kasneb

CPA PART III SECTION 5

ADVANCED FINANCIAL MANAGEMENT

FRIDAY: 27 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) Discuss four reasons for restructuring and reorganising an organisation. (8 marks)

(b) Professor Edward Altman's model for prediction of bankruptcy is given as follows:

$Z - score = 1.2x_1 + 1.4x_2 + 3.3x_3 + 0.6x_4 + 0.999x_5$

x_1, x_2, x_3, x_4 and x_5 are the financial ratios which according to Prof. Altman have the discriminating power.

Where:
- x_1 = Networking capital/Total assets
- x_2 = Retained earnings/Total assets
- x_3 = Operating profit (EBIT)/Total assets
- x_4 = Market value of equity shares/Book value of debt including preference share capital
- x_5 = Sales/Total assets

Given below are summarised financial statements of Alpha Limited for the year ended 31 December 2019:

Alpha Limited
Income statement for year ended 31 December 2019

	Sh."000"
Sales	400,000
Cost of sales	(300,000)
Gross earnings	100,000
Operating expenses	(60,000)
Operating profit	40,000
Financing cost: Interest	(10,000)
Profit before tax	30,000
Corporation tax @30%	(9,000)
Profit after tax	21,000
Ordinary dividend proposed and paid	(11,000)
Retained profit for the year	10,000

Alpha Limited
Statement of financial position as at 31 December 2019

	Sh."000"
Assets:	
Non-current assets	300,000
Current assets	100,000
Total assets	400,000
Financed by:	
Ordinary share capital (Sh.10 each)	100,000
Retained profit	120,000
Share premium	40,000
Equity capital	260,000

	Sh."000"
Total current liabilities	20,000
12% preference share capital	40,000
10% debenture capital	80,000
Total equity and liabilities	400,000

In this model, a Z – score of 2.7 or more indicates no signs of failure and a Z – score of 1.8 or less indicates there are signs of failure. The firm's ordinary shares are currently trading at Sh.15 each.

Required:

(i) The Z – score for Alpha Limited. (5 marks)

(ii) Comment on the results obtained in (b) (i) above. (1 mark)

(c) Chanzu Ltd. is considering a project which would cost Sh.5,000,000 now. The annual benefits for four years, would be a fixed income of Sh.2,500,000 per annum plus other savings of Sh.500,000 in year 1, rising by 5% each year because of inflation. Running costs will be Sh.1,000,000 in the first year but would increase at a rate of 10% each year because of inflating labour costs.

The general rate of inflation is expected to be 7.5% per annum and the firm's required nominal rate of return is 16%.

Required:

(i) Advise the management of Chanzu Limited on whether to undertake the project. (4 marks)

(ii) Comment on the impact of inflation in (c) (i) above. (2 marks)

(Total: 20 marks)

QUESTION TWO

(a) The following information relates to two mutual funds operating in your country:

	Omega Mutual fund	Beta Mutual fund
Realised return	13%	18%
Beta	1.0	2.0
Standard deviation	19%	15%

Additional information:

1. The return on the market index is 12%.
2. The risk free rate is 8%.

Required:

For each of the above mutual funds, compute the following performance index scores:

(i) Jensen's alpha. (2 marks)

(ii) Treynor's alpha. (2 marks)

(iii) Sharpe index for the funds and the market. (3 marks)

(b) The estimated factor sensitivities of Diamond Ltd. to Fama-French factors and the Pastor-Stambaugh model factors and the risk premium associated with those factors are given in the table below:

	Factor sensitivity	Risk premium (%)
Market factor	1.05	5.00
Size factor	–0.65	2.50
Value factor	–0.20	4.50
Liquidity factor	0.20	4.50

The treasury bill rate is 5%

Required:

(i) The required rate using the Fama-French model. (3 marks)

(ii) The required rate of return using the Pastor-Stambaugh model (PSM). (3 marks)

(c) You have recently been hired as a financial manager at Panblock Limited, a locally incorporated company that deals in imported building materials from the United States of America (USA). As the person in charge of negotiating the exchange rates, you have noted the following indicative exchange rates and interest rates:

3-months forward exchange rates	105 KES/USD
Spot exchange rate	100 KES/USD
3-months interest rate in Kenya	8% per annum
3-months interest rate in USA	5.8% per annum

Assume that Panblock Limited can borrow as much as KES 1,000,000.

Required:

(i) Determine whether the interest rate parity (IRP) is currently holding. (2 marks)

(ii) Demonstrate how you could undertake a covered interest arbitrage assuming that IRP is not holding. (4 marks)

(iii) Determine the arbitrage profit. (1 mark)

(Total: 20 marks)

QUESTION THREE

(a) Explain the difference between the following terms as applied in mortgage and financial markets:

(i) "Primary mortgage market" and "secondary mortgage market". (2 marks)

(ii) "Fixed-rate mortgage" and "adjustable-rate mortgage". (2 marks)

(iii) "Lien" and "recourse". (2 marks)

(b) The shareholders of Mali Investment Holdings have for the last two years managed to save an accumulated fund of Sh.15 million available for investment. A financial analyst they hired to appraise some possible projects they can invest in, has availed the following information:

Project	Initial cash outlay Sh."000"	Expected return (%)	Standard deviation (%)
P	9,000	12	2.5
Q	7,000	21	1.8
R	6,000	16	2.3
S	8,000	14	1.6

The co-variances between various projects contribution are as follows:

Project pairing	Covariance
PQ	– 3.1
PR	1.3
PS	– 4.1
QR	1.5
QS	1.7
RS	2.7

Additional information:

1. The management is planning to invest by pairing the projects.
2. The maximum capital that can be invested is the accumulated fund as shown above.
3. Any paired project is mutually exclusive and none of the projects is divisible.

Required:

(i) For each possible project pair combination, calculate the expected return, correlation coefficient and standard deviation. (12 marks)

(ii) Advise the shareholders of Mali Investment Holdings on the optimal project pair based on the mean variance criterion. (2 marks)

(Total: 20 marks)

QUESTION FOUR

(a) Explain the following terms as used in the context of international parity conditions:

(i) Interest rate parity. (2 marks)

(ii) Purchasing power parity. (2 marks)

(iii) International Fisher effect. (2 marks)

(b) An investor has acquired a call option whose exercise price is Sh.100. The option's premium is Sh.5 per option.

The following are the possible market prices (in shillings) of the option:

114 112 110 108 106 105 104 102 100 98 96 94

Required:

(i) Determine the options value based on each of the above market prices. (3 marks)

(ii) Determine the profit or loss associated with the option on the basis of each of the possible market prices. (3 marks)

(iii) Represent the information in (b) (ii) above in a diagram where the x – axis represents market price and y – axis represents profit or loss for the option buyer. (3 marks)

(iv) Interpret the graph in (b) (iii) above. (1 mark)

(c) Describe four types of real options available to the management while making strategic capital budgeting decisions of a firm. (4 marks)

(Total: 20 marks)

QUESTION FIVE

(a) Explain six reasons why mergers and acquisition deals fail despite good planning. (6 marks)

(b) Zeltex Ltd. is an unlevered firm. The firm expects to generate operating profit (EBIT) of Sh.20 million each year to perpetuity.

The firm's current market value is Sh.80 million and pays corporation tax at the rate of 30%. The management of the firm is considering the use of debt financing. The firm's financial analysts have estimated that the present value of any future financial distress costs is Sh.8 million and that the probability of financial distress would increase with leverage according to the following schedule:

Value of debt (Sh.m)	Probability of financial distress	Pre-tax cost of debt (%)
2.5	0.00	6
5.0	0.0125	7.5
7.5	0.025	9
10	0.0625	10
12.5	0.125	11.5
15	0.3125	12.5
20	0.75	14

Additional information:

1. The firm's ungeared asset beta is 0.60.
2. The risk free rate of return is 8%.
3. Expected return of the market portfolio is 15%.
4. The cost of equity of a levered firm shall be captured using capital asset pricing model (CAPM).
5. The Hamada model shall be applied to capture the levered equity Beta.

Required:

(i) The current cost of equity and weighted average cost of capital (WACC). (2 marks)

(ii) The firm's optimal level of debt using the "pure" Modigliani and Miller with corporation tax model. (4 marks)

(iii) The firm's optimal weighted average cost of capital (WACC) and hence its optimal capital structure proportions. (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	0.0638	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	0.0601	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	0.0234	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	0.0154	0.0107	0.0075	0.0053	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	3.4651	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	3.3522	3.2743	2.9906	2.7454	2.6893	2.4356
6	5.7955	5.6014	5.4172	5.2421	5.0757	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	7.4353	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	8.1109	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	9.2526	8.7605	8.3064	7.8869	7.4987	7.1390	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	7.4694	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	4.1212	3.9631	3.3198
22	19.660	17.658	15.937	14.451	13.163	12.042	11.061	10.201	9.4424	8.7715	8.1757	7.6446	7.1695	6.7429	6.3587	6.0113	4.9094	4.1300	3.9705	3.3230
23	20.456	18.292	16.444	14.857	13.489	12.303	11.272	10.371	9.5802	8.8832	8.2664	7.7184	7.2297	6.7921	6.3988	6.0442	4.9245	4.1371	3.9764	3.3254
24	21.243	18.914	16.936	15.247	13.799	12.550	11.469	10.529	9.7066	8.9847	8.3481	7.7843	7.2829	6.8351	6.4338	6.0726	4.9371	4.1428	3.9811	3.3272
25	22.023	19.523	17.413	15.622	14.094	12.783	11.654	10.675	9.8226	9.0770	8.4217	7.8431	7.3300	6.8729	6.4641	6.0971	4.9476	4.1474	3.9849	3.3286
30	25.808	22.396	19.600	17.292	15.372	13.765	12.409	11.258	10.274	9.4269	8.6938	8.0552	7.4957	7.0027	6.5660	6.1772	4.9789	4.1601	3.9950	3.3321
35	29.409	24.999	21.487	18.665	16.374	14.498	12.948	11.655	10.567	9.6442	8.8552	8.1755	7.5856	7.0700	6.6166	6.2153	4.9915	4.1644	3.9984	3.3330
36	30.108	25.489	21.832	18.908	16.547	14.621	13.035	11.717	10.612	9.6765	8.8786	8.1924	7.5979	7.0790	6.6231	6.2201	4.9929	4.1649	3.9987	3.3331
40	32.835	27.355	23.115	19.793	17.159	15.046	13.332	11.925	10.757	9.7791	8.9511	8.2438	7.6344	7.1050	6.6418	6.2335	4.9966	4.1659	3.9995	3.3332
50	39.196	31.424	25.730	21.482	18.256	15.762	13.801	12.233	10.962	9.9148	9.0417	8.3045	7.6752	7.1327	6.6605	6.2463	4.9995	4.1666	3.9999	3.3333