368	0.326	0.290	13
14	0.870	0.758	0.661	0.577	0.505	0.442	0.388	0.340	0.299	0.263	14
15	0.861	0.743	0.642	0.555	0.481	0.417	0.362	0.315	0.275	0.239	15

(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	1
2	0.812	0.797	0.783	0.769	0.756	0.743	0.731	0.718	0.706	0.694	2
3	0.731	0.712	0.693	0.675	0.658	0.641	0.624	0.609	0.593	0.579	3
4	0.659	0.636	0.613	0.592	0.572	0.552	0.534	0.516	0.499	0.482	4
5	0.593	0.567	0.543	0.519	0.497	0.476	0.456	0.437	0.419	0.402	5
6	0.535	0.507	0.480	0.456	0.432	0.410	0.390	0.370	0.352	0.335	6
7	0.482	0.452	0.425	0.400	0.376	0.354	0.333	0.314	0.296	0.279	7
8	0.434	0.404	0.376	0.351	0.327	0.305	0.285	0.266	0.249	0.233	8
9	0.391	0.361	0.333	0.308	0.284	0.263	0.243	0.225	0.209	0.194	9
10	0.352	0.322	0.295	0.270	0.247	0.227	0.208	0.191	0.176	0.162	10
11	0.317	0.287	0.261	0.237	0.215	0.195	0.178	0.162	0.148	0.135	11
12	0.286	0.257	0.231	0.208	0.187	0.168	0.152	0.137	0.124	0.112	12
13	0.258	0.229	0.204	0.182	0.163	0.145	0.130	0.116	0.104	0.093	13
14	0.232	0.205	0.181	0.160	0.141	0.125	0.111	0.099	0.088	0.078	14
15	0.209	0.183	0.160	0.140	0.123	0.108	0.095	0.084	0.074	0.065	15

Annuity Table

Present value of an annuity of 1 i.e. $\dfrac{1-(1+r)^{-n}}{r}$

Where r = discount rate

n = number of periods

Periods					Discount 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	1
2	1.970	1.942	1.913	1.886	1.859	1.833	1.808	1.783	1.759	1.736	2
3	2.941	2.884	2.829	2.775	2.723	2.673	2.624	2.577	2.531	2.487	3
4	3.902	3.808	3.717	3.630	3.546	3.465	3.387	3.312	3.240	3.170	4
5	4.853	4.713	4.580	4.452	4.329	4.212	4.100	3.993	3.890	3.791	5
6	5.795	5.601	5.417	5.242	5.076	4.917	4.767	4.623	4.486	4.355	6
7	6.728	6.472	6.230	6.002	5.786	5.582	5.389	5.206	5.033	4.868	7
8	7.652	7.325	7.020	6.733	6.463	6.210	5.971	5.747	5.535	5.335	8
9	8.566	8.162	7.786	7.435	7.108	6.802	6.515	6.247	5.995	5.759	9
10	9.471	8.983	8.530	8.111	7.722	7.360	7.024	6.710	6.418	6.145	10
11	10.37	9.787	9.253	8.760	8.306	7.887	7.499	7.139	6.805	6.495	11
12	11.26	10.58	9.954	9.385	8.863	8.384	7.943	7.536	7.161	6.814	12
13	12.13	11.35	10.63	9.986	9.394	8.853	8.358	7.904	7.487	7.103	13
14	13.00	12.11	11.30	10.56	9.899	9.295	8.745	8.244	7.786	7.367	14
15	13.87	12.85	11.94	11.12	10.38	9.712	9.108	8.559	8.061	7.606	15
(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	1
2	1.713	1.690	1.668	1.647	1.626	1.605	1.585	1.566	1.547	1.528	2
3	2.444	2.402	2.361	2.322	2.283	2.246	2.210	2.174	2.140	2.106	3
4	3.102	3.037	2.974	2.914	2.855	2.798	2.743	2.690	2.639	2.589	4
5	3.696	3.605	3.517	3.433	3.352	3.274	3.199	3.127	3.058	2.991	5
6	4.231	4.111	3.998	3.889	3.784	3.685	3.589	3.498	3.410	3.326	6
7	4.712	4.564	4.423	4.288	4.160	4.039	3.922	3.812	3.706	3.605	7
8	5.146	4.968	4.799	4.639	4.487	4.344	4.207	4.078	3.954	3.837	8
9	5.537	5.328	5.132	4.946	4.772	4.607	4.451	4.303	4.163	4.031	9
10	5.889	5.650	5.426	5.216	5.019	4.833	4.659	4.494	4.339	4.192	10
11	6.207	5.938	5.687	5.453	5.234	5.029	4.836	4.656	4.486	4.327	11
12	6.492	6.194	5.918	5.660	5.421	5.197	4.988	4.793	4.611	4.439	12
13	6.750	6.424	6.122	5.842	5.583	5.342	5.118	4.910	4.715	4.533	13
14	6.982	6.628	6.302	6.002	5.724	5.468	5.229	5.008	4.802	4.611	14
15	7.191	6.811	6.462	6.142	5.847	5.575	5.324	5.092	4.876	4.675	15

ALL FOUR questions are compulsory and MUST be attempted

1   AGD Co is a profitable company which is considering the purchase of a machine costing $320,000. If purchased, AGD Co would incur annual maintenance costs of $25,000. The machine would be used for three years and at the end of this period would be sold for $50,000. Alternatively, the machine could be obtained under an operating lease for an annual lease rental of $120,000 per year, payable in advance.

AGD Co can claim capital allowances on a 25% reducing balance basis. The company pays tax on profits at an annual rate of 30% and all tax liabilities are paid one year in arrears. AGD Co has an accounting year that ends on 31 December. If the machine is purchased, payment will be made in January of the first year of operation. If leased, annual lease rentals will be paid in January of each year of operation.

Required:

(a)   **Using an after-tax borrowing rate of 7%, evaluate whether AGD Co should purchase or lease the new machine.**   **(12 marks)**

(b)   The after-tax borrowing rate of 7% was used in the evaluation because a bank had offered to lend AGD Co $320,000 for a period of five years at a before-tax rate of 10% per year with interest payable every year.

Required:

(i)   **Explain why the after-tax cost of borrowing is the correct discount rate to use within the lease v buy decision**   **(2 marks)**

(ii)   **Calculate the amount to be repaid at the end of each year if the offered loan is to be repaid in equal instalments.**   **(3 marks)**

(c)   **Managers and owners of business may not have the same objectives. Explain this statement, illustrating your answer with examples of possible conflicts of interest.**   **(8 marks)**

                                                                                    (Total: 25 marks)

2 Whirlygig Co manufactures and markets automatic dishwashing machines. Among the components which it purchases each year from external suppliers for assembly into the finished article are window units, of which it uses 20,000 units per annum.

It is considering buying in larger amounts in order to claim quantity discounts. This will lower the number of orders placed but raise the administrative and other costs of placing and receiving orders. Details of actual and expected ordering and holding costs are given in the table below:

	Actual	Proposed
Ordering cost per order	$31.25	$120.00
Purchase price per item	$6.25	$6.00
Annual inventory holding cost (as a percentage of inventory value)	20%	20%

To implement the new arrangements will require reorganisation costs estimated at $10,000.

Ignore taxation in your answer.

Required:

(a) Determine the change in the economic order quantity caused by the new system. **(3 marks)**

(b) Calculate the payback period for the proposal and comment on your results.

(6 marks)

(c) Discuss the suitability of the payback method for evaluating investments.

(6 marks)

(d) Explain the benefits of moving to a just-in-time (JIT) inventory management policy. **(5 marks)**

(e) Identify the actions a company may take when faced with cash flow shortages. **(5 marks)**

(Total: 25 marks)

3 A manufacturing company has an ageing machine which has been requiring more maintenance recently. The directors have undertaken an investigation of the possible replacement of the machine, as they have just signed a new contract to supply their goods to a large company. This contract will last for a five-year period beginning on 1 January 20X5 and ending on 31 December 20X9.

The alternative to replacement is a complete overhaul of the machine, but the annual maintenance costs will be higher.

The cost of a new machine is $45,000, while the cost of a complete overhaul of the old machine is $27,500, with either payment being due on 1 January 20X5.

The maintenance costs on either machine are paid at the end of each year of the project. The first maintenance payment for the new machine is $2,500 which is set to rise by 7.5% per year. The maintenance payments for the old machine are expected to be $4,000 in 20X5 and to have the following inflation indices:

Year	20X5	20X6	20X7	20X8	20X9
Inflation index	100	110.5	122.1	134.9	149.1

As the new machine is likely to reduce the variable cost, the contribution will be different depending on which machine is used. The contribution from each machine (excluding maintenance costs) is tabulated as follows, with the inflow of funds assumed to be at the end of each year:

Year	20X5	20X6	20X7	20X8	20X9
Contribution with new machine ($)	15,000	17,000	19,000	21,000	22,000
Contribution with overhauled machine ($)	13,000	14,500	15,500	16,000	16,000

The financial manager is unsure of the cost of capital, but expects it is around 12%.

Required:

(a) **Establish and tabulate the net cash flows for each plan, assuming that all other costs are the same for both, and calculate the payback period for each alternative.** **(8 marks)**

(b) **Establish the net present value of each plan, assuming a 12% cost of capital.**

(6 marks)

(c) **Estimate the internal rate of return of each plan.** **(6 marks)**

(d) **Interpret the results that you have obtained in parts (a), (b), and (c) above, and recommend which alternative should be chosen.** **(5 marks)**

(Total: 25 marks)

4 Velm Co sells stationery and office supplies on a wholesale basis and has an annual revenue of $4,000,000. Materials purchases represent approximately 80% of revenue and inventory levels have remained consistent over recent years. The company employs four people in its sales ledger and credit control department at an annual salary of $12,000 each. All sales are on 40 days' credit with no discount for early payment. Bad debts represent 3% of revenue and Velm Co pays annual interest of 9% on its overdraft. The most recent accounts of the company offer the following financial information:

Velm Co: Statement of financial position as at 31 December 20X2

	$000	$000
Non-current assets		17,500
Current assets		
Inventory	900	
Receivables	550	
Cash	120	
		1,570
Total assets		19,070
Equity and liabilities		
Ordinary shares	3,500	
Reserves	11,640	
Total equity		15,140
Non-current liabilities		
12% loan notes due 20X9		2,400
Current liabilities		
Trade payables	330	
Bank overdraft	1,200	
		1,530
Total equity and liabilities		19,070

Current sector averages are as follows:

Inventory days: 90 days

Receivables days: 45 days

Payables days: 60 days

Velm Co is considering offering a discount of 1% to customers paying within 14 days, which it believes will reduce bad debts to 2.4% of revenue. The company also expects that offering a discount for early payment will reduce the average credit period taken by its customers to 26 days. The consequent reduction in the time spent chasing customers where payments are overdue will allow one member of the credit control team to take early retirement. Two-thirds of customers are expected to take advantage of the discount.

Required:

(a) **Calculate the length of Velm's cash operating cycle and comment on your findings.** **(6 marks)**

(b) **Using the information provided, determine whether a discount for early payment of one per cent will lead to an increase in profitability for Velm Co.** **(5 marks)**

(c) **Discuss the different policies that may be adopted by a company towards the financing of working capital needs and indicate which policy has been adopted by Velm Co.** **(7 marks)**

(d) **Outline the advantages to a company of taking steps to improve its working capital management, giving examples of steps that might be taken by Velm Co.** **(7 marks)**

(Total: 25 marks)