



**CIFA PART II SECTION 4**

**EQUITY INVESTMENTS ANALYSIS**

**THURSDAY: 23 May 2019.**

**Time Allowed: 3 hours.**

**Answer ALL questions. Marks allocated to each question are shown at the end of the question. Show ALL your workings.**

**QUESTION ONE**

- (a) Irene Kanini believes that the shares of Rafiki Limited are currently overvalued. However, she recognises that share prices often continue to increase above their intrinsic values for sometime before correcting.

**Required:**

With reference to the above statement:

- (i) Explain to Irene Karini three types of validity instructions used in securities exchange market which specify when an order should be executed. (3 marks)
- (ii) Advise Irene on the type of order that she should place assuming that she intends to sell her shares when the share prices begin to fall by a significant amount. (2 marks)
- (b) Better App Limited has come up with a new mobile application software that is expected to enable the company grow at a rate of 20% per annum for the next four years. By the end of four years, Better App Limited forecast that other firms will have copied the mobile application and competition will drive down profit margin and the sustainable growth rate will fall to 5%.

The company's most recent dividend was Sh.1.00 per share. The cost of capital is 10%.

**Required:**

The expected rate of return to an investor who buys the company's shares now and sells them in a year. (4 marks)

- (c) Dee Limited uses bonds, preference shares and ordinary shares modes of financing. The market value of each of these sources of financing and the before-tax required rates of return for each source are given below:

	<b>Market value</b> Sh. "million"	<b>Required rate of return</b> (%)
Bonds	400	8.0
Preference shares	100	8.0
Ordinary shares	<u>500</u>	12.0
Total	<u>1,000</u>	

**Additional information:**

1. Net income available to ordinary shareholders is Sh.110 million.
2. Interest expense is Sh.32 million.
3. Preference dividends are Sh.48 million.
4. Depreciations expense is Sh.40 million.
5. Investment in fixed capital is Sh.70 million.
6. Investment in working capital is Sh.20 million.
7. Net borrowing is Sh.25 million.
8. Corporate tax rate is at 30%.
9. Stable growth rate of free cash flow to the firm (FCFF) is 4%.
10. Stable growth rate of free cash flow to equity (FCFE) is 5.4%.

**Required:**

- (i) The weighted average cost of capital (WACC) for the firm. (2 marks)
- (ii) The current value of free cash flow to the firm (FCFF). (2 marks)
- (iii) The total value of the firm. (2 marks)
- (iv) The value of equity for the firm. (1 mark)
- (v) The current value of free cash flow to equity (FCFE). (2 marks)
- (vi) The value of equity based on forecasted year 1 FCFE. (2 marks)

**(Total: 20 marks)**

**QUESTION TWO**

(a) In relation to industry and company analysis and equity valuation:

- (i) Explain the term "peer group". (2 marks)
- (ii) Summarise any four steps that an equity analyst should follow in forming a peer group. (4 marks)

(b) In relation to technical analysis:

- (i) Explain the term "change in polarity principle". (2 marks)
- (ii) Describe two chart patterns. (4 marks)

(c) Jeremy Owuor is valuing Delta Railways. During the last five years (year ended 31 March 2015 to year ended 31 March 2019), the company has paid dividends per share (DPS) of Sh.5.50, Sh.6.50, Sh.7.00, Sh.8.00 and Sh.9.00 respectively. These dividends suggest an average annual growth rate in DPS of just above 13%. Jeremy has decided to use a three-stage dividend discount model (DDM) with a linearly declining growth rate in Stage 2. He considers Delta Railways to be an average growth company, and estimates stage 1 (the growth stage) to be 6 years and stage 2 (the transition stage) to be 10 years. He estimates the growth rate to be 14% in stage 1 and 10% in stage 2. His estimated required return on equity is 16%.

**Required:**

The current value of Delta Railways share.

(8 marks)

**(Total: 20 marks)**

**QUESTION THREE**

(a) You are presented with the following two scenarios about two companies, Alpha Ltd. and Beta Ltd. The real rate of return on shares for both companies is 3% per annum.

**Scenario 1:**

Suppose both Alpha Ltd. and Beta Ltd. can pass through 75% of cost increase. Cost inflation is 6% for Alpha Ltd. but only 2% for Beta Ltd.

**Required:**

- (i) Estimate the Justified price to earnings (P/E) ratio for each company and interpret the results. (3 marks)

**Scenario 2:**

Suppose both Alpha Ltd. and Beta Ltd. face 6% annual inflation. Alpha Ltd. can pass through 90% of cost increases, but Beta Ltd. can pass through only 70%.

**Required:**

- (ii) Estimate the justified P/E ratio for each company and interpret the results. (3 marks)

(b) Naheshon Marwa is a junior financial analyst at Cleverinvest, a fund management company specialising in equity investment. His supervisor requested him to perform a couple of valuation tasks on some private companies.

**Required:**

Advise Naheshon on two factors that he should consider when selecting the approach to value a private company. (4 marks)

- (c) Linus Wambua owns 10% of Applex Limited shares while the remaining 90% is held by Kelvin Mukuna who is the Chief Executive Officer of the company. Kelvin is interested in selling Applex Limited to a third party. He advises Linus that if Applex Limited is not sold, he has no reason to purchase his 10% interest.

**Additional information:**

1. Valuation discounts assuming imminent sale of Applex Limited.
  - Lack of control discount 0%.
  - Lack of marketability discounts 5%.
2. Valuation discount assuming continued operation as a private company:
  - Lack of control discount: incorporated through use of reported earnings rather than normalised earnings.
  - Lack of marketability discount 25%.
3. Indicated value of equity operations:
  - In sale scenario Sh.9,600,000,000.
  - In stay-private scenario No., Sh.8,000,000,000

**Required:**

- (i) Discuss the relevance of valuation discount assuming imminent sale of Applex Limited. (2 marks)
- (ii) Explain which estimate of equity value should be used and calculate the value of Linus equity interest in Applex Limited assuming sale is likely. (3 marks)
- (iii) Evaluate relevance of valuation discount assuming Applex Limited continues as a private company. (2 marks)
- (iv) Assuming Applex Limited continues as a private company, explain which estimate of equity value should be used and calculate the value of Linus equity interest. (3 marks)

**(Total: 20 marks)**

**QUESTION FOUR**

- (a) An equity analyst at SmartInvest Asset Management Firm prepares a market forecast for his firm which uses the Grinold-Kroner Model to forecast the expected rate of return on equities for the next 10 years. He uses the data provided below to prepare his forecast:

Factor	10 years forecast (annualised)
Dividend yield	1.80%
Dividend growth rate	4.00%
Changes in price to earnings (P/E) multiple	0.50%
Inflation rate	1.20%
Change in number of shares outstanding	-0.30%
Real total earnings growth rate	2.50%

**Required:**

Determine the following sources of return for equities according to the Grinold-Kroner Model, using the analyst's forecasts:

- (i) Expected nominal earnings growth return. (2 marks)
- (ii) Expected repricing return. (2 marks)
- (iii) Expected income return. (2 marks)

- (b) The following data relate to a firm listed on the Naxsi Securities Exchange (NSE):

1. The firm will earn Sh.1.00 per share in perpetuity.
2. The firm pays all earnings as dividends.
3. Book value per share (BVPS) is Sh.6.00.
4. The required rate of return on equity is 10%.

**Required:**

- (i) The value of the company's shares using the dividend discount model (DDM). (2 marks)
- (ii) The value of the share using the residual income valuation model. (2 marks)

- (c) Amlex Limited has just paid an annual dividend of Sh.0.8 per share for the very recently closed financial year. Earnings per share (EPS) for the previous year had been Sh.1.00.

**Additional information:**

1. The expected market rate of return is 7%.
2. The risk-free rate is 2%.
3. The current ex-dividend market price per share (MPS) is Sh.20.80.
4. The company's shares have a beta of 1.2.

**Required:**

- (i) The market implied dividend growth rate ( $g_{IMPL}$ ) for Amlex Limited using the constant dividend growth model. (3 marks)
  - (ii) The implied dividend growth rate assuming that the company will just be able to retain its average past years' return on equity (ROE) of 10% while maintaining its current payout ratio. (3 marks)
  - (iii) The value of Amlex Limited's share assuming a sustainable growth rate,  $g$ , of 2.5%. (2 marks)
  - (iv) Advise an investor on whether to buy the company's shares based on your results in (c) (iii) above. (2 marks)
- (Total: 20 marks)**

**QUESTION FIVE**

- (a) Describe two instances when the following equity valuation measures are appropriate:

- (i) Dividends. (2 marks)
- (ii) Free cash flows (FCFs). (2 marks)
- (iii) Residual income. (2 marks)

- (b) James Koech, a Certified Investment and Financial Analyst, (CIFA), is considering using economic value added (EVA) and market value added (MVA) to measure the performance of Sukari Limited. He has gathered the following information for the year ended 31 December 2018:

1. Adjusted net operating profit before tax for the year 2018 is Sh.142,857,143.
2. Total capital is Sh.700 million (no debt).
3. Closing market price per share (MPS) is Sh.26.
4. Sukari Limited has 84 million outstanding ordinary shares.
5. Total cost of equity is 14%.
6. Corporation tax rate is 30%.

**Required:**

- (i) EVA for the year ended 31 December 2018. (3 marks)
- (ii) MVA for the year ended 31 December 2018. (3 marks)

- (c) Mwi Ltd. expects earnings of Sh.1.25 per share next year out of which Sh.0.50 will be paid out as dividends. Earnings and dividends are expected to grow at a constant rate each year afterwards. Mwi Ltd.'s shares currently trade at Sh.20 per share.

The firm's cost of capital is 10%.

**Required:**

- (i) Return on equity (ROE) for the company. (4 marks)
- (ii) Justifying your answer, explain whether Mwi Ltd. is a growth company. (2 marks)

- (d) According to the Elliot Wave Theory, cycles that are repetitive and quite predictable could be observed in share price movement.

In light of the above statement, highlight two types of wave movements as postulated by Ralph Nelson Elliot. (2 marks)  
**(Total: 20 marks)**

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Present Value of 1 Received at the End of  $n$  Periods:

$$PVIF_{r,n} = 1/(1+r)^n = (1+r)^{-n}$$

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	12%	14%	15%	16%	18%	20%	24%	28%	32%	36%
1	.9901	.9804	.9709	.9615	.9524	.9434	.9346	.9259	.9174	.9091	.8929	.8772	.8696	.8621	.8475	.8333	.8065	.7813	.7576	.7353
2	.9803	.9612	.9426	.9246	.9070	.8900	.8734	.8573	.8417	.8264	.7972	.7695	.7561	.7432	.7182	.6944	.6504	.6104	.5739	.5407
3	.9706	.9423	.9151	.8890	.8638	.8396	.8163	.7938	.7722	.7513	.7118	.6750	.6575	.6407	.6086	.5787	.5245	.4768	.4348	.3975
4	.9610	.9238	.8885	.8548	.8227	.7921	.7629	.7350	.7084	.6830	.6355	.5921	.5718	.5523	.5158	.4823	.4230	.3725	.3294	.2923
5	.9515	.9057	.8626	.8219	.7835	.7473	.7130	.6806	.6499	.6209	.5674	.5194	.4972	.4761	.4371	.4019	.3411	.2910	.2495	.2149
6	.9420	.8880	.8375	.7903	.7462	.7050	.6663	.6302	.5963	.5645	.5066	.4556	.4323	.4104	.3704	.3349	.2751	.2274	.1890	.1580
7	.9327	.8706	.8131	.7599	.7107	.6651	.6227	.5835	.5470	.5132	.4523	.3996	.3759	.3538	.3139	.2791	.2218	.1776	.1432	.1162
8	.9235	.8535	.7894	.7307	.6768	.6274	.5820	.5403	.5019	.4665	.4039	.3506	.3269	.3050	.2660	.2326	.1789	.1388	.1085	.0854
9	.9143	.8368	.7664	.7026	.6446	.5919	.5439	.5002	.4604	.4241	.3606	.3075	.2843	.2630	.2255	.1938	.1443	.1084	.0822	.0628
10	.9053	.8203	.7441	.6756	.6139	.5584	.5083	.4632	.4224	.3855	.3220	.2697	.2472	.2267	.1911	.1615	.1164	.0847	.0623	.0462
11	.8963	.8043	.7224	.6496	.5847	.5268	.4751	.4289	.3875	.3505	.2875	.2366	.2149	.1954	.1619	.1346	.0938	.0662	.0472	.0340
12	.8874	.7885	.7014	.6246	.5568	.4970	.4440	.3971	.3555	.3186	.2567	.2076	.1869	.1685	.1372	.1122	.0757	.0517	.0357	.0250
13	.8787	.7730	.6810	.6006	.5303	.4688	.4150	.3677	.3262	.2897	.2292	.1821	.1625	.1452	.1163	.0935	.0610	.0404	.0271	.0184
14	.8700	.7579	.6611	.5775	.5051	.4423	.3878	.3405	.2992	.2633	.2046	.1597	.1413	.1252	.0985	.0779	.0492	.0316	.0205	.0135
15	.8613	.7430	.6419	.5553	.4810	.4173	.3624	.3152	.2745	.2394	.1827	.1401	.1229	.1079	.0835	.0649	.0397	.0247	.0155	.0099
16	.8528	.7284	.6232	.5339	.4581	.3936	.3387	.2919	.2519	.2176	.1631	.1229	.1069	.0930	.0708	.0541	.0320	.0193	.0118	.0073
17	.8444	.7142	.6050	.5134	.4363	.3714	.3166	.2703	.2311	.1978	.1456	.1078	.0929	.0802	.0600	.0451	.0258	.0150	.0089	.0054
18	.8360	.7002	.5874	.4936	.4155	.3503	.2959	.2502	.2120	.1799	.1300	.0946	.0808	.0691	.0508	.0376	.0208	.0118	.0068	.0039
19	.8277	.6864	.5703	.4746	.3957	.3305	.2765	.2317	.1945	.1635	.1161	.0829	.0703	.0596	.0431	.0313	.0168	.0092	.0051	.0029
20	.8195	.6730	.5537	.4564	.3769	.3118	.2584	.2145	.1784	.1486	.1037	.0728	.0611	.0514	.0365	.0261	.0135	.0072	.0039	.0021
25	.7798	.6095	.4776	.3751	.2953	.2330	.1842	.1460	.1160	.0923	.0588	.0378	.0304	.0245	.0160	.0105	.0046	.0021	.0010	.0005
30	.7419	.5521	.4120	.3083	.2314	.1741	.1314	.0994	.0754	.0573	.0334	.0196	.0151	.0116	.0070	.0042	.0016	.0006	.0002	.0001
40	.6717	.4529	.3066	.2083	.1420	.0972	.0668	.0460	.0318	.0221	.0107	.0053	.0037	.0026	.0013	.0007	.0002	.0001		
50	.6080	.3715	.2281	.1407	.0872	.0543	.0339	.0213	.0134	.0085	.0035	.0014	.0009	.0006	.0003	.0001				
60	.5504	.3048	.1697	.0951	.0535	.0303	.0173	.0099	.0057	.0033	.0011	.0004	.0002	.0001						

\* The factor is zero to four decimal places

Present Value of an Annuity of 1 Per Period for  $n$  Periods:

$$PVIFA_{r,n} = \sum_{t=1}^n \frac{1}{(1+r)^t} = \frac{1 - \frac{1}{(1+r)^n}}{r}$$

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	12%	14%	15%	16%	18%	20%	24%	28%	32%
1	0.9901	0.9804	0.9709	0.9615	0.9524	0.9434	0.9346	0.9259	0.9174	0.9091	0.8929	0.8772	0.8696	0.8621	0.8475	0.8333	0.8065	0.7813	0.7576
2	1.9704	1.9416	1.9135	1.8861	1.8594	1.8334	1.8080	1.7833	1.7591	1.7355	1.6901	1.6467	1.6257	1.6052	1.5656	1.5278	1.4568	1.3916	1.3315
3	2.9410	2.8839	2.8286	2.7751	2.7232	2.6730	2.6243	2.5771	2.5313	2.4869	2.4018	2.3216	2.2832	2.2459	2.1743	2.1065	1.9813	1.8684	1.7663
4	3.9020	3.8077	3.7171	3.6299	3.5460	3.4651	3.3872	3.3121	3.2397	3.1699	3.0373	2.9137	2.8550	2.7982	2.6901	2.5887	2.4043	2.2410	2.0957
5	4.8534	4.7135	4.5797	4.4518	4.3295	4.2124	4.1002	3.9927	3.8897	3.7908	3.6048	3.4331	3.3522	3.2743	3.1272	2.9906	2.7454	2.5320	2.3452
6	5.7955	5.6014	5.4172	5.2421	5.0757	4.9173	4.7655	4.6229	4.4859	4.3553	4.1114	3.8887	3.7845	3.6847	3.4976	3.3255	3.0205	2.7594	2.5342
7	6.7282	6.4720	6.2303	6.0021	5.7864	5.5824	5.3893	5.2064	5.0330	4.8684	4.5638	4.2883	4.1604	4.0386	3.8115	3.6046	3.2423	2.9370	2.6775
8	7.6517	7.3255	7.0197	6.7327	6.4632	6.2098	5.9713	5.7466	5.5348	5.3349	4.9676	4.6389	4.4873	4.3436	4.0776	3.8372	3.4212	3.0758	2.7860
9	8.5660	8.1622	7.7861	7.4353	7.1078	6.8017	6.5152	6.2469	5.9952	5.7590	5.3282	4.9464	4.7716	4.6065	4.3030	4.0310	3.5655	3.1842	2.8681
10	9.4713	8.9826	8.5302	8.1109	7.7217	7.3601	7.0236	6.7101	6.4177	6.1446	5.6502	5.2161	5.0188	4.8332	4.4941	4.1925	3.6819	3.2689	2.9304
11	10.3676	9.7868	9.2526	8.7605	8.3064	7.8869	7.4987	7.1390	6.8052	6.4951	5.9377	5.4527	5.2337	5.0286	4.6560	4.3271	3.7757	3.3351	2.9776
12	11.2551	10.5753	9.9540	9.3851	8.8633	8.3838	7.9427	7.5361	7.1607	6.8137	6.1944	5.6603	5.4206	5.1971	4.7932	4.4392	3.8514	3.3868	3.0133
13	12.1337	11.3484	10.6350	9.9856	9.3936	8.8527	8.3577	7.9038	7.4869	7.1034	6.4235	5.8424	5.5831	5.3423	4.9095	4.5327	3.9124	3.4272	3.0404
14	13.0037	12.1062	11.2961	10.5631	9.8986	9.2950	8.7455	8.2442	7.7862	7.3667	6.6282	6.0021	5.7245	5.4675	5.0081	4.6106	3.9616	3.4587	3.0609
15	13.8651	12.8493	11.9379	11.1184	10.3797	9.7122	9.1079	8.5595	8.0607	7.6061	6.8109	6.1422	5.8474	5.5755	5.0916	4.6755	4.0013	3.4834	3.0764
16	14.7179	13.5777	12.5611	11.6523	10.8378	10.1059	9.4466	8.8514	8.3126	7.8237	6.9740	6.2651	5.9542	5.6685	5.1624	4.7296	4.0333	3.5026	3.0882
17	15.5623	14.2919	13.1661	12.1657	11.2741	10.4773	9.7632	9.1216	8.5436	8.0216	7.1196	6.3729	6.0472	5.7487	5.2223	4.7746	4.0591	3.5177	3.0971
18	16.3983	14.9920	13.7535	12.6593	11.6896	10.8276	10.0591	9.3719	8.7556	8.2014	7.2497	6.4674	6.1280	5.8178	5.2732	4.8122	4.0799	3.5294	3.1039
19	17.2260	15.6785	14.3238	13.1339	12.0853	11.1581	10.3356	9.6036	8.9501	8.3649	7.3658	6.5504	6.1982	5.8775	5.3162	4.8435	4.0967	3.5386	3.1090
20	18.0456	16.3514	14.8775	13.5903	12.4622	11.4699	10.5940	9.8181	9.1285	8.5136	7.4694	6.6231	6.2593	5.9288	5.3527	4.8696	4.1103	3.5458	3.1129
25	22.0232	19.5235	17.4131	15.6221	14.0939	12.7834	11.6536	10.6748	9.8226	9.0770	7.8431	6.8729	6.4641	6.0971	5.4669	4.9476	4.1474	3.5640	3.1220
30	25.8077	22.3965	19.6004	17.2920	15.3725	13.7648	12.4090	11.2578	10.2737	9.4269	8.0552	7.0027	6.5660	6.1772	5.5168	4.9789	4.1601	3.5693	3.1242
40	32.8347	27.3555	23.1148	19.7928	17.1591	15.0463	13.3317	11.9246	10.7574	9.7791	8.2438	7.1050	6.6418	6.2335	5.5482	4.9966	4.1659	3.5712	3.1250
50	39.1961	31.4236	25.7298	21.4822	18.2559	15.7619	13.8007	12.2335	10.9617	9.9148	8.3045	7.1327	6.6605	6.2463	5.5541	4.9995	4.1666	3.5714	3.1250
60	44.9550	34.7609	27.6756	22.6235	18.9293	16.1614	14.0392	12.3766	11.0480	9.9672	8.3240	7.1401	6.6651	6.2402	5.5553	4.9999	4.1667	3.5714	3.1250