



kasneb

CIFA PART II SECTION 3

CORPORATE FINANCE

THURSDAY: 26 November 2020.

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) (i) Explain the term “agency costs” as used in the context of corporate finance. (2 marks)
- (ii) Describe two ways in which agency costs relating to the conflict of interest between shareholders and bondholders may show up as real costs. (4 marks)
- (b) An analyst has gathered the following information using the latest financial year’s statements and interviews with managers of Chuma Limited:

Number of units produced and sold	1,000,000 units
Sales price per unit	Sh.108
Variable cost per unit	Sh.72
Fixed operating costs	Sh.22.5 million
Fixed financing expenses	Sh.9 million

Required:

Calculate the following for Chuma Limited at a sales volume of 1,000,000 units (ignore taxation):

- (i) Degree of operating leverage (DOL). (2 marks)
- (ii) Degree of financial leverage (DFL). (2 marks)
- (iii) Degree of total leverage (DTL). (2 marks)
- (c) Damiano Okulo is an analyst who is following the market performance of Mali Limited. He believes that Mali Limited is a likely takeover candidate and plans to estimate its value per share using comparable company analysis and comparable transaction analysis approaches. He gathers data on two companies which are comparable to Mali Limited, namely; Alphatech Limited and Betatech Limited. He believes that price-to-earnings, price-to-sales and price-to-book value per share of these companies should be used to value Mali Limited.

The relevant data for the three companies is provided below:

Valuation variables	Alphatech Limited	Betatech Limited	Mali Limited
	Sh.	Sh.	Sh.
Current market price per share	72.00	45.00	24.00
Earnings per share	2.00	1.50	1.00
Sales per share	32.00	22.50	16.00
Book value per share	18.00	10.00	8.00

Damiano Okulo also identifies one recent takeover transaction (Mavuno Limited) and analyses its takeover premium. Mavuno Limited is comparable to the possible transaction on Mali Limited. Mavuno Limited had a share price of Sh.44.40 per share prior to a website report of a takeover rumour. After the takeover rumour was reported, the share price rose to Sh.60.30 per share. Eventually, the takeover offer was accepted by Mavuno Limited’s shareholders for Sh.55.00 per share.

Required:

The best takeover price per share of Mali Limited.

(8 marks)

(Total: 20 marks)



**QUESTION TWO**

- (a) Ali Limited and Baba Limited are firms operating in the same industry. The firms are similar and identical in all respects except in their capital structures. Both firms generate annual sales of Sh.800 million. The gross profit margin for both firms is 40% with estimated annual operating costs of Sh.70 million for each firm.

The capital structures of the firms are as follows:

	Ali Limited Sh. "million"	Baba Limited Sh. "million"
Equity (market value)	1,750	1,500
8% debt (trading at par)	-	1,000
	<u>1,750</u>	<u>2,500</u>

The two companies adopt a 100% payout ratio as their dividend policy. The corporation tax rate is 30%.

**Required:**

Using the Modigliani and Miller (MM) propositions with corporate taxes:

- (i) Determine the equilibrium market value for each firm. (4 marks)
- (ii) The weighted average cost of capital (WACC) of each firm. (6 marks)
- (iii) Comment on the results obtained in (a) (i) and (a) (ii) above. (2 marks)
- (b) Bahari Limited has a target capital structure composed of 70% equity and 30% debt. The schedule of the costs of the components of capital of the company is provided in the table below:

Amount of new debt Sh. "million"	After tax cost of debt	Amount of new equity Sh. "million"	Cost of equity
0 to 150	3.90%	0 to 300	6.00%
150 to 300	4.40%	300 to 600	7.80%
300 to 450	4.80%	600 to 900	10.00%

**Required:**

Calculate the break-points and illustrate the marginal cost of capital schedule for Bahari Limited. (8 marks)  
(Total 20 marks)

**QUESTION THREE**

- (a) Bidii Limited is evaluating a new project to produce lawn mowers. The initial investment in plant and equipment is Sh.500 million. Sales of lawn mowers in year 1 are forecasted at Sh.200 million and costs at Sh.100 million. Both are expected to increase by 10% each year in line with inflation. The corporation tax rate is 30%. Working capital in each year consists of inventories of raw materials and is forecasted at 20% of sales in the following year.

The project will last for five years and the equipment at the end of this period will have no resale value. For tax purposes, the equipment can be depreciated on a straight line basis over these five years. The nominal discount rate is 15%.

**Required:**

Show that the net present value (NPV) of the project is the same whether calculated using real cash flows or nominal cash flows. (10 marks)

- (b) Boma Ltd. has in issue 8 million ordinary shares with an ex-dividend market value of Sh.7.16 per share. A dividend of Sh.0.62 per share for 2019 has just been paid. The pattern of recent dividends is as follows:

Year	2016	2017	2018	2019
Dividend per share Sh.	0.551	0.579	0.591	0.62

Boma Ltd. also has in issue 8.5% bonds which are redeemable in five years' time with a total nominal value of Sh.5 million. The market value of each Sh.100 bond is Sh.103.42.

Redemption will be at nominal value.



Boma Ltd. is planning to invest a significant amount of money in a joint venture in a new business area. It has identified a proxy company with 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%. The corporate tax rate is 30% and Boma Ltd. has an equity beta of 1.6.

**Required:**

- (i) The after tax weighted average cost of capital (WACC) for Boma Ltd. using the dividend growth model. (6 marks)
  - (ii) A project-specific cost of equity for Boma Ltd. for the planned joint venture. (4 marks)
- (Total: 20 marks)**

**QUESTION FOUR**

- (a) Mamba Ltd. is considering an investment in two alternative projects; X and Y. Both investments require an initial cash outlay of Sh.1,800,000. The firm expects to invest in only one of the projects.

Project X has a useful life of 3 years whereas project Y has a useful life of 4 years. Both projects shall not have resale values at the end of their useful lives.

Given below are the operating cash flows expected from each project for each year

Year	Project X Sh."000"	Project Y Sh."000"
1	800	700
2	900	700
3	850	700
4	-	700

**Addition information:**

- 1. The risk indices for the projects are given as follows:

Project	Risk index
X	1.0
Y	1.2

- 2. The risk-free rate of return is 8%
- 3. The expected return on the market portfolio is 15%.

**Required:**

- (i) The risk-adjusted discounting rate for each project. (2 marks)
  - (ii) Advise on which project the firm should undertake when evaluated using the equivalent annuity approach. (6 marks)
- (b) The new credit manager of Mali Mali Enterprises plans to liberalise the firm's credit policy. The firm currently generates credit sales of Sh.287,500,000 annually. The more lenient policy is expected to produce credit sales of Sh.375,000,000. The bad debt losses on additional sales are projected to be 10%. An additional collection expenditure of Sh.7,500,000 will be incurred. The new credit manager anticipates that production and selling costs other than additional bad debts and collection expenses will remain at 70% of the additional sales.

The firm pays corporate tax at the rate of 30% after deductible expenses.

Assume 360 days in a year.

**Required:**

- (i) Assuming that the firm maintains a debtors turnover of 15 times, calculate by how much the debtors' balance will increase. (4 marks)
  - (ii) Compute the firm's incremental return on investment. (4 marks)
  - (iii) Assuming additional stocks of Sh.17,500,000 are required and additional creditors of Sh.7,500,000 will arise in order to support the additional sales, compute the after tax return on additional investment. (4 marks)
- (Total: 20 marks)**



**QUESTION FIVE**

(a) In relation to Islamic finance, highlight six features of a Musharakah contract.

(6 marks)

(b) The Altman formula for prediction of bankruptcy is given as follows:

$$Z \text{ score} = 1.2X_1 + 1.4X_2 + 3.3X_3 + 1X_4 + 0.6X_5$$

Where;  $X_1$  = Working capital/Total assets

$X_2$  = Retained earnings/Total assets

$X_3$  = Earnings before interest and tax/Total assets

$X_4$  = Sales/Total assets

$X_5$  = Market value of equity/Liabilities

You are provided with the following information in respect of two listed companies:

Company	Working capital	Retained earnings	Earnings before interest and tax	Market value of equity	Total assets	Liabilities	Sales
	Sh. "000"	Sh. "000"	Sh. "000"	Sh. "000"	Sh. "000"	Sh. "000"	Sh. "000"
Alpha Ltd.	4,000	60,000	10,000	20,000	200,000	120,000	200,000
Falcon Ltd.	40,000	200,000	30,000	100,000	1,800,000	1,000,000	2,000,000

**Required:**

(i) The Z – score for each company.

(4 marks)

(ii) Interpret the results obtained in (b) (i) above.

(2 marks)

(iii) Explain four shortcomings of Altman's model for predicting corporate failure.

(8 marks)

**(Total: 20 marks)**

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Present Value Interest factor of 1 Received at the End of  $n$  Periods at  $r$  Percent:

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

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	20%	24%	25%	30%
1	0.9901	0.9804	0.9709	0.9615	0.9524	0.9434	0.9346	0.9259	0.9174	0.9091	0.9009	0.8929	0.8850	0.8772	0.8696	0.8621	0.8333	0.8065	0.8000	0.7692
2	0.9803	0.9612	0.9426	0.9246	0.9070	0.8900	0.8734	0.8573	0.8417	0.8264	0.8116	0.7972	0.7831	0.7695	0.7561	0.7432	0.6944	0.6504	0.6400	0.5917
3	0.9706	0.9423	0.9151	0.8890	0.8638	0.8396	0.8163	0.7938	0.7722	0.7513	0.7312	0.7118	0.6931	0.6750	0.6575	0.6407	0.5787	0.5245	0.5120	0.4552
4	0.9610	0.9238	0.8885	0.8548	0.8227	0.7921	0.7629	0.7350	0.7084	0.6830	0.6587	0.6355	0.6133	0.5921	0.5718	0.5523	0.4823	0.4230	0.4096	0.3501
5	0.9515	0.9057	0.8626	0.8219	0.7835	0.7473	0.7130	0.6806	0.6499	0.6209	0.5935	0.5674	0.5428	0.5194	0.4972	0.4761	0.4019	0.3411	0.3277	0.2693
6	0.9420	0.8880	0.8375	0.7903	0.7462	0.7050	0.6663	0.6302	0.5963	0.5645	0.5346	0.5066	0.4803	0.4556	0.4323	0.4104	0.3349	0.2751	0.2621	0.2072
7	0.9327	0.8706	0.8131	0.7599	0.7107	0.6651	0.6227	0.5835	0.5470	0.5132	0.4817	0.4523	0.4251	0.3996	0.3759	0.3538	0.2791	0.2218	0.2097	0.1594
8	0.9235	0.8535	0.7894	0.7307	0.6768	0.6274	0.5820	0.5403	0.5019	0.4665	0.4339	0.4039	0.3762	0.3506	0.3269	0.3050	0.2326	0.1789	0.1678	0.1226
9	0.9143	0.8368	0.7664	0.7026	0.6446	0.5919	0.5439	0.5002	0.4604	0.4241	0.3909	0.3606	0.3329	0.3075	0.2843	0.2630	0.1938	0.1443	0.1342	0.0943
10	0.9053	0.8203	0.7441	0.6756	0.6139	0.5584	0.5083	0.4632	0.4224	0.3855	0.3522	0.3220	0.2946	0.2697	0.2472	0.2267	0.1615	0.1164	0.1074	0.0725
11	0.8963	0.8043	0.7224	0.6496	0.5847	0.5268	0.4751	0.4289	0.3875	0.3505	0.3173	0.2875	0.2607	0.2366	0.2149	0.1954	0.1346	0.0938	0.0859	0.0558
12	0.8874	0.7885	0.7014	0.6246	0.5568	0.4970	0.4440	0.3971	0.3555	0.3186	0.2858	0.2567	0.2307	0.2076	0.1869	0.1685	0.1122	0.0757	0.0687	0.0429
13	0.8787	0.7730	0.6810	0.6006	0.5303	0.4688	0.4150	0.3677	0.3262	0.2897	0.2575	0.2292	0.2042	0.1821	0.1625	0.1452	0.0935	0.0610	0.0550	0.0330
14	0.8700	0.7579	0.6611	0.5775	0.5051	0.4423	0.3878	0.3405	0.2992	0.2633	0.2320	0.2046	0.1807	0.1597	0.1413	0.1252	0.0779	0.0492	0.0440	0.0254
15	0.8613	0.7430	0.6419	0.5553	0.4810	0.4173	0.3624	0.3152	0.2745	0.2394	0.2090	0.1827	0.1599	0.1401	0.1229	0.1079	0.0649	0.0397	0.0352	0.0195
16	0.8528	0.7284	0.6232	0.5339	0.4581	0.3936	0.3387	0.2919	0.2519	0.2176	0.1883	0.1631	0.1415	0.1229	0.1069	0.0930	0.0541	0.0320	0.0281	0.0150
17	0.8444	0.7142	0.6050	0.5134	0.4363	0.3714	0.3166	0.2703	0.2311	0.1978	0.1696	0.1456	0.1252	0.1078	0.0929	0.0802	0.0451	0.0258	0.0225	0.0116
18	0.8360	0.7002	0.5874	0.4936	0.4155	0.3503	0.2959	0.2502	0.2120	0.1799	0.1528	0.1300	0.1108	0.0946	0.0808	0.0691	0.0376	0.0208	0.0180	0.0089
19	0.8277	0.6864	0.5703	0.4746	0.3957	0.3305	0.2765	0.2317	0.1945	0.1635	0.1377	0.1161	0.0981	0.0829	0.0703	0.0596	0.0313	0.0168	0.0144	0.0068
20	0.8195	0.6730	0.5537	0.4564	0.3769	0.3118	0.2584	0.2145	0.1784	0.1486	0.1240	0.1037	0.0868	0.0728	0.0611	0.0514	0.0261	0.0135	0.0115	0.0053
21	0.8114	0.6598	0.5375	0.4388	0.3589	0.2942	0.2415	0.1987	0.1637	0.1351	0.1117	0.0926	0.0768	0.0634	0.0531	0.0443	0.0217	0.0109	0.0092	0.0040
22	0.8034	0.6468	0.5219	0.4220	0.3418	0.2775	0.2257	0.1839	0.1502	0.1228	0.1007	0.0826	0.0680	0.0560	0.0462	0.0382	0.0181	0.0088	0.0074	0.0031
23	0.7954	0.6342	0.5067	0.4057	0.3256	0.2618	0.2109	0.1703	0.1378	0.1117	0.0907	0.0738	0.0605	0.0491	0.0402	0.0329	0.0151	0.0071	0.0059	0.0024
24	0.7876	0.6217	0.4919	0.3901	0.3101	0.2470	0.1971	0.1577	0.1264	0.1015	0.0817	0.0659	0.0532	0.0431	0.0349	0.0284	0.0126	0.0057	0.0047	0.0018
25	0.7798	0.6095	0.4776	0.3751	0.2953	0.2330	0.1842	0.1460	0.1160	0.0923	0.0736	0.0588	0.0471	0.0378	0.0304	0.0245	0.0105	0.0046	0.0038	0.0014
30	0.7419	0.5521	0.4120	0.3083	0.2314	0.1741	0.1314	0.0994	0.0754	0.0573	0.0437	0.0334	0.0256	0.0196	0.0151	0.0116	0.0042	0.0016	0.0012	*
35	0.7059	0.5000	0.3554	0.2534	0.1813	0.1301	0.0937	0.0676	0.0490	0.0356	0.0259	0.0189	0.0139	0.0102	0.0075	0.0055	0.0017	0.0005	*	*
36	0.6989	0.4902	0.3450	0.2437	0.1727	0.1227	0.0875	0.0626	0.0449	0.0323	0.0228	0.0169	0.0123	0.0089	0.0065	0.0048	0.0014	*	*	*
40	0.6717	0.4529	0.3066	0.2083	0.1420	0.0972	0.0668	0.0460	0.0318	0.0221	0.0155	0.0107	0.0075	0.0055	0.0037	0.0026	0.0007	*	*	*
50	0.6080	0.3715	0.2281	0.1407	0.0872	0.0543	0.0339	0.0213	0.0134	0.0085	0.0054	0.0035	0.0022	0.0014	0.0009	0.0006	*	*	*	*

Present Value Interest factors for Annuity of 1 Discounted at  $r$  Percent for  $n$  Periods:

$$PVIFA_{r,n} = [1 - 1/(1+r)^n] / r$$

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	20%	24%	25%	30%
1	0.9901	0.9804	0.9709	0.9615	0.9524	0.9434	0.9346	0.9259	0.9174	0.9091	0.9009	0.8929	0.8850	0.8772	0.8696	0.8621	0.8333	0.8065	0.8000	0.7692
2	1.9704	1.9416	1.9135	1.8861	1.8594	1.8334	1.8080	1.7833	1.7591	1.7355	1.7125	1.6901	1.6681	1.6467	1.6257	1.6052	1.5278	1.4568	1.4400	1.3609
3	2.9410	2.8839	2.8286	2.7751	2.7232	2.6730	2.6243	2.5771	2.5313	2.4869	2.4437	2.4018	2.3612	2.3216	2.2832	2.2459	2.1065	1.9813	1.9520	1.8161
4	3.9020	3.8077	3.7171	3.6299	3.5460	3.4653	3.3872	3.3121	3.2397	3.1699	3.1024	3.0373	2.9745	2.9137	2.8550	2.7982	2.5887	2.4043	2.3616	2.1662
5	4.8534	4.7135	4.5797	4.4518	4.3295	4.2124	4.1002	3.9927	3.8897	3.7908	3.6959	3.6048	3.5172	3.4331	3.3523	3.2743	2.9906	2.7454	2.6893	2.4356
6	5.7955	5.6014	5.4172	5.2421	5.0759	4.9173	4.7665	4.6229	4.4859	4.3553	4.2305	4.1114	3.9975	3.8887	3.7845	3.6847	3.3255	3.0205	2.9514	2.6427
7	6.7282	6.4720	6.2303	6.0021	5.7864	5.5824	5.3893	5.2064	5.0330	4.8684	4.7122	4.5638	4.4226	4.2883	4.1604	4.0386	3.6046	3.2423	3.1611	2.8021
8	7.6517	7.3255	7.0197	6.7327	6.4632	6.2098	5.9713	5.7466	5.5348	5.3349	5.1461	4.9676	4.7988	4.6389	4.4873	4.3436	3.8372	3.4212	3.3289	2.9247
9	8.5660	8.1622	7.7861	7.4333	7.1078	6.8017	6.5152	6.2469	5.9952	5.7590	5.5370	5.3282	5.1317	4.9464	4.7716	4.6065	4.0310	3.5655	3.4631	3.0190
10	9.4713	8.9826	8.5302	8.1019	7.7217	7.3601	7.0236	6.7101	6.4177	6.1446	5.8892	5.6502	5.4262	5.2161	5.0188	4.8332	4.1925	3.6819	3.5705	3.0915
11	10.368	9.7868	9.2550	8.7605	8.3064	7.8809	7.4887	7.1300	6.8052	6.4951	6.2065	5.9377	5.6869	5.4527	5.2337	5.0286	4.3271	3.7757	3.6564	3.1473
12	11.255	10.575	9.9540	9.3851	8.8633	8.3838	7.9427	7.5361	7.1607	6.8137	6.4924	6.1944	5.9176	5.6603	5.4206	5.1971	4.4392	3.8514	3.7251	3.1903
13	12.134	11.348	10.635	9.9856	9.3936	8.8527	8.3577	7.9038	7.4869	7.1034	6.7499	6.4235	6.1218	5.8424	5.5831	5.3423	4.5327	3.9124	3.7801	3.2233
14	13.004	12.106	11.296	10.563	9.8986	9.2950	8.7455	8.2442	7.7862	7.3667	6.9819	6.6282	6.3025	6.0021	5.7245	5.4675	4.6106	3.9616	3.8241	3.2487
15	13.865	12.849	11.938	11.118	10.380	9.7122	9.1079	8.5595	8.0607	7.6061	7.1909	6.8109	6.4624	6.1422	5.8474	5.5755	4.6755	4.0013	3.8593	3.2682
16	14.718	13.578	12.561	11.652	10.838	10.106	9.4466	8.8514	8.3126	7.8237	7.3792	6.9740	6.6039	6.2651	5.9542	5.6685	4.7296	4.0333	3.8874	3.2832
17	15.562	14.292	13.166	12.166	11.274	10.477	9.7632	9.1216	8.5436	8.0216	7.5488	7.1196	6.7291	6.3729	6.0472	5.7487	4.7746	4.0591	3.9099	3.2948
18	16.398	14.992	13.754	12.659	11.690	10.828	10.059	9.3719	8.7556	8.2014	7.7016	7.2497	6.8399	6.4674	6.1280	5.8178	4.8122	4.0799	3.9279	3.3037
19	17.226	15.678	14.324	13.134	12.085	11.158	10.336	9.6036	8.9501	8.3649	7.8393	7.3658	6.9380	6.5504	6.1982	5.8775	4.8435	4.0967	3.9424	3.3105
20	18.046	16.351	14.877	13.590	12.462	11.470	10.594	9.8181	9.1285	8.5136	7.9633	7.4894	7.0248	6.6231	6.2593	5.9288	4.8696	4.1103	3.9539	3.3158
21	18.857	17.011	15.415	14.029	12.821	11.764	10.836	10.017	9.2922	8.6487	8.0751	7.5620	7.1016	6.6870	6.3125	5.9731	4.8913			