
CERTIFIED PUBLIC ACCOUNTANT(CPA) INTERMEDIATE LEVEL EXAMINATIONS

I1.1: MANAGERIAL FINANCE

WEDNESDAY: 6 JUNE 2018

INSTRUCTIONS:

1. **Time Allowed: 3 hours 15 minutes** (15 minutes reading and 3 hours writing).
2. This examination has two sections; A & B.
3. Section A has **three** Compulsory Questions while B has **three** questions **two** to be attempted.
4. In summary attempt five questions.
5. Marks allocated to each question are shown at the end of the question.
6. Show all your workings.

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QUESTION ONE

Kamage (R) Ltd (KRL) is a manufacturer of plastic products that are supplied to the entire East African region. KRL has been enjoying the market until recently when new companies producing similar products entered the market. This development has affected the company's profitability and the stakeholders' value. In a bid to reduce the impact of competition and to increase shareholders' value, management plans to diversify their operations into the broadcasting industry. It is hoped that when the company diversifies its operations, the costs of exportation will be greatly reduced as the services will be exported without physical movement.

However, the risks in the broadcasting industry are different from those in the manufacturing industry and these will affect the cost of capital, the investment and the returns. Therefore, management needs to be cautious. In order to mitigate the effects of the risks in the new industry management was advised to use adjusted present value (APV) to value investment projects. Note that KRL plans to open an international television station and have identified you as an expert in financial management to help them evaluate the project and advise them on its viability.

Details of the projects are given below:

1. The project will require the company to:
 - (a) purchase telecasting machine at Frw 100 million.
 - (b) pay Frw 5 million for application fee.
 - (c) pay Frw 2 million investor allocating fee.
 - (d) pay Frw 1 million commitment fee. This fee is refundable when the company undertakes the project and is forfeited when the company does not undertake the project.
2. Half of the funds needed to undertake the project will be got from issue of new shares at a cost of 2% and the other half will be borrowed from a local bank at an interest rate of 15%. The loan will be paid back in equal annual installments over the life of the project.
3. The project is expected to generate cash flow of Frw 30 million in the first year increasing by 5% every year for the next 4 years. The required rate of return on this investment by equity investors is 10%.
4. Tax rate is 30%

REQUIRED:

- (a) Evaluate the viability of the project using:
 - (i) Adjusted present value (APV). **(13 Marks)**
 - (ii) Internal rate of return (IRR). **(7 Marks)**
 - (iii) Profitability index **(3 Marks)**
 - (b) Explain to the management of KRL how payback period is used in evaluation of investment projects. **(2 Marks)**
- (Total 25 Marks)**

QUESTION TWO

Karegyeya Holdings Ltd (KHL), manufactures plastics for both export and internal market. Due to the nature of its operation, it usually sells its products on credit with the aim of boosting sales. This strategy has caused the company problems in terms of collection and managing cash flows. Most of the customers have defaulted on their obligations by failing to pay on due dates and others eventually becoming bad debtors.

During the monthly management meeting, the sales and marketing manager suggested the need to reverse the strategy since it is not yielding fruits as expected. The credit controller on the other hand thinks that reversing the strategy will put the company in an awkward position as far as competition is concerned. He proposed that the company should employ the services of the factor. He said, 'when a factor is engaged, he will take on the administration of the receivables and the company will reduce bad debts and save on

administrative costs'. The chief executive officer wants a benefit of doubt to the credit controller's suggestion and has tasked him to evaluate his suggestion and demonstrate benefits to management in the next month's meeting.

The following information was available to support the evaluation:

The company sold goods worth Frw 30 million to its customers on credit last year. The company allows its customers to pay after 2 months but on average customers take 3 months to pay with approximately 2% of credit sales resulting into bad debts.

When a factor is employed, he will take on the administration of receivables at an annual fee of 3% of credit sales and save the company collection costs of Frw 0.5 million

A factor will advance the company 75% of the sales on credit and will charge the company 12%. Because of intervention of the factor the collection period will reduce from 3 months back to 2 months allowed by the company.

The average market cost of capital is 10%.

REQUIRED:

Assuming you are the credit controller of KHL:

(a) Demonstrate to the management whether it is cost effective to employ the services of the factor.

(15 Marks)

(b) Explain the advantages of factoring debts.

(5 Marks)

(Total 20 Marks)

QUESTION THREE

Ngondo (R) Ltd (NRL) is a family owned business with three shareholders. The company has applied for listing on Rwanda Securities Exchange. One of the requirements to list on the stock market is to have a wide range of shareholders. For the IPO to be successful, a realistic and fair price must be used to issue shares to the public. Since the company is unlisted, the share price is not known. You have been identified as an expert in financial management to help them identify the share price and you have been provided with extracts from financial statements for the year ended 31st December 2017.

Income statement for the year ended 31st December 2017:

	Frw '000'
Sales revenue	500,000
Operating profit	200,000
Operating expenses	50,000
Interest	20,000
Profit before tax	130,000
Tax	39,000
Profit after tax	91,000
Dividends	45,500

Statement of financial position as at 31st December 2017:

	Frw '000'
Non -current assets	300,000
Total assets	600,000
Total debts	200,000
Net worth	400,000

Additional information:

- The company has 200 shares in issue.
- The dividends have grown from Frw 32 million in year 2013 to Frw 45.5 million in 2017 and the growth rate is expected to remain the same even in future.
- The appropriate Price Earnings (P.E) ratio of similar type of companies is 14.
- The company's cost of equity is 12%

REQUIRED:

From the information above;

- Calculate the growth rate in dividends **(4 Marks)**
 - Compute the price per share using:
 - Price earnings ratio **(3 Marks)**
 - Dividend valuation model **(3 Marks)**
 - Net assets approach **(3 Marks)**
 - Advise the management the appropriate share prices among the prices determined using the above methods **(2 Marks)**
- (Total 15 Marks)**

QUESTION FOUR

Mamba (R) Ltd (MRL) operates in the printing and publishing industry. The company recently purchased a printing machine, one of its kind, being the only machine in the country that prints advertising materials that are displayed on billboards. The company has been enjoying the market sometime without competitors. Due to high demand of their products, the company has grown faster than expected. This growth forced the company to borrow externally to finance its increased capacity.

Investment advisors have warned the management of MRL against high external debts that will affect the gearing levels and the company's creditworthiness. They instead advised management to seek listing on Rwanda Stock Exchange in order to access equity funds from the investing public. Management have identified you as an expert in financial management to take them through in the listing process. You have subsequently accepted and organised an entry meeting with management, at which you intend to discuss some of the technical and environmental aspects of the tasks ahead.

REQUIRED:

- (a) Explain to the management of MRL:
 - (i) the general listing requirements of the Rwanda Stock Exchange **(5 Marks)**
 - (ii) the advantages of a company being listed on a stock exchange **(4 Marks)**
 - (b) Discuss:
 - (i) the challenges affecting the development of capital markets in Rwanda. **(6 Marks)**
 - (ii) the role of capital markets in an economy like that of Rwanda. **(5 Marks)**
- (Total 20 Marks)**

QUESTION FIVE:

Ngeze Investments Limited (NIL), with its headquarters in the Eastern Province, has been in business since 2001. NIL deals in hides and skins and operates in two major towns of Rwamagana and Kibungo. During the year 2017, NIL realised high profits and had retained earnings of Frw 90 million. Early this year however, there was an outbreak of foot and mouth disease in all districts of Eastern Province which devastated livestock in the region.

In March 2018, the government put a quarantine on movement and slaughtering of cattle in the province and it is to last for 5 years. This has put NIL business activities on hold. Management wants to invest funds at hand but they are not sure which investment will add value to their shareholders. You have been approached as a financial analyst to analyze the available investment opportunities and report back. The different investment opportunities are listed below:

1. Depositing Frw 90 million on a fixed deposit account in their bank at an interest rate of 14% per annum compounded twice a year for 5 years.
2. Investing in treasury bonds which was recently announced by the central bank. The details of treasury bonds were as announced by Bank of Rwanda as follows:

5 year bond:	
Coupon rate	10.5%
Maturity period	5 years
Offer price	Frw.88.5
Yield to maturity	15%

The company wants the maturity value Frw 180 million.

REQUIRED:

- (a) Assess the profitability of the fixed deposit plan of Frw 90 million if interest is paid semi-annually. **(7 Marks)**
- (b) Calculate the amount the company needs to invest in the bond in order to realize their wish and advise management on the best option. **(8 Marks)**
- (c) Discuss the relationship between financial management and financial accounting. **(5 Marks)**

(Total 20 Marks)**QUESTION SIX**

During the recently concluded workshop on financial literacy that was held in Byumba, one of the presenters emphasised the need to invest in portfolios that will reduce risk and maximise returns.

A group of traders from Rwamanga market took interest in what the presenter said and have approached you to help them select a portfolio that will maximise their returns. They have altogether Frw 100 million which they wish to invest in well diversified portfolios as per the presenter's emphasis. They came along with a list of individual projects from which different portfolios can be formed.

The details about the individual projects are provided to you as follows:

Project	Current return (%)	Beta
Real estate	10	1.5
Poultry keeping	20	2.0
Handcrafts	30	2.5
Retail business	40	3.0

The overall return on market portfolio of risky assets is 11% and the risk free rate of return is 6%.

The traders intend to invest in the proposed projects as follows:

Project	Investment Frw 'million'
Real estate	70
Poultry keeping	30
Handcrafts	70
Retail business	30

The possible portfolios where the trader's funds could be invested are shown below:

1. Real estate and poultry keeping;
2. Poultry and handcrafts;
3. Handcrafts and retail business;
4. Real estate and retail business.

REQUIRED:

- (a) Determine the best portfolio in which the trader's funds could be invested given the level of risk and return. **(15 Marks)**
- (b) State the assumptions of capital asset pricing model. **(5 Marks)**

(Total 20 Marks)

FINANCIAL FORMULAE

The capital asset pricing model $Er_i = Rf + \beta_i(Rr_m - Rf)$

The asset beta formula $\beta_a = \left(\frac{Ve}{Ve + Vd(1-T)} \cdot \beta_e \right) + \left(\frac{Vd(1-T)}{Ve + Vd(1-T)} \cdot \beta_d \right)$

Correlation coefficient $\rho_{(x,y)} = \frac{Cov_{(x,y)}}{\sigma_x \sigma_y}$

Covariance $Cov_{(x,y)} = \sum \rho(x - \bar{x})(y - \bar{y})$

Beta of a security $\beta_A = \frac{CovR_A, R_M}{\sigma^2(R_M)} = (r_{jm} \sigma_j) / \sigma_m$

The Gordon model $P_0 = \frac{D_0(1+g)}{[r_g - g]}$

Gordon's growth approximation $g = br_e$

Terminal value $TV = FCF_t \frac{(1+g)}{(k-g)}$

Purchasing power parity and interest rate parity $S_1 = S_0 \left(\frac{1+i_c}{1+i_b} \right)$ $S_1 = S_0 \left(\frac{1+r_c}{1+r_b} \right)$

The Fisher formula $(1+m) = (1+r)(1+i)$

Economic order quantity (EOQ) $= \sqrt{\frac{2C_0D}{C_H}}$

Weighted Average Cost of Capital (WACC) $= \left[\frac{V_e}{V_e + V_d} \right] k_e + \left[\frac{V_d}{V_e + V_d} \right] k_d (1-T)$

Modigliani and Miller Proposition 2 (with tax) $k_e = k_e^i + (1-T) (k_e^i - k_d) \frac{V_d}{V_e}$

Two-asset portfolio $S_p = \sqrt{w_a^2 s_a^2 + w_b^2 s_b^2 + 2w_a w_b r_{ab} s_a s_b}$

FINANCIAL FORMULAE

Present value interest factor of Shs 1 per period at r% for n periods $(1 + r)^{-n}$

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%
1	0.990	0.980	0.971	0.962	0.952	0.943	0.935	0.926	0.917	0.909	0.901	0.893
2	0.980	0.961	0.943	0.925	0.907	0.890	0.873	0.857	0.842	0.826	0.812	0.797
3	0.971	0.942	0.915	0.889	0.864	0.840	0.816	0.794	0.772	0.751	0.731	0.712
4	0.961	0.924	0.888	0.855	0.823	0.792	0.763	0.735	0.708	0.683	0.659	0.636
5	0.951	0.906	0.863	0.822	0.784	0.747	0.713	0.681	0.650	0.621	0.593	0.567
6	0.942	0.888	0.837	0.790	0.746	0.705	0.666	0.630	0.596	0.564	0.535	0.507
7	0.933	0.871	0.813	0.760	0.711	0.665	0.623	0.583	0.547	0.513	0.482	0.452
8	0.923	0.853	0.789	0.731	0.677	0.627	0.582	0.540	0.502	0.467	0.434	0.404
9	0.914	0.837	0.766	0.703	0.645	0.592	0.544	0.500	0.460	0.424	0.391	0.361
10	0.905	0.820	0.744	0.676	0.614	0.558	0.508	0.463	0.422	0.386	0.352	0.322
11	0.896	0.804	0.722	0.650	0.585	0.527	0.475	0.429	0.388	0.350	0.317	0.287
12	0.887	0.788	0.701	0.625	0.557	0.497	0.444	0.397	0.356	0.319	0.286	0.257
13	0.879	0.773	0.681	0.601	0.530	0.469	0.415	0.368	0.326	0.290	0.258	0.229
14	0.870	0.758	0.661	0.577	0.505	0.442	0.388	0.340	0.299	0.263	0.232	0.205
15	0.861	0.743	0.642	0.555	0.481	0.417	0.362	0.315	0.275	0.239	0.209	0.183
16	0.853	0.728	0.623	0.534	0.458	0.394	0.339	0.292	0.252	0.218	0.188	0.163
17	0.844	0.714	0.605	0.513	0.436	0.371	0.317	0.270	0.231	0.198	0.170	0.146
18	0.836	0.700	0.587	0.494	0.416	0.350	0.296	0.250	0.212	0.180	0.153	0.130
19	0.828	0.686	0.570	0.475	0.396	0.331	0.277	0.232	0.194	0.164	0.138	0.116
20	0.820	0.673	0.554	0.456	0.377	0.312	0.258	0.215	0.178	0.149	0.124	0.104
Period	13%	14%	15%	16%	17%	18%	19%	20%	21%	22%	23%	24%
1	0.885	0.877	0.870	0.862	0.855	0.847	0.840	0.833	0.826	0.820	0.813	0.806
2	0.783	0.769	0.756	0.743	0.731	0.718	0.706	0.694	0.683	0.672	0.661	0.650
3	0.693	0.675	0.658	0.641	0.624	0.609	0.593	0.579	0.564	0.551	0.537	0.524
4	0.613	0.592	0.572	0.552	0.534	0.516	0.499	0.482	0.467	0.451	0.437	0.423
5	0.543	0.519	0.497	0.476	0.456	0.437	0.419	0.402	0.386	0.370	0.355	0.341
6	0.480	0.456	0.432	0.410	0.390	0.370	0.352	0.335	0.319	0.303	0.289	0.275
7	0.425	0.400	0.376	0.354	0.333	0.314	0.296	0.279	0.263	0.249	0.235	0.222
8	0.376	0.351	0.327	0.305	0.285	0.266	0.249	0.233	0.218	0.204	0.191	0.179
9	0.333	0.308	0.284	0.263	0.243	0.225	0.209	0.194	0.180	0.167	0.155	0.144
10	0.295	0.270	0.247	0.227	0.208	0.191	0.176	0.162	0.149	0.137	0.126	0.116
11	0.261	0.237	0.215	0.195	0.178	0.162	0.148	0.135	0.123	0.112	0.103	0.094
12	0.231	0.208	0.187	0.168	0.152	0.137	0.124	0.112	0.102	0.092	0.083	0.076
13	0.204	0.182	0.163	0.145	0.130	0.116	0.104	0.093	0.084	0.075	0.068	0.061
14	0.181	0.160	0.141	0.125	0.111	0.099	0.088	0.078	0.069	0.062	0.055	0.049
15	0.160	0.140	0.123	0.108	0.095	0.084	0.074	0.065	0.057	0.051	0.045	0.040
16	0.141	0.123	0.107	0.093	0.081	0.071	0.062	0.054	0.047	0.042	0.036	0.032
17	0.125	0.108	0.093	0.080	0.069	0.060	0.052	0.045	0.039	0.034	0.030	0.026
18	0.111	0.095	0.081	0.069	0.059	0.051	0.044	0.038	0.032	0.028	0.024	0.021
19	0.098	0.083	0.070	0.060	0.051	0.043	0.037	0.031	0.027	0.023	0.020	0.017
20	0.087	0.073	0.061	0.051	0.043	0.037	0.031	0.026	0.022	0.019	0.016	0.014

Present value interest factor of an (ordinary) annuity of Shs 1 per period at r% for n periods $\left(\frac{1 - (1 + r)^{-n}}{r} \right)$

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%
1	0.990	0.980	0.971	0.962	0.952	0.943	0.935	0.926	0.917	0.909	0.901	0.893
2	1.970	1.942	1.913	1.886	1.859	1.833	1.808	1.783	1.759	1.736	1.713	1.690
3	2.941	2.884	2.829	2.775	2.723	2.673	2.624	2.577	2.531	2.487	2.444	2.402
4	3.902	3.808	3.717	3.630	3.546	3.465	3.387	3.312	3.240	3.170	3.102	3.037
5	4.853	4.713	4.580	4.452	4.329	4.212	4.100	3.993	3.890	3.791	3.696	3.605
6	5.795	5.601	5.417	5.242	5.076	4.917	4.767	4.623	4.486	4.355	4.231	4.111
7	6.728	6.472	6.230	6.002	5.786	5.582	5.389	5.206	5.033	4.868	4.712	4.564
8	7.652	7.325	7.020	6.733	6.463	6.210	5.971	5.747	5.535	5.335	5.146	4.968
9	8.566	8.162	7.786	7.435	7.108	6.802	6.515	6.247	5.995	5.759	5.537	5.328
10	9.471	8.983	8.530	8.111	7.722	7.360	7.024	6.710	6.418	6.145	5.889	5.650
11	10.368	9.787	9.253	8.760	8.306	7.887	7.499	7.139	6.805	6.495	6.207	5.938
12	11.255	10.575	9.954	9.385	8.863	8.384	7.943	7.536	7.161	6.814	6.492	6.194
13	12.134	11.348	10.635	9.986	9.394	8.853	8.358	7.904	7.487	7.103	6.750	6.424
14	13.004	12.106	11.296	10.563	9.899	9.295	8.745	8.244	7.786	7.367	6.982	6.628
15	13.865	12.849	11.938	11.118	10.380	9.712	9.108	8.559	8.061	7.606	7.191	6.811
16	14.718	13.578	12.561	11.652	10.838	10.106	9.447	8.851	8.313	7.824	7.379	6.974
17	15.562	14.292	13.166	12.166	11.274	10.477	9.763	9.122	8.544	8.022	7.549	7.120
18	16.398	14.992	13.754	12.659	11.690	10.828	10.059	9.372	8.756	8.201	7.702	7.250
19	17.226	15.678	14.324	13.134	12.085	11.158	10.336	9.604	8.950	8.365	7.839	7.366
20	18.046	16.351	14.877	13.590	12.462	11.470	10.594	9.818	9.129	8.514	7.963	7.469
Period	13%	14%	15%	16%	17%	18%	19%	20%	21%	22%	23%	24%
1	0.885	0.877	0.870	0.862	0.855	0.847	0.840	0.833	0.826	0.820	0.813	0.806
2	1.668	1.647	1.626	1.605	1.585	1.566	1.547	1.528	1.509	1.492	1.474	1.457
3	2.361	2.322	2.283	2.246	2.210	2.174	2.140	2.106	2.074	2.042	2.011	1.981
4	2.974	2.914	2.855	2.798	2.743	2.690	2.639	2.589	2.540	2.494	2.448	2.404
5	3.517	3.433	3.352	3.274	3.199	3.127	3.058	2.991	2.926	2.864	2.803	2.745
6	3.998	3.889	3.784	3.685	3.589	3.498	3.410	3.326	3.245	3.167	3.092	3.020
7	4.423	4.288	4.160	4.039	3.922	3.812	3.706	3.605	3.508	3.416	3.327	3.242
8	4.799	4.639	4.487	4.344	4.207	4.078	3.954	3.837	3.726	3.619	3.518	3.421
9	5.132	4.946	4.772	4.607	4.451	4.303	4.163	4.031	3.905	3.786	3.673	3.566
10	5.426	5.216	5.019	4.833	4.659	4.494	4.339	4.192	4.054	3.923	3.799	3.682
11	5.687	5.453	5.234	5.029	4.836	4.656	4.486	4.327	4.177	4.035	3.902	3.776
12	5.918	5.660	5.421	5.197	4.988	4.793	4.611	4.439	4.278	4.127	3.985	3.851
13	6.122	5.842	5.583	5.342	5.118	4.910	4.715	4.533	4.362	4.203	4.053	3.912
14	6.302	6.002	5.724	5.468	5.229	5.008	4.802	4.611	4.432	4.265	4.108	3.962
15	6.462	6.142	5.847	5.575	5.324	5.092	4.876	4.675	4.489	4.315	4.153	4.001
16	6.604	6.265	5.954	5.668	5.405	5.162	4.938	4.730	4.536	4.357	4.189	4.033
17	6.729	6.373	6.047	5.749	5.475	5.222	4.990	4.775	4.576	4.391	4.219	4.059
18	6.840	6.467	6.128	5.818	5.534	5.273	5.033	4.812	4.608	4.419	4.243	4.080
19	6.938	6.550	6.198	5.877	5.584	5.316	5.070	4.843	4.635	4.442	4.263	4.097
20	7.025	6.623	6.259	5.929	5.628	5.353	5.101	4.870	4.657	4.460	4.279	4.110

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