Strathmore
UNIVERSITY

STRATHMORE BUSINESS SCHOOL

BACHELOR OF COMMERCE

SPECIAL EXAMINATION

AMS 3201: ASSET VALUATION THEORY & TECHNIQUES

DATE: Wed, 24th April 2024 **TIME:** 10:30 – 12:30

INSTRUCTIONS:

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

Section A-COMPULSORY

QUESTION ONE

(a) Masomo Ltd is considering acquiring Mawazo Ltd. a firm in the same industry in order to consolidate its market share. Mawazo Ltd has been less profitable, so it has paid an average of only 20% in taxes during the last 10 years. In addition, it has used little debt having a debt ratio of 25%. If the acquisition would be implemented, Masomo Ltd could operate Mawazo Ltd as separate wholly owned subsidiary. This will increase Masomo Ltd's gearing ratio to 30%. The following is a forecasted financial data for Mawazo Lt over the next five years;

Year	**1** **Sh.million**	**2** **Sh. million**	**3** **Sh. million**	**4** **Sh. million**	**5** **Sh.million**
Net Sales	150	160	175	170	165
Operating Costs	10	15	20	25	17
Selling and Admin Costs	15	20	18	19	21
Acceptable investment projects	0.8	0.90	2.60	2.20	1.20

Additional information;

1. The risk free rate of return is 8% and debt is considered to be risk free
2. Expected return of the market portfolio is 13%
3. The firm's levered equity beta after acquisition is estimated at 0.80
4. After 5 years, the net cash flows of Mawazo Ltd increase at a constant rate of 6% per annum in perpetuity.
5. Corporation tax is 30%
6. The firm's gross profit margin is 40%
7. Mawazo Ltd incurs fixed cost of Sh. 2 million per annum
8. The firm's equity shares and bonds are currently trading at par.

Required;

Determine the maximum price payable to acquire Mawazo ltd using the discounted free cash flows basis. **(10marks)**

(b) Over the recent past, there has been increased number of mergers and acquisitions. Despite, their popularity, reported failed mergers are still on the rise. Explain **Four** Reasons why mergers and acquisitions fail. **(4marks)**

(c) Biashara Ltd shares are currently trading for Sh24 and have paid a dividend of Sh1 per share for the most recent year. The following information is given:

- The Risk free rate is 4%
- The shares have an estimated beta of 1.2
- The equity risk premium is estimated at 5%

Required:

Based on the above information, determine the constant dividend growth rate that would be required to justify the market price of Sh24. **(4marks)**

(d) Maji Mazuri Ltd has an estimated beat of 0.2 and the risk free rate of return is 4.5%. The equity risk premium is estimated to be 7.5%. Using the CAPM, calculate the required rate of return for investors in Maji Mazuri Ltd. **(2marks)**

(e) (i) You want to determine the YTM for an issue of outstanding bonds at your firm. Your firm has an issue of 10% annual coupon bonds with 15 years left to maturity. The bonds have a current market value of Sh1,250 and par value of Sh1,000. Estimate the approximate Yield to maturity of the bond. **(3marks)**

(f) A bond has current par value of Sh1,000 and an annual coupon rate of 4% and current interest rate of 4.5%. The bond has 5 years to maturity. Required:

(i) Calculate the Macaulay duration of the bond and interpret your answer **(5marks)**

(ii) Calculate the modified duration **(2marks)**

Total: 30 Marks

QUESTION TWO

(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)**

Total: 20 Marks

QUESTION THREE

(a) The Gordon's growth model has a number of fundamental assumptions. Explain **three** assumptions of the model **(3marks)**

(b) A company has a dividend payout ratio of 80% and the current return on equity is 35%. Calculate the sustainable growth rate of the company **(2marks)**

(c) Lavender is preparing a valuation of Quick Auto Centre Ltd. She has decided to use a three stage Free Cash Flow to Equity (FCFE) model and the following estimates. The FCFE per share for the current year is Sh0.75 The FCFE is expected to grow at 10% for the next year, then at 26% annually for the following three years, and then 6% in year 5 and thereafter. Lawrence has estimated beta to be 2.00 and the risk free rate to be 4.5%. The equity risk premium is 5%.

Required:

Given the above data collected by Lawrence, estimate the value per share of Quick Auto Ltd **(5marks)**

(d) Naikare Baraka (NB) is a family controlled company that dominates the retail book market. NB has a book value of Sh10 per share, is expected to earn Sh2.00 forever, and pays out all of its earnings as dividends. Its required return on equity is 12.5%. Required;

Required: Calculate the value of the stock of NB using the following**:**

(i) Dividend discount model **(2marks)**
(ii) Residual income model **(2marks)**
(iii) How does the value calculated using residual income compare with the dividend discount model**?** **(1 mark)**

Total: 20 Marks

QUESTION FOUR

(a) Explain the **FIVE** steps involved in a valuation process **(5 marks**)

(b) Differentiate between Absolute Valuation Models and Relative Valuation Models **(4marks)**

(c) Vivian is evaluating Masomo Ltd by using a three stage growth model. She has accumulated the following information relating to the Free Cash Flows to the Firm (FCFF)

- Current FCFF= Sh745 million
- Outstanding shares= 309.9 million
- Equity beat= 0.9, Risk free rate=5.04%; Equity Risk Premium= 5.5%
- Cost of debt before tax= 7.1%
- Marginal Tax Rate= 34%
- Capital structure= 20% debt, 80% equity
- Long-Term debt=Sh1.518 billion

Growth rate of FCFF=

- 8.8% annually in stage 1, year 1 to year 4
- 7.4% in year 5, 6% in year 6, 4.6% in year 7
- 3.2% in year 8 and thereafter

Required:
From the information that Vivian has accumulated, estimate the following;

(i) Weighted Average Cost of Capital (WACC) **(2marks)**
(ii) Total value of the firm **(4marks)**
(iii) Total value of equity **(3marks)**
(iv) Value per share **(2marks**)

Total: 20 Marks

QUESTION FIVE

(a) In Options Theory, differentiate between a "Call Option" and a "Put Option" **(3marks)**

(b) A financial analyst is interested in using the Black-Scholes Model to value call options on a 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. **(5marks)**

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

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

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

(c)(i) Great Plains Energy is a public utility holding company that listed its 4.5% cumulative perpetual preferred stock series in March 1952. The par value of the preferred stock is Sh.100. If the required rate of return on this stock is 5.6%, estimate the value of the stock. **(3marks)**

(ii) Down Under Financial recently paid a dividend of Sh1.80 An analyst has examined the financial statements and historical dividend policy of Down Under and expects that the firm's dividend rate will grow at a constant rate of 3.5% indefinitely. The analyst has also determined the beta to be 1.5, the risk free rate is 4%, and the expected return on the market portfolio is 8%.
Required: Calculate the current value of Down Under's shares. **(3marks)**

(iii) The Gordon growth model (GGM) has a number of characteristics that make it useful and appropriate for many applications. However, the model has some characteristics that limits its application. Explain **Three** limitations of the GGM **(3marks)**

(d) Heri Haki Ltd has issued 5 years' corporate bonds of par value Sh1,000. The coupon rate is 8% and the required rate of return is 10%.
Required: Calculate the Market Value of the bond and state whether the bond is selling at a premium or a discount. **(3marks)**

Total: 20 Marks

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