



Strathmore
UNIVERSITY

STRATHMORE UNIVERSITY BUSINESS SCHOOL
BACHELOR OF FINANCIAL SERVICES
AMS 3201: ASSET VALUATION THEORY & TECHNIQUES
END OF SEMESTER EXAMINATION

DATE: 13th December 2023

TIME: 08:00-10:00

Answer Question ONE in Section A and TWO other Questions in Section B.

Section A-COMPULSORY

QUESTION ONE

(30marks)

- (a) ABC investment trust expects to earn Sh8.00, Sh10.00 and Sh16.00 for the next three years. ABC will pay annual dividends of Sh4.00, Sh5.00 and Sh11.00 in each of these years. The last dividend includes a liquidating payment to the shareholders at the end of year 3 when the trust terminates. The Company's book value is Sh16 per share and the required return on equity is 10%.

Required;

- (i) The Current Value per share of ABC according to the dividend discount model. **(3 marks)**
- (ii) Calculate the per share book value and residual income for ABC for each of the next three years and use those results to find the stock's value using the residual income model. **(4marks)**
- (iii) Calculate the return on equity and use it as input model to the residual income model to calculate ABC investment trust's value. **(4marks)**
- (b) Over the recent past, mergers and acquisitions have become a popular method that companies use to expand and grow. Despite companies doing proper due diligence before

a merger or an acquisition, sometimes the envisioned mergers and acquisition would still fail. Explain **THREE** reasons why Mergers and Acquisitions fail. **(3 marks)**

(c) Sheba Industries Limited is considering acquisition of Roka Corporation Ltd. in a share for share exchange. The financial data for the two companies are given below:

	Sheba Ltd.	Roka Ltd.
Sales (millions)	500	100
Net earnings (millions)	30	12
Ordinary shares outstanding (millions)	6	2
Ordinary share market price, per share (MPS)	50	40
Dividend per share (DPS)	2	1.50

Additional information:

1. Sheba Limited is not willing to incur an initial dilution in its earnings per share (EPS).

2. Sheba Limited will have to offer a minimum of 25% of Roka Ltd.'s current share market price.

Required:

(i) The relevant offer price range. **(4 marks)**

(i) If Roka Ltd.'s shareholders accept an offer by Sheba Ltd. of Sh.40 per share in a share for share exchange. Determine the post-merger earnings per share (EPS). **(4 marks)**

(ii) Using the results obtained in (c) (ii) above and assuming that Sheba Ltd.'s price-earning (P/E) ratio will remain unchanged after the merger, determine the post-acquisition market price of a share of Sheba. **(3 marks)**

(d) The current share price of a company is currently selling at Sh10. The share price will increase by 5% or reduce by 5% six months from now. The risk free rate of return is 6% p.a. and the strike price is Sh10. The option will be exercised after six months.

Required:

Using the one period-binomial model, determine the value of the put option (Use binomial tree to present your answer) **(5marks)**

SECTION B

ANSWER ANY TWO QUESTIONS

QUESTION TWO

(20marks)

- (a) Explain the following defense tactics against a hostile takeover as used in mergers and acquisitions
- (i) Pac-man defense **(2 marks)**
 - (ii) White Knight **(2 marks)**
 - (iii) Sale of crown jewel **(2 marks)**
- (b) Huge Limited intends to take over Tiny Ltd, another company in the same industry.

If Huge Ltd acquires Tiny Ltd, the expected results of Tiny Ltd for the next three years will be as follows:

Year	1	2	3
	Sh."000"	Sh."000"	Sh."000"
Sales	200,000	280,000	320,000
Cash costs/Expenses	120,000	160,000	180,000
Capital Allowance	20,000	30,000	40,000
Interest charges	10,000	10,000	10,000
Cash to replace asset and finance growth	25,000	30,000	35,000

From year 4 onwards, it is expected that the annual cash flows from Tiny Ltd will increase by 4% each year into perpetuity. Tax is payable at the rate of 30% and this tax is paid in the same year the profits to which it relates are earned.

If Huge Ltd, acquires Tiny Ltd, it estimates that the gearing after the acquisition will be 35% measured as the value of debt as a proportion to the total equity and debt. After the acquisition of Tiny Ltd, Huge Ltd would have a cost of debt of 7.5% before tax and beta of 1.60. The risk free rate of return is 6% and the return on the market portfolio is 11%

Required:

- (i) The weighted average cost of Capital WACC for Huge Ltd after the acquisition of Tiny Ltd. **(2marks)**

(ii) The maximum amount the Huge Ltd will be willing to pay in order to acquire Tiny Ltd. (10 marks)

(c) Explain Two Limitations of the Gordon's Growth Model. (2marks)

QUESTION THREE

(20marks)

(a) You have recently been appointed as a financial analyst with a corporate valuations firm, "Capital First". You have been provided with the following financial information;

Share capital in issue: 2 million ordinary shares

- Current dividend per share (just paid) Sh10.
- Current Earnings Per Share Sh3
- Current return earned on assets 20%
- Current equity beta 1.2.

You also have the following market information:

- Current *market risk premium* is 7%.
- Risk-free rate 5%.

Required;

Find the value per share and the total market capitalization of the company. (5marks)

(b) Explain **Three cases** where Free Cash Flows valuation model will be appropriate as a valuation technique. (3marks)

(c) Patrick is evaluating "Accelerated Ltd" by using the Free Cash Flows to Firm (FCFF) and Free Cash flows to Equity (FCFE) approaches. Patrick has collected the following information in \$:

- Accelerated has net income of \$250 million, depreciation of \$90 million, capital expenditures of \$170 million, and an increase in working capital of \$40 million.
- Accelerated will finance 40% of the increase in net fixed assets (capital expenditures less depreciation) and 40% of the increase in working capital with debt financing
- Interest expenses are \$150 million. The current market value of Accelerated Ltd.'s outstanding debt is \$1,800 million
- FCFF is expected to grow at 6% indefinitely and FCFE is expected to grow at 7%
- The tax rate is 7%
- Accelerated is financed with 40% debt and 60% equity. The before-tax cost of debt is 9%, and the before-tax cost of equity is 13%.
- Accelerated has 10 million outstanding shares.

Required:

- (i) Using the FCFF valuation approach, estimate the total value of the firm, total market value of equity, and the per share value of equity. **(6marks)**
- (ii) Using FCFE valuation approach, estimate the total market value of equity and the per-share value of equity. **(4marks)**
- (iii) Explain Two advantages of the Free Cash flows valuation used above. **(2marks)**

QUESTION FOUR

(20 marks)

- (a) A financial analyst is interested in using the Black-Scholes Model (BSM) to value call options on the stock.

The following information is available:

- The price of the stock is Sh.35.
- The strike price is Sh.30.
- The option matures in 9 months.
- The volatility of returns of the stock is 0.30.
- The risk-free rate is 10%.

Required: The value of a call option using the Black-Scholes Model.

(5 marks)

The Black- Scholes formulae is given below:

$$c = P_a N(d_1) - P_e N(d_2) e^{-rt}$$

$$d_1 = \frac{\ln(P_a/P_e) + (r + 0.5s^2)t}{s\sqrt{t}}$$

$$d_2 = d_1 - s\sqrt{t}$$

- (b) Explain Three Limitations of the Black-Scholes Options Pricing Model **(3marks)**

(c) Sheryl is valuing Pit Pot Services Limited. She has made the following assumptions;

- The Book Value per share is estimated at Sh24.05 on 31st Dec 2017

- EPS will be 20% of the beginning book value per share for the next 8 years.
- Cash dividends paid will be 20% of EPS
- At the end of eight-year period, the market price per share will be three times the book value per share
- The beta for Pit Pot is 0.60, the risk free rate is 6% and the risk premium is 6.5%
- The current market price of Pit pot is Sh.148.45, which indicates a current P/B of 6.1725.

Required:

- (i) Prepare a table showing the beginning and ending book values, net income and cash dividends annually for the eight – year period. **(5marks)**
- (ii) Estimate the residual income and the present value of residual income for the eight years **(3marks)**
- (iii) Estimate the value per share of Pit Pot using the residual income model. **(2 marks)**
- (d) Differentiate between Absolute Valuation Models and Relative Valuation Models. **(2marks)**

QUESTION FIVE

(20marks)

- (a) Masambo Limited issued a 10year corporate bond with a par value of Sh1,000 and coupon rate of 10%. The Required rate of return is 8%.

Required: Calculate the Market value of the Bond and state whether the bond is selling at a discount or a premium. **(3marks)**

- (b) A bond has a current market value of Sh1,200 and a par value of Sh1,000. The coupon rate is 10% pa. and the time to maturity is 5 years.

Required:

Calculate the Approximate Yield to Maturity (YTM) **(3marks)**

- (c) A bond has a par value of \$1,000 and 5 years to maturity. The annual coupon rate is 10% and the current interest rate is 8%. Required:

- (i) Calculate the Macaulay's duration of the bond. **(4 marks)**
- (ii) Calculate the Modified Duration of the bond. **(2 marks)**

- (d) Explain the following terms as used in Mergers and Acquisitions;

- (i) Synergy **(2marks)**

- (ii) Horizontal integration (2marks)
- (iii) Conglomerate integration (2marks)
- (iv) Conglomerate integration (2marks)

APPENDIX 1: STANDARD NORMAL DISTRIBUTION TABLE

	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	
0.0	.0000	.0040	.0080	.0120	.0160	.0199	.0239	.0279	.0319	.0359
0.1	.0398	.0438	.0478	.0517	.0557	.0596	.0636	.0675	.0714	.0753
0.2	.0793	.0832	.0871	.0910	.0948	.0987	.1026	.1064	.1103	.1141
0.3	.1179	.1217	.1255	.1293	.1331	.1368	.1406	.1443	.1480	.1517
0.4	.1554	.1591	.1628	.1664	.1700	.1736	.1772	.1808	.1844	.1879
0.5	.1915	.1950	.1985	.2019	.2054	.2088	.2123	.2157	.2190	.2224
0.6	.2257	.2291	.2324	.2357	.2389	.2422	.2454	.2486	.2517	.2549
0.7	.2580	.2611	.2642	.2673	.2703	.2734	.2764	.2794	.2823	.2852
0.8	.2881	.2910	.2939	.2967	.2995	.3023	.3051	.3078	.3106	.3133
0.9	.3159	.3186	.3212	.3238	.3264	.3289	.3315	.3340	.3365	.3389
1.0	.3413	.3438	.3461	.3485	.3508	.3531	.3554	.3577	.3599	.3621
1.1	.3643	.3665	.3686	.3708	.3729	.3749	.3770	.3790	.3810	.3830
1.2	.3849	.3869	.3888	.3907	.3925	.3944	.3962	.3980	.3997	.4015
1.3	.4032	.4049	.4066	.4082	.4099	.4115	.4131	.4147	.4162	.4177
1.4	.4192	.4207	.4222	.4236	.4251	.4265	.4279	.4292	.4306	.4319
1.5	.4332	.4345	.4357	.4370	.4382	.4394	.4406	.4418	.4430	.4441
1.6	.4452	.4463	.4474	.4484	.4495	.4505	.4515	.4525	.4535	.4545
1.7	.4554	.4564	.4573	.4582	.4591	.4599	.4608	.4616	.4625	.4633
1.8	.4641	.4649	.4656	.4664	.4671	.4678	.4686	.4693	.4699	.4706
1.9	.4713	.4719	.4726	.4732	.4738	.4744	.4750	.4756	.4761	.4767
2.0	.4772	.4778	.4783	.4788	.4793	.4798	.4803	.4808	.4812	.4817
2.1	.4821	.4826	.4830	.4834	.4838	.4842	.4846	.4850	.4854	.4857
2.2	.4861	.4864	.4868	.4871	.4875	.4878	.4881	.4884	.4887	.4890
2.3	.4893	.4896	.4898	.4901	.4904	.4906	.4909	.4911	.4913	.4916
2.4	.4918	.4920	.4922	.4925	.4927	.4929	.4931	.4932	.4934	.4936
2.5	.4938	.4940	.4941	.4943	.4945	.4946	.4948	.4949	.4951	.4952
2.6	.4953	.4955	.4956	.4957	.4959	.4960	.4961	.4962	.4963	.4964
2.7	.4965	.4966	.4967	.4968	.4969	.4970	.4971	.4972	.4973	.4974
2.8	.4974	.4975	.4976	.4977	.4977	.4978	.4979	.4980	.4980	.4981
2.9	.4981	.4982	.4982	.4983	.4984	.4984	.4985	.4985	.4986	.4986
3.0	.4987	.4987	.4987	.4988	.4988	.4989	.4989	.4989	.4990	.4990