INV3701 MAY/JUNE 2015 EXAM MEMO

Question	Option	Solution
1.	3	required return is greater than expected return.
2.	1	Liquidation value is the value of assets sold as a unit.
3.	1	$Realized\ return = \frac{EV - BV}{BV} = \frac{67.40 - 65.80}{65.80} = 0.0243 = 2.43\%$
4.	2	Residual income model
5.	3	Dividend discount model
6.	3	deducts
7.	2	r_{NOVA} $= r_f + \beta_{mkt}(R_{mkt} - r_f) + \beta_{SMB}(R_{small} - R_{big})$ $+ \beta_{HML}(R_{HBM} - R_{LBM})$ $= 3.5 + 1.25(2.6) - 1.15(3.7) + 0.85(4.2)$ $= 3.5 + 3.25 - 4.255 + 3.57$ $= 6.07\%$
8.	3	$E(R_i) = r_f + \beta_i[R_m - r_f]$ $= 6 + 1.14(8.40 - 6)$ $= 8.736\%$ $D_0 = E_0 \times {}^{D}/_{E} = 3.50 \times 0.20 = R0.70$ $V_0 = \frac{D_0(1+g)}{r-g} = \frac{D_1}{r-g}$

		$= \frac{0.70(1.04)}{0.0874 - 0.04}$ $= R15.36$
9	3	Jack and Jill is **undervalued** because the current market price of R14.22 is lower than its value of R15.36 per share.
10.	1	$V_0 = \frac{E}{r} + PVGO$ $PVGO = V_0 - \frac{E}{r}$ $= 78.40 - \frac{3.10}{0.072}$ $= R35.34$
11.	3	$V_0 = \frac{D_1 + P_1}{1 + r} = \frac{0.80 + 51.60}{1.14} = R45.96$
12.	1	$E_3 = 4.50 \times (1.12)^3 = 6.3222$ $E_4 = 6.3222 \times 1.06 = 6.7015$ $D_4 = E_4 \times {}^{D}/_{E} = 6.7015 \times 0.15 = 1.0052$ $V_3 = \frac{D_4}{r - g} = \frac{1.0052}{0.10 - 0.06} = R25.13$ $V_0 = \frac{V_3}{(1 + r)^3} = \frac{25.13}{1.10^3} = R18.88$
13.	1	$V_0 = B_0 + \left[\frac{ROE - r}{r - g}\right] B_0$ $= 102 + \left[\frac{0.22 - 0.14}{0.14 - 0.044}\right] 102$ $= 102 + 85$ $= R187$

<table>
<tr><td></td><td></td><td>$g = b \times ROE = 0.20 \times 22 = 4.40\%$</td></tr>
<tr><td>14.</td><td>3</td><td>Increase in net profit margin.</td></tr>
<tr><td>15.</td><td>2</td><td>$\frac{P_0}{E_0} = \frac{(1-b)(1+g)}{r-g} = \frac{0.30(1.054)}{0.083-0.054)} = 10.90$
$1 - b = \frac{D}{E} = \frac{0.96}{3.20} = 0.30$</td></tr>
<tr><td>16.</td><td>1</td><td>Great Trek's market trailing P/E is 15 while the justified trailing P/E is 10.90 which means the share is overvalued hence I would sell the share.</td></tr>
<tr><td>17</td><td>2</td><td>$ROE = Net\ profit\ margin \times Total\ asset\ turnover \times Financial\ leverage$
$= \frac{650\,000}{2\,500\,000} \times \frac{2\,500\,000}{3\,400\,000} \times 0.97$
$= 0.26 \times 0.7353 \times 0.97$
$= 18.54\%$
$\frac{D_0}{E_0} = \frac{195\,000}{650\,000} = 0.30$
$g = b \times ROE = (1 - 0.30) \times 18.54 = 12.98\%$</td></tr>
<tr><td>18.</td><td>3</td><td>Amortization of long-term bond premiums</td></tr>
<tr><td>19.</td><td>1</td><td>
<table>
<tr><td></td><td>2016</td><td>2017</td></tr>
<tr><td>B_{t-1}</td><td>8.30</td><td>9.35</td></tr>
<tr><td>$+\mathrm{E}_t$</td><td>1.50</td><td>2.00</td></tr>
<tr><td>$-D_T$</td><td>(0.45)</td><td>(0.60)</td></tr>
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		B_t | **R9.35** | R10.75 $Equity\ charge$ $(r \times B_{t-1})$ | 0.747 | 0.8415 RI | R0.753 | **R1.1585**
20.	3	R1.16
21.	2	$EVA = NOPAT - \$WACC$ $= 2\ 100 - 2556$ $= -R456$ $\$WACC = 0.142 \times 18\ 000 = R2\ 556$
22.	2	$Sales\ per\ share = \frac{9\ 475}{5\ 233} = R1.8106$ $\frac{P}{S} = \frac{market\ price\ per\ share}{sales\ per\ share} = \frac{12.15}{1.8106} = 6.71$
23.	2	$Average\ EPS = \frac{1.40 + 2.75 + 3.40}{3} = R2.52$
24.	1	$Terminal\ value\ in\ year\ 5$ $= benchmark\ trailing\ P/E\ ratio \times forecasted\ earnings\ in\ year\ 5$ $= 21 \times 5.50$ $= R115.50$
25.	2	Lower PEGs are more attractive than stocks with higher PEGs, all else equal.
26.	2	A high E/P suggests a cheap security.

27.	2	$Equity\ charge = equity\ capital \times cost\ of\ equity$ $= 850\,000 \times 0.114$ $= R96\,900$
28.	2	$Residual\ income = Net\ income - equity\ charge$ $= 85\,400 - 96\,900$ $= -R11\,500$ The firm is destroying value.
29.	3	$\frac{P}{B} = \frac{ROE - g}{r - g}$ $ROE = \left[\frac{P}{B} \times (r - g)\right] + g$ $= 1.94 \times (0.15 - 0.06) + 0.06$ $= 0.2346 = 23.46\%$
30.	2	Shares in mature or cyclical industries and start-up companies with no record of earnings

SECTION B

QUESTION 1 **[10 marks]**

Question 1.1 **[7 marks]**

a **[6 marks]**

$D_0 = R1.00$

$D_1 = 1.00(1.20) = 1.20$ ^

$D_2 = 1.20(1.20) = 1.44$ ^

$D_3 = 1.44(1.10) = 1.584$ ^

$D_4 = 1.584(1.04) = 1.6474$ ^

$$P_3 = \frac{D_4}{r - g}$$

$$= \frac{1.6474}{0.106 - 0.04} \text{ ^}$$

$= R24.96$ ^

Step 2: Calculate the intrinsic value:

$$V_0 = \frac{D_1}{(1+k)^1} + \frac{D_2}{(1+k)^2} + \frac{D_3}{(1+k)^3} + \frac{P_3}{(1+k)^3}$$

$$= \frac{1.20}{(1.106)^1} + \frac{1.44}{(1.106)^2} + \frac{1.584}{(1.106)^3} + \frac{24.96}{(1.106)^3}$$

$= 1.085$ ^ $+ 1.1772$ ^ $+ 1.1708$ ^ $+ 18.4493$ ^

$= R21.88$ √

b) **[1 mark]**

I would **buy** Bombela's share. ^

The market price of Bombela is R15.20 which is lower than its intrinsic value of R21.88 hence the share is undervalued. ^

Question 1.2 **[3 marks]**

Give a mark for any of the three steps described.

1) Understanding the business ^ - Industry and competitive analysis, together with an analysis of financial statements and other company disclosures, provides a basis for forecasting company performance. ^
2) Forecasting the company performance ^ – Forecasts of sales, earnings, dividends and financial position provide the inputs for most valuation models. ^
3) Selecting the appropriate valuation model ^ – Depending on the characteristics of the company and the context of valuation, some valuation models will be more appropriate than others. ^
4) Converting forecasts to a valuation ^ – Beyond mechanically obtaining the output of valuation models, estimating value involves judgement. ^
5) Applying the valuation conclusion ^ – Depending on the purpose, an analyst may use the valuation conclusions to make an investment recommendation about a particular share, provide an opinion about the price of a transaction, or evaluate the economic merits of potential strategic investment. ^

QUESTION 2 **[10 Marks]**

a) **[2 marks]**

$$WACC = w_d r_d(1-t) + w_e r_e + w_p r_p$$

$$= \frac{500}{1\,500}[6.50(1-0.30)] + \frac{700}{1\,500}[13.40] + \frac{300}{1\,500}[8.20]$$

$$= 1.5167\,\wedge + 6.2533\,\wedge + 1.64\,\wedge$$

$$= 9.41\%\,\wedge$$

b) **[2 marks]**

$$FCFF_0 = NI + NCC + Int(1-t) + Preferred\ dividends - FCInv - WCInv$$

$$= 140 + [43+5]\wedge + 32.50(1-0.30) + 22\wedge - 58 - 36$$

$$= R138.75\ \surd$$

c) **[1.5 marks]**

$$V_0 = \frac{FCFF_0(1+g)}{WACC-g} = \frac{FCFF_1}{WACC-g}$$

$$= \frac{138.75(1.035)}{0.0941-0.035}\wedge$$

$$= R2\,429.89\ \surd$$

d) **[1.5 marks]**

$$Total\ value\ of\ equity$$

$$= Total\ value\ of\ the\ company - Value\ of\ debt - Value\ of\ preferred\ stock$$

$$= 2\,429.89 - 500\,\wedge - 300\,\wedge$$

$$= R1\,629.89\,\wedge$$

e) **[2 marks]**

FCFF is more preferable for a firm instead of FCFE if:

- FCFE is negative √
- It has a volatile capital structure/ capital structure is unstable /history of leverage changes √

f) **[1 mark]**

- FCFE considers only the equity portion of total capital. ^
- FCFE should be discounted using the required return on equity instead of WACC. ^