FORMULA

FIN1513 INTRODUCTION TO FINANCE

Financial ratio	
ROE/ROCE	$= \frac{\text{Earnings before interest \& tax}}{\text{Shareholders equity /capital employed}} \text{ x } 100\%$
Return on investment	$= \frac{\text{Net profits}}{\text{Assets}} \text{ x } 100\%$
Gross profit margin	$= \frac{\text{Gross profits}}{\text{Sales}} \text{ x } 100\%$
Net profit margin	$= \frac{\text{Net profits}}{\text{Sales}} \text{ x } 100\%$
EPS	$= \frac{\text{Profit after interest,after taxation \& after preference dividends}}{\text{No. of ordinary shares in issued}} \text{ x } 100\%$
PE ratio	$= \frac{\text{Market price per share}}{\text{EPS}}$
Current ratio	$= \frac{\text{Current assets}}{\text{Current liabilities}}$
Acid-test ratio	$= \frac{\text{Current assets} - \text{inventory} - \text{prepayment}}{\text{Current liabilities}}$
AR collection period	$= \frac{\text{Accounts receivable}}{\text{Credit sales}} \text{ x } 365$
AR turnover	$= \frac{\text{Credit sales}}{\text{Accounts receivable}}$
AP settlement period	$= \frac{\text{Accounts payable}}{\text{Credit purchases}} \text{ x } 365$
AP turnover	$= \frac{\text{Credit purchases}}{\text{Accounts payable}}$
Days inventory	$= \frac{\text{Inventories}}{\text{Cost of goods sold}} \text{ x } 365$
Inventory Turnover	$= \frac{\text{Cost of goods sold}}{\text{Inventories}}$
Debt ratio	$= \frac{\text{Total liabilities}}{\text{Total assets}}$
Debts to equity ratio	$= \frac{\text{Total Liabilities}}{\text{Shareholders}' \text{equity}} \text{ x } 100\%$
Interest coverage ratio	$= \frac{\text{Earnings before interest \& tax}}{\text{Interest expenses}}$
The time value of money	
Future value of a single sum	$= (1+i)^n$
Present value of a single sum	$= \frac{1}{(1+i)^n}$
Future value of an ordinary annuity	$= \frac{(1+i)^n - 1}{i}$
Future value of an annuity due	$= \frac{(1+i)^n - 1}{i}(1+i)$
Present value of an ordinary annuity	$= \frac{1 - \left[\frac{1}{(1+i)^n}\right]}{i}$

Present value of an annuity due	$= (1+i)\dfrac{1-\left[\dfrac{1}{(1+i)^n}\right]}{i}$
Simple interest	$= P_0 \ x\ i\ x\ n$
Compound interest	$= \mathrm{P} \times [(1+i)^n - 1]$
Effective interest rate	$= \left\lfloor 1+\dfrac{i}{n} \right\rfloor^{\ n} - 1$
Nominal interest rate	$= \mathrm{n}[(1+i_{eff})^{\ 1/n} - 1]$
Risk and Return	
Rate of return (r)	$= \dfrac{\mathrm{D}+(\mathrm{P1}-\mathrm{P0})}{\mathrm{P0}}$
Dividend yield	$= \dfrac{\mathrm{D1}}{\mathrm{P0}}$
Capital gains yield	$= \dfrac{\mathrm{P1}-\mathrm{P0}}{\mathrm{P0}}$
Expected rate of return ($\hat{r}$)	$= \sum_{i=1}^{n}(r_i)(P_i)$
Standard deviation (σ)	$= \sqrt{\sum_{i=1}^{n} = (r_i - \hat{\mathrm{r}})^2 \times P_i}$
Coefficient of variation (CV)	$= \dfrac{\sigma}{\hat{\mathrm{r}}}$
Valuation of securities	
No growth dividend (P_0)	$= \dfrac{\mathrm{D}}{\mathrm{r_e}}$
Gordon Growth Model	$\mathrm{P_0} = \dfrac{\mathrm{D_0}\ (1+\mathrm{g})}{\mathrm{r_e} - \mathrm{g}}$ $\mathrm{P_0} = \dfrac{\mathrm{D1}}{\mathrm{r_e} - \mathrm{g}}$ $\mathrm{P_1} = \mathrm{P_0} \times (1+\mathrm{g})$
Rate of return	$\mathrm{r_e} = \dfrac{\mathrm{D_0}\ (1+\mathrm{g})}{\mathrm{P_0}} + \mathrm{g}$ $r_e = \dfrac{\mathrm{D1} + (\mathrm{P_0} \times \mathrm{g})}{\mathrm{P_0}}$
Dividend growth rate	$\mathrm{DGR} = \left(\dfrac{\text{Ending dividend}}{\text{Starting dividend}}\right) - 1$
Compounded annual growth rate	$\mathrm{CAGR} = \left[\left(\dfrac{\text{Ending dividend}}{\text{Starting dividend}}\right)\right]^{1/n} - 1$
Coupon payment (PMT)	$= \dfrac{\mathrm{PV} \times \mathrm{CR}}{\mathrm{n}}$
Bond value (P_0)	$= \dfrac{\mathrm{PMT1}}{(1+\mathrm{r})^1} + \dfrac{\mathrm{PMT2}}{(1+\mathrm{r})^2} + \ldots\ldots \dfrac{\mathrm{PMTn} + \mathrm{FV}}{(1+\mathrm{r})^n}$

Yield to maturity (YTM)	$= \dfrac{\text{PMT} + \dfrac{\text{FV} - \text{PV}}{\text{n}}}{\dfrac{\text{FV} + \text{PV}}{2}}$
Capital Budgeting Techniques	
Net Present value	$= \text{CF}_0 + \dfrac{\text{CF}_1}{(1+\text{k})^1} + \dfrac{\text{CF}_2}{(1+\text{k})^2} + \cdots + \dfrac{\text{CF}_\text{n}}{(1+\text{k})^\text{n}}$
Profitability index	$= \dfrac{\text{Present value of future cash flows}}{\text{initial investment}}$
Accounting rate of return (%)	$= \dfrac{\text{Average annual income}}{\text{Average /initial investment}}$
Payback period on equal cash flows (years)	$= \dfrac{\text{Initial investment}}{\text{Annual net cah inflows}}$
Internal rate of return (equal cash flows)	$= \dfrac{\text{Initial investment}}{\text{Annual net cah inflows}}$
Internal rate of return (unequal cash flows)	$= \text{R1} + \left\{ (\text{R2} - \text{R1}) \times \dfrac{\text{NPV1}}{(\text{NPV1} - \text{NPV2})} \right\}$