## Equities

## Question 1

XYZ Corporation is planning to issue 5 million shares of preferred stock. These shares will pay a perpetual dividend of $\$ 5.00$ per share. The current risk-free rate of interest is $3.33 \%$ and XYZ is able to issue new bonds at a $10 \%$ yield-to-maturity. XYZ is a high-quality company and preferred stocks of similar quality companies are yielding $5 \%$. The per share value of XYZ Corporation's preferred stock is:
a. $\$ 5.00$
b. $\$ 50.00$
c. $\$ 100.00$
d. $\$ 150.00$

Choice "c" is correct.
$\mathrm{P}=\frac{\operatorname{Div}_{1}}{\mathrm{r}_{\mathrm{P}}}=\frac{\$ 5.00}{5 \%}=\$ 100.00$
Choice "a" is incorrect. This is the perpetual dividend, not the value of the preferred shares.
Choice " b " is incorrect. This is the result if the Company's $10 \%$ debt rate is used in the denominator, but the denominator should be the yield on similar quality preferred stocks.

Choice " d " is incorrect. This is the result if the risk-free rate of interest is used in the denominator, but the denomination should be the yield on similar quality preferred stocks.

## Question 2

Dunlap Corporation is expected to earn $\$ 2.00, \$ 2.20$, and $\$ 2.40$ per share in each of the next three years. At the end of the third year, the stock is expected to sell at a current yield of $3 \%$. It is Dunlap's policy of employing a dividend payout ratio of $25 \%$. If an investor demands a $15 \%$ return for investing in Dunlap stock, how much should the investor be willing to pay for the shares today?
a. $\$ 12.68$
b. $\$ 14.40$
c. $\$ 16.67$
d. \$57.58

Choice "b" is correct.
Current yield $=\frac{\text { Dividend }}{\text { Stock Price }}$
Stock price at year $3=\frac{\text { Dividend }}{\text { Currentyield }}=\frac{25 \% \times \$ 2.40}{3 \%}=\$ 20$
$P_{C S}=\frac{0.25 \times \$ 2.00}{1.15}+\frac{0.25 \times \$ 2.20}{(1.15)^{2}}+\frac{0.25 \times \$ 2.40}{(1.15)^{3}}+\frac{\$ 20.00}{(1.15)^{3}}=\$ 14.40$

Choice "a" is incorrect. This is the price if the stock value at year three is incorrectly discounted for four periods, not three.

Choice " c ' is incorrect. This is the next year's projected dividend $(25 \% \times \$ 2.00=\$ 0.50)$ divided by the year three $3 \%$ current yield.\}

Choice " d " is incorrect. This is the price that results if earnings, not dividends, are used in calculating the price.

## Question 3

An analyst is considering acquiring a common stock that will be held for one year. The analyst expects to receive $\$ 1.50$ in dividends and $\$ 26.00$ from the sale of stock at the end of the year. Using a dividend discount model, the maximum price the analyst should pay for the stock today if the required return is $15 \%$ is closest to:
a. \$23.91
b. $\$ 22.61$
c. $\$ 25.22$
d. 27.50

Choice " a " is correct.
$P_{C S}=\frac{D i v_{1}+P_{1}}{1+r}+\frac{\$ 1.50+\$ 26.00}{1.15}=\$ 23.91$

Choice " $b$ " is incorrect. This is the value excluding the dividends, but the dividends should be included.
Choice " $c$ " is incorrect. This is the result if the dividends are incorrectly double counted.
Choice " d " is incorrect. This is the cash flows, but they should be discounted by the $15 \%$ required return.

## Question 4

Suggs Corporation currently pays a $\$ 1.00$ dividend. This dividend is expected to grow at a $5 \%$ rate for the next two years and the shares are expected to trade at a $2 \%$ yield at the end of this two-year period. If an investor requires a $10 \%$ return on Suggs' shares, how much should he or she be willing to pay for the stock?
a. $\$ 47.32$
b. $\$ 45.17$
c. $\$ 55.00$
d. $\$ 52.50$

Choice "a" is correct.
First, calculate the next two year's dividends:
$D i v_{1}=D i v_{0}(1+g D i v)=\$ 1.00(1.05)=\$ 1.05$
$D i v_{2}=\operatorname{Div}_{1}(1+g D i v)=\$ 1.05(1.05)=\$ 1.10$
Next, calculate the terminal value:
$P_{C S_{2}}=\frac{D i v_{2}}{C Y_{2}}=\frac{\$ 1.10}{2 \%}=\$ 55.00$
Finally, calculate the price today:

$$
P_{C S_{2}}=\frac{D i v_{1}}{\left(1+r_{C E}\right)}+\frac{D i v_{2}+P_{C S_{2}}}{\left(1+r_{C E}\right)^{2}}=\frac{\$ 1.05}{1.10}+\frac{\$ 1.10+\$ 55.00}{(1.10)^{2}}=\$ 47.32
$$

Choice " b " is incorrect. This is the value of all calculations are based on $\$ 1.00$ being used as dividend ${ }_{1}$ instead of the correct $\$ 1.05$.
Choice ' $c$ " is incorrect. This is the value of the stock in two years.
Choice " d " is incorrect. This is the expected year one dividend divided by the year two yield of $2 \%$.

## Question 5

Stevens Inc.'s dividend is assumed to grow at the same rate of $4 \%$ forever. The dividend is currently $\$ 2.00$ per share. The risk-free rate is currently $2 \%$, the 10 -year treasury is $6 \%$, and the investor's required return is $9 \%$. What is the value of Stevens Inc.'s common stock?
a. $\$ 33.33$
b. $\$ 40.00$
c. $\$ 41.60$
d. 52.00

Choice "c' is correct. The current dividend of $\$ 2.00$ will grow to $\$ 2.08$ next year, using the $4 \%$ growth rate. Thus the numerator is $\$ 2.08$. The denominator is the investor's required return minus the growth rate.
$P_{C S_{2}}=\frac{D i v_{1}}{r_{C e}-g}=\frac{\$ 2.00(1.04)}{.09-.04}=\$ 41.60$
Choice "a" is incorrect. This is the result if the current dividend is divided by the 10 -year Treasury rate.
Choice " b " is incorrect. This is the result if the current dividend is divided by the required rate of return less the growth rate.
Choice " d " is incorrect. This is the result if $\mathrm{r}_{\mathrm{CE}}$ is calculated by adding the risk-free rate to the 10 -year Treasury rate. The correct dividend and growth rate are used.

## Question 6 - Excel Application

DCF Valuation Model
Information for first five years
Payout ratio: 58.44\% (average last 5 years)
ROE = $16 \%$
EPS (year zero) = \$1.54
Dividend per share (year zero) = \$0.90
Risk Free rate (Long term bond rate in USD) $=4.95 \%$
Company's Beta $=0.95$
US Market Risk Premium $=4.00 \%$
Country Risk $=0 \%$
Information Terminal Value
Company's Beta $=1.00$
Expected growth $=4.00 \%$
Calculate the intrinsic value of the stock today?

## Question 7

Barcelona Plc. currently pays a $£ 1.00$ dividend. This dividend is expected to grow at a $2 \%$ rate for the next two years and the shares are expected to trade at a $4 \%$ yield at the end of this two-year period. If an investor requires an $11 \%$ return on Barcelona's shares, how much should he or she be willing to pay for the stock?

First, calculate the next two year's dividends:

$$
\begin{gathered}
\operatorname{Div}_{1}=\operatorname{Div}_{0}(1+g \operatorname{Div})=£ 1.00(1.02)=£ 1.02 \\
\operatorname{Div}_{2}=\operatorname{Div}_{0}(1+g \operatorname{Div})=£ 1.02(1.02)=£ 1.0404
\end{gathered}
$$

Next, calculate the terminal value:

$$
P_{C S_{2}}=\frac{D i v_{2}}{C Y_{2}}=\frac{1.0404}{4 \%}=£ 26.01
$$

Finally, calculate the price today:

$$
P_{C S_{0}}=\frac{\operatorname{Div}_{1}}{\left(1+r_{C E}\right)}+\frac{\operatorname{Div}_{2}}{\left(1+r_{C E}\right)^{2}}=\frac{1.02}{1.11}+\frac{1.0404+26.01}{(1.11)^{2}}=£ 22.874
$$

## Question 8

Madrid Inc.'s dividend is assumed to grow at the same rate of $2.5 \%$ forever. The dividend is currently $£ 1.40$ per share. The risk-free rate is currently $2.5 \%$, the 10 -year treasury is $3 \%$, and the investor's required return is $7 \%$. What is the value of Madrid's Inc.'s common stock?

The current dividend of $£ 1.40$ will grow to $£ 1.435$ next year, using the $2.5 \%$ growth rate. Thus the numerator is $£ 1.435$. The denominator is the investor's required return minus the growth rate.

$$
P_{C S_{2}}=\frac{\operatorname{Div}_{1}}{r_{C E}-g}=\frac{1.435}{(0.09-0.04)}=£ 28.7
$$

## Question 9

In valuing the stock of Evergreen Enterprises, an analyst compiles the following information about the firm

- Expected constant growth rate of dividends: 6\%
- Next year’s expected earnings per share: $£ 4.24$
- Expected retention ration: 62.5\%
- Required rate of return: $11 \%$

What is the value of the firm's stock today?

$$
P=\frac{4.24 \times(1-0.625)}{0.11-0.06}=£ 31.8
$$

