DBS
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Quality & Qualifications Ireland (QQI)
BA (Hons) Accounting and Finance

Level 3

SUMMER 2018 EXAMINATION

Module Code: **B8AF106**

Module Description: **Advanced Financial Management**

Examiner: **Derek Reynolds**

Internal Moderator: **Andrew Quinn**

External Examiner: **Dr Ciaran Mac an Bhaird**

Date: 08 May 2018
Time: 1530 - 1830

INSTRUCTIONS TO CANDIDATES

Time allowed is <u>THREE</u> (3) Hours

Answer any <u>FOUR</u> (4) Questions

All <u>Questions</u> carry <u>25 MARKS</u>

Calculators are allowed and please Show All Workings

Formulae and Mathematical Tables Attached

Question 1

Optiplex Co is evaluating two investment projects, as follows.

Project 1

Optiplex Co plan to replace an existing machine and must choose between two machines. Machine 1 has an initial cost of €1,200,000 and will have a scrap value of €150,000 after four years. Machine 2 has an initial cost of €1,350,000 and will have a scrap value of €300,000 after three years. Annual maintenance costs of the two machines are as follows:

Year	1	2	3	4
Machine 1 (€/year)	€ 150,000	€ 174,000	€ 192,000	€ 210,000
Machine 2 (€/year)	€ 90,000	€ 120,000	€ 150,000	

Where relevant, all information relating to Project 1 has already been adjusted to include expected future inflation. Taxation and capital allowances must be ignored in relation to Machine 1 and Machine 2.

Project 2

The cost of a machine is €2.4 million, payable immediately, and will be used to produce a recently-developed product. The scrap value of the machinery at the end of four years is expected to be €180,000. Capital allowances can be claimed on this investment at a rate of 25% per annum, reducing balance method.

Information on future returns from the investment has been forecast to be as follows:

Year	1	2	3	4
Sales volume (units/year)	75,000	125,000	165,000	135,000
Selling price (€/unit)	€33	€32	€30	€29
Variable cost (€/unit)	€18	€19	€20	€21
Fixed costs (€/year)	€130,000	€135,000	€145,000	€150,000

This information is current terms prices and must be adjusted to allow for selling price inflation of 4% per year and variable cost inflation of 3.5% per year. Fixed costs, which are wholly attributable to the project, have already been adjusted for inflation. Optiplex Co pays profit tax of 30% per year a year in arrears.

Other information:
Optiplex Co has a nominal before-tax weighted average cost of capital of 11% and a nominal after-tax weighted average cost of capital of 6%.

Required:
a) Calculate the net present value of Project 2 and comment on whether this project is financially acceptable to Optiplex Co.

(13 marks)

b) Calculate the equivalent annual costs of Machine 1 and Machine 2 and discuss which machine should be purchased.

(7 marks)

c) Critically discuss the use of sensitivity analysis as a way of including risk in the investment appraisal process.

(5 marks)

Total: (25 marks)

Question 2

Oxford Co has in issue 6 million shares with an ex dividend market value of €10.20 per share. A dividend of 69.4 cents per share for 2017 has just been paid. The pattern of recent dividends is as follows:

Year	2014	2015	2016	2017
Dividends per share (cents)	61.7	64.8	66.2	69.4

Oxford Co also has in issue 6% bonds redeemable in five years' time with a total nominal value of €5 million. The market value of each €100 bond is €107.40. Redemption will be at a 10% premium to nominal value.

Oxford Co is planning to invest a significant amount of money into a joint venture in a new business area. It has identified a proxy company with a similar business risk to the joint venture. The proxy company has an equity beta of 1·038 and is financed 75% by equity and 25% by debt, on a market value basis.

The current risk-free rate of return is 4% and the average equity risk premium is 5%. Oxford Co pays profit tax at a rate of 30% per year and has an equity beta of 1·6.

Required:

a) Calculate the cost of equity of Oxford Co using the dividend growth model.

(6 marks)

b) Calculate the weighted average after-tax cost of capital of Oxford Co using a cost of equity of 11%

(9 marks)

c) Calculate a project-specific cost of equity for Oxford Co for the planned joint venture.

(5 marks)

d) Discuss whether the dividend growth model or the capital asset pricing model should be used to calculate the cost of equity.

(5 marks)

Total: (25marks)

Question 3

Alpha Co sells both Product A and Product B, with sales of both products occurring evenly throughout the year.

Product A
The annual demand for Product A is 420,000 units and an order for new inventory is placed each month. Each order costs €304.76 to place. The cost of holding Product A in inventory is 16 cents per unit per year. Buffer inventory equal to 40% of one month's sales is maintained.

Product B
The annual demand for Product B is 652,000 units per year and Alpha Co buys in this product at €1.50 per unit on 60 days credit. The supplier has offered an early settlement discount of 2% for settlement of invoices within 30 days.

Other information Alpha Co finances working capital with short-term finance costing 8% per year. Assume that there are 365 days in each year.

Required:
  a) Calculate the following values for Product A
     i)   The total cost of the current ordering and holding policy

                                                                (3 marks)
     ii)   The total cost of an ordering policy using the economic order quantity;

                                                                  (3 marks)
     iii)   The net cost or saving of introducing an ordering policy using the economic order quantity.   **(1 mark)**

  b) Calculate the net value in **EURO** to Alpha Co of accepting the early settlement discount for Product B.

                                                                  (5 marks)

  c) Discuss how invoice discounting and factoring can aid the management of trade receivables.   **(6 marks)**

  d) Identify the objectives of working capital management and discuss the central role of working capital management in financial management.

                                                                  (7 marks)

                                                         Total: (25marks)

Question 4

Gamma Co is considering how to finance the acquisition of a machine costing €730,000 with an operating life of five
years. There are two financing options:

Option 1
The machine could be leased for an annual lease payment of €170,000 per year, payable at the start of each year.
Option 2
The machine could be bought for €730,000 using a bank loan charging interest at an annual rate of 5% per year.
At the end of five years, the machine would have a scrap value of 10% of the purchase price. If the machine is bought,
maintenance costs of €20,000 per year would be incurred.

Taxation must be ignored.

Required:
a) Evaluate whether Gamma Co should use leasing or borrowing as a source of finance, explaining the evaluation method which you use.

(12 marks)

b) Discuss the attractions of leasing as a source of both short-term and long-term finance.

(5 marks)

c) Discuss briefly the reasons why interest rates may differ between loans of different maturity.

(8 marks)

Total: (25 marks)

Question 5

Killiney Ltd is a well-established Irish based printing company. It has performed well over many years and has grown organically such that in its most recent financial statements, it reported a profit after tax of €12m on a turnover of €93m.

However, the firm's management is aware that the printing industry is becoming increasingly competitive, since new technology development is making it ever easier for customers to source their printing needs from a worldwide pool of suppliers.

As a consequence, the directors have decided to reposition the firm by diversifying into the design and advertising industry - it is hoped that customers will find it easier if Killiney can both design and print items for them.

The directors are trying to decide whether to set up a design business from scratch, or whether to acquire an existing firm in the industry. Conflicting views were expressed at last week's Board Meeting:

Chief Executive:

"I would prefer to grow by acquisition. Killiney has little experience in the design industry, so I think it would be very difficult to set up a brand new business in this area. I have been looking at some information on local design companies and have found a firm called Dalkey Ltd. Rumour has it that the Dalkey family is keen to sell their business if they can achieve a good price for it."

The Finance Director expressed reservations about the Chairman's suggestion:

"At Killiney we have never previously made an acquisition, and I have heard that it is a complex process. Having had no experience of this process in the past, I wouldn't know where to start. In particular, I have heard that it is not always necessary to pay cash to acquire another company's shares, but I'm not sure what the alternatives are."

The Financial Manager was concerned about the firm's future direction:

"I'm not sure that we should be raising finance to invest in Dalkey at this time. Our shareholders are demanding higher and higher dividends each year. How will we be able to satisfy our current shareholders' needs if we are directing funds and management time towards this acquisition?"

The Chairman could understand all the points raised and decided that further work needed to be done before a final decision could be made. He has contacted you and asked for advice

Required:

a) Explain the advantages of acquisition as a method of growing a company.

(7 marks)

b) Explain the advantages of organic growth as a method of growing a company.

(7marks)

c) Explain the possible different methods of payment which can be used when one company wants to buy another company's shares.

(11 marks)

Total: (25 marks)

Question 6

Brexit Co is a UK based company which has just begun to make export sales to the Eurozone and is considering starting to purchase from a supplier in Germany. The managing director is aware that the company is likely to face foreign exchange rate risk but is unsure how this could be managed. Additionally, the managing director is keen to understand how she could forecast future exchange rates as this would be of assistance when budgeting for the company.

Brexit Co can borrow in euros at 4% and in pounds sterling at 3%. Deposits in pounds earn just 1%. All rates are annual rates.

The current Euro/£ exchange rate is 1.200 +/- 0.005. A 12-month forward contract with a spread of +/- 0.010 will be available.

The company has just won a tender which will result in a receipt of €280,000 in one year's time.

Required:

a) Briefly explain the methods that could be used to forecast future exchange rates and using the available information calculate a one year forward rate.

(5 marks)

b) Explain whether or not the forecast of the future exchange rate using the current interest rate differential shown is likely to be accurate.

(4 marks)

c) Discuss simple techniques the company could use to minimise the foreign exchange rate risk that it is exposed to and hence reduce the need for hedging.

(3 marks)

d) Show how the receipt expected in one year's time could be hedged using a forward market hedge or a money market hedge and recommend which hedge should be used.

(7 marks)

e) Identify the key economic objectives of government policy and briefly explain the tools or policies a government can use to achieve these objectives.

(6 marks)

Total: (25 marks)

END OF PAPER

FORMULAE

PRESENT VALUE OF A SHARE (Dividend Valuation Model)

$$Po = \frac{Div_0\,(1+g)}{(Ke - g)}$$

COST OF EQUITY CAPITAL

$$Ke = \frac{[Do\,(1+g)\,]}{Po} + g$$

CAPITAL ASSET PRICING MODEL

$$Ke = r_f + \beta\,[E(r_m) - r_f]$$

WEIGHTED AVERAGE COST OF CAPITAL AFTER TAX (WACC)

$$WACC = Ke \times \frac{E}{E + D} + Kd \times (1-T) \times \frac{D}{E + D}$$

ASSET BETA

$$\beta_{asset} = \beta_{equity} \times \frac{E}{E + D\,(1-T)}$$

EQUITY BETA

$$\beta_{equity} = \beta_{asset} \times \frac{E + D\,(1-T)}{E}$$

NOMINAL AND REAL RETURNS

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

INTERNAL RATE OF RETURN

$$IRR = L + \{(NL/(NL - NH)) \times (H-L)\}$$

ECONOMIC ORDER QUANTITY

$$\sqrt{\frac{2 \times CoD}{Ch}}$$

Present Value Tables

Periods	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

	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	0.074	0.065

Annuity Tables

Periods	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

	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