Solution 1 : *(7pts)*

Annual Coupon Payment = $1,000 × 8% = **$80** *0.5pt*

Step 1: Present Value of Coupon Payments*0.75pt*

$$PV\ Coupouns = 80\left(\frac{1-(1.06)^{-12}}{0.06}\right) = \$670.71$$

Step 2: Present Value of Face Value *0.75pt*

$$PVface = \frac{1000}{(1.06)^{12}} = \$497.02$$

Step 3: Add Both Values*1pt*

$$Bond\ Price = 670.71 + 497.02 = \$1,167.73$$

Part 2:

Yield to Maturity- Bond A:

$$YTM = \frac{coupon\ payement + \frac{Face\ value - Market\ price}{N}}{\frac{Per\ value + Market\ price}{2}}$$ *0.5pt*

Coupon payment= 1000 x 0.12=$ 120*0.5pt*

$$YTM = \frac{120 + \frac{\$1000 - \$920}{6}}{\frac{\$1000 + \$920}{2}} = 0.13888 = 13.89\%$$ *1pt*

Yield to Call- Bond B:

$$YTC = \frac{coupon\ payement + \frac{Call\ price - Market\ price}{N}}{\frac{Call\ price + Market\ price}{2}}$$ *0.5pt*

Coupon payment= 1000 x 0.09=$ 90*0.5pt*

$$YTC = \frac{90 + \frac{\$1050 - \$1120}{5}}{\frac{\$1050 + \$1120}{2}} = 0.07 = 7\%$$ *1pt*

Solution 2 : (7pt)

1. calculating P_0:

- D1= $1.00 (Given)
- D2 = $1.20 (Given)
- D3 = Year 2 × (1 + g_1) = $1.20 × 1.20 = $1.44
- D4 = $1.44 × 1.06 = $1.52
- D5 = $1.52 × 1.06 = $1.61
- D6 = Year 5 × (1 + g_2) = $1.61 × 1.03 = $1.65 **(4 →0. 5 pt)**

g_2 3% (annually forever from year 6)
R = 8%

➢ **Discounting All Cash Flows to Present Value (10% discount rate for Years 1–5):**

$$PV\ of\ D1 = \frac{Dt}{(1+r)^t}$$

$PV\ of\ D1 = \frac{\$1}{(1.10)} = \$0.90$

PV D2=$0.99; PV D3=$1.08; PV D4=$1.03 ;PV D5=$0.99 **(5 x 0.25 pt)**

- **Calculating the PV of Terminal value:**

$P5 = \frac{D6}{r-g} = \frac{D5(1+g)}{r-g} = \frac{1.61(1.03)}{(0.08-0.03)} = 33$ **0.75 pt**

$pv\ of\ terminal\ value = \frac{p5}{(1+r)^n} = \frac{33}{(1.10)^5} = \$20.49$ **0.5pt**

$$\boxed{instrict\ value\ (P0) = \sum_{t=1}^{n} \frac{Dt}{(1+r)^t} + \frac{Pn}{(1+r)^n}}$$ **0.5 pt**

$instrict\ value$ = $4.99 + $20.49 = $25.48 **0.5 pt**

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2. Current Market Price = $18< Intrinsic Value = $25.48
Since the intrinsic value is higher than the market price, the stock is considered ***undervalued***. **(0.5pt)**

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3. a. FCFE

FCFE = Net Income + Depreciation – Capital Expenditures – Change in Working Capital + Net Borrowing **(0.75pt)**

(FCFE) = 120 + 15 – 40 – (-10) + 5 = $110 million **(0.5pt)**

b. Cost of Equity using CAPM
Market Return (Rm) = 5% of FCFE
Rm= 5% × $110 = 5.5% **(0.25pt)**

Cost of Equity (re) = Rf + β × (Rm – Rf) **(0.5pt)**

(re) = 3.2% + 1.37 × (5.5% – 3.2%)= 6.35% **(0.5pt)**

Solution 3 :

1 → B

2 → B

3 → A

4 → D

5 → B

6 → B