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# CPA

## Advanced Financial Management

April 2026

**Level: Advanced Level**

### Question 1a

□ Advanced capital budgeting decision

Explain FOUR common capital budgeting pitfalls and briefly illustrate how each may distort investment decision making.



## ✓ Answer for Question 1a

# 1. Ignoring the Time Value of Money

## Explanation

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Some managers evaluate projects using accounting profits instead of discounted cash flows.

This ignores the fact that:

- Money received today is worth more than money received in future.

## Distortion

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Projects with slow cash inflows may appear attractive even when their present value is low.

## Illustration

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A project generating Sh.1 million after 10 years may seem attractive, yet inflation and opportunity cost significantly reduce its real value today.

# 2. Overestimating Cash Flows

## Explanation

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Managers may become overly optimistic when forecasting:

- Sales
- Cost savings



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# CPA

## Advanced Financial Management

December 2025

**Level: Advanced Level**

### Question 1b

☐ Real estate finance

Evaluate THREE investment characteristics of real estate investment trusts (REITS).



## ✓ Answer for Question 1b

### Investment Characteristics of REITs

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REITs are companies that own, operate, or finance income-generating real estate. They allow investors to invest in large-scale property portfolios without directly buying property. Their key investment characteristics include:

#### 1. Liquidity

- Unlike physical real estate, REIT shares are traded on major stock exchanges.
- Investors can buy and sell quickly, providing easy entry and exit.

#### 2. Diversification

- REITs typically hold multiple properties across sectors (e.g., office, retail, residential, industrial).
- They reduce unsystematic risk compared to owning a single property.

#### 3. Income generation (Dividend yield)

- By law (in many jurisdictions), REITs must distribute a high percentage of taxable income (often 90%) to shareholders.
- This results in regular, often high, dividend payments.

#### 4. Capital appreciation potential

- Share prices can rise if the underlying property values increase or rental income grows.
- Total return = dividends + capital gains.

#### 5. Accessibility and affordability

- Small investors can access large-scale real estate with low minimum investment (price of one share).



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# CPA

## Advanced Financial Management

August 2025

**Level: Advanced Level**

### Question 1c

▢ Advanced financing decision

Describe FOUR advantages Eurobond market offer over a domestic bond market that makes it an attractive way for companies to raise capital.



## ✓ Answer for Question 1c

# ADVANTAGES OF THE EUROBOND MARKET OVER DOMESTIC BOND MARKETS

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## 1. Regulatory and Legal Advantages

- **Less Stringent Regulation:** Eurobonds are issued outside the jurisdiction of any single country, avoiding strict domestic securities regulations
- **Lower Disclosure Requirements:** Reduced reporting and disclosure obligations compared to domestic bond issues
- **Faster Approval Process:** Bypasses lengthy domestic regulatory approvals and registration processes

## 2. Cost Advantages

- **Lower Interest Costs:** Typically offers lower coupon rates than domestic bonds due to investor demand and tax advantages
- **Reduced Issuance Costs:** Underwriting fees and other issuance expenses are generally lower
- **Tax Benefits:** Eurobonds are often issued in a way that minimizes withholding taxes for international investors

## 3. Market Access and Investor Base

- **Broader Investor Base:** Access to international investors across multiple countries
- **Diversified Funding Sources:** Reduces reliance on domestic investors and spreads funding risk
- **Global Visibility:** Enhances the company's international profile and reputation

## 4. Flexibility in Terms and Structure

- **Currency Flexibility:** Can be denominated in various currencies, allowing companies to match their currency exposure



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# CPA

## Advanced Financial Management

April 2025

**Level: Advanced Level**

### Question 2a

□ Advanced financing decision

Discuss the following theories of capital structure:

- (i) Pecking order theory.
- (ii) Static trade off theory.
- (iii) Agency effect theory.

## ✓ Answer for Question 2a

### Theories of Capital Structure

#### (i) Pecking Order Theory

- **Core Idea:** Companies prioritize their sources of financing based on the principle of least effort or resistance, similar to a "pecking order." They prefer internal financing first, then debt, and issue new equity only as a last resort.
- **Driving Force: Information Asymmetry** - Managers have more information about the company's true value and prospects than outside investors.
- **The Order of Financing:**
  1. **Internal Funds First:** Use retained earnings. No flotation costs, no disclosure, no commitment.
  2. **Debt Second:** If external funds are needed, issue debt first. Debt is less sensitive to information asymmetry than equity and signals less risk about the firm's overvaluation.
  3. **Equity Last:** Issuing new equity is seen as a negative signal. Investors believe managers issue shares only when they think the stock is overpriced, leading to a drop in share price.
- **Key Implication:** There is no target debt-to-equity ratio. The capital structure is simply the cumulative result of past financing decisions.

#### (ii) Static Trade-Off Theory

- **Core Idea:** Firms identify an **optimal capital structure** that balances the benefits and costs of debt financing to maximize the firm's value.
- **The "Trade-Off":**
  - **Benefit of Debt:** The **Tax Shield** - Interest payments on debt are tax-deductible, which reduces the effective cost of debt and increases the firm's value.
  - **Costs of Debt:**





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# CPA

## Advanced Financial Management

December 2024

**Level: Advanced Level**

### Question 2b

☐ Portfolio theory and analysis



Peter Mwangangi, an investor at the securities exchange intends to construct a minimum variance portfolio comprising the shares of two companies; Simba Ltd. and Nyati Ltd. The projected returns on the shares of the two companies under three different states of the economy are as follows:

| State of economy | Probability | Simba Ltd. (%) | Nyati Ltd. (%) |
|------------------|-------------|----------------|----------------|
| Boom             | 0.30        | 18             | 10             |
| Normal           | 0.45        | 16             | 14             |
| Recession        | 0.25        | 9              | 16             |

**Required:**

- (i) The weights of the two company's shares in the minimum variance portfolio.
- (ii) The expected return for the minimum variance portfolio.
- (iii) The standard deviation for the minimum variance portfolio.

## ✓ Answer for Question 2b

### 1. Initial Calculations

#### A. Expected Returns ( $\bar{R}$ )

The expected return is calculated as  $\bar{R} = \sum P_i R_i$ .

- Simba Ltd. ( $\bar{R}_S$ ):

$$\bar{R}_S = (0.30 \times 18) + (0.45 \times 16) + (0.25 \times 9)$$

$$\bar{R}_S = 5.40 + 7.20 + 2.25 = \mathbf{14.85\%}$$

- Nyati Ltd. ( $\bar{R}_N$ ):

$$\bar{R}_N = (0.30 \times 10) + (0.45 \times 14) + (0.25 \times 16)$$

$$\bar{R}_N = 3.00 + 6.30 + 4.00 = \mathbf{13.30\%}$$

#### B. Variance ( $\sigma^2$ )

The variance is calculated as  $\sigma^2 = \sum P_i (R_i - \bar{R})^2$ .

- Simba Ltd. ( $\sigma_S^2$ ):

$$\sigma_S^2 = 0.30(18 - 14.85)^2 + 0.45(16 - 14.85)^2 + 0.25(9 - 14.85)^2$$

$$\sigma_S^2 = 0.30(9.9225) + 0.45(1.3225) + 0.25(34.2225)$$

$$\sigma_S^2 = 2.97675 + 0.595125 + 8.555625 = \mathbf{12.1275}$$

- Nyati Ltd. ( $\sigma_N^2$ ):

$$\sigma_N^2 = 0.30(10 - 13.30)^2 + 0.45(14 - 13.30)^2 + 0.25(16 - 13.30)^2$$

$$\sigma_N^2 = 0.30(10.89) + 0.45(0.49) + 0.25(7.29)$$

$$\sigma_N^2 = 3.267 + 0.2205 + 1.8225 = \mathbf{5.31}$$

#### C. Covariance ( $\text{Cov}_{S,N}$ )

The covariance is calculated as  $\text{Cov}_{S,N} = \sum P_i (R_S - \bar{R}_S)(R_N - \bar{R}_N)$

| State | $P_i$ | $(R_S - \bar{R}_S)$ | $(R_N - \bar{R}_N)$ | $P_i(R_S - \bar{R}_S)(R_N - \bar{R}_N)$ |
|-------|-------|---------------------|---------------------|-----------------------------------------|
|-------|-------|---------------------|---------------------|-----------------------------------------|



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# CPA

## Advanced Financial Management

August 2024

**Level: Advanced Level**

### Question 3a

□ Advanced financing decision

Highlight FOUR reasons why firms make bond refinancing decisions.



## ✓ Answer for Question 3a

**Bond refinancing** (or debt refunding) is the process where a company retires existing bonds (debt) and issues new ones — usually to take advantage of better financing conditions or restructure its debt obligations.

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### 1. To Reduce Interest Costs

- When market interest rates fall, firms can replace high-interest bonds with lower-rate issues.
  - Reduces annual interest expense and overall cost of capital.
- 

### 2. To Extend the Maturity Period

- Refinancing allows rescheduling of repayment over a longer period.
  - Eases pressure on short-term cash flows and improves liquidity.
- 

### 3. To Alter Capital Structure

- Firms may refinance debt to achieve a better debt-equity balance.
  - Can improve financial leverage and optimize the firm's risk-return trade-off.
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### 4. To Raise Additional Capital

- New bond issues may provide extra funds for expansion or new projects.
  - Provides an alternative to issuing new equity (which could dilute ownership).
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### 5. To Eliminate Restrictive Covenants

- Old bonds may contain clauses limiting further borrowing, dividends, or asset sales.
  - Refinancing helps replace them with more flexible terms.
-



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# CPA

## Advanced Financial Management

April 2024

**Level: Advanced Level**

### Question 3b

▢ Mergers and acquisitions



Duet Ltd. is considering a takeover bid for Small Ltd., another company in the same industry. Small Ltd. is expected to have earnings next year of Sh.129,000,000.

If Duet Ltd. acquires Small Ltd., the expected results from Small Ltd. will be as follows:

| Year                                            | Year after acquisition |                    |                    |
|-------------------------------------------------|------------------------|--------------------|--------------------|
|                                                 | Year 1<br>Sh."000"     | Year 2<br>Sh."000" | Year 3<br>Sh."000" |
| Sales                                           | 300,000                | 420,000            | 480,000            |
| Cash costs/expenses                             | 180,000                | 240,000            | 270,000            |
| Capital allowances                              | 30,000                 | 45,000             | 60,000             |
| Interest charges                                | 15,000                 | 15,000             | 15,000             |
| Cash flows to replace assets and finance growth | 37,500                 | 45,000             | 52,000             |

**Additional information:**

1. From year 4 onwards, it is expected that the annual cash flows from Small Ltd. will increase by 4% each year in perpetuity.
2. Tax is payable at the rate of 30%. Tax is paid in the same year it falls due.
3. If Duet Ltd. acquires Small Ltd., it estimates that gearing after the acquisition will be 35% (measured as the value of its debt capital as proportion of total equity plus debt).
4. The cost of debt is 7.4% before tax. Duet Ltd. has an equity beta of 1.60.
5. The risk free rate of return is 6% and the return on the market portfolio is 11%.

**Required:**

- (i) The offer price for Small Ltd. assuming Duet Ltd. chooses to value Small Ltd. on a forward price earnings (P/E) multiple of 8 times.
- (ii) The cost of capital of Duet Ltd.

(iii) Determine the offer price for Small Ltd. using discounted free cash flow (DCF) valuation method.

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## ✓ Answer for Question 3b

### (i) Offer Price Using Forward Price-Earnings (P/E) Multiple

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The P/E multiple valuation is based on the target company's expected earnings for the next year.

Offer Price = Expected Earnings Next Year  $\times$  Forward P/E Multiple

- Expected Earnings Next Year( $E_1$ )= Sh. 129,000,000
- Forward P/E Multiple = 8 times

Offer Price = Sh. 129,000,000  $\times$  8 = Sh. 1,032,000,000

The offer price for Small Ltd. using the P/E multiple method is **Sh. 1,032,000,000.**

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### (ii) The Cost of Capital of Duet Ltd. (WACC)

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Since the acquisition will change Duet Ltd.'s financial structure, the appropriate discount rate for valuing the target firm's cash flows is the post-acquisition Weighted Average Cost of Capital (WACC).

#### 1. Calculate Cost of Equity ( $K_e$ )

We use the Capital Asset Pricing Model (CAPM):

$$K_e = R_f + \beta_e(R_m - R_f)$$

- $R_f = 6\%$  (0.06)
- $R_m = 11\%$  (0.11)



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# CPA

## Advanced Financial Management

December 2023

**Level: Advanced Level**

### Question 3c

Financial risk management

A bond with a five year to maturity has a current value of Sh.92.41, a coupon rate of 8% per annum and a current market yield of 10% per annum.

The bond will be redeemed at a par value of Sh.100.

Required:

Using the Macaulay duration method, compute the bond's duration.

## ✓ Answer for Question 3c

### 1. Bond Data

| Variable                | Value      | Notes                                                |
|-------------------------|------------|------------------------------------------------------|
| Par Value (FV)          | Sh. 100.00 | Redemption Value                                     |
| Coupon Rate             | 8% p.a.    | Coupon Payment = $8\% \times 100 = \text{Sh. } 8.00$ |
| Years to Maturity (N)   | 5 years    |                                                      |
| Market Yield (Y)        | 10% p.a.   | Used as the discount rate                            |
| Current Value ( $V_0$ ) | Sh. 92.41  | Sum of the PV of all cash flows (given)              |

### 2. Macaulay Duration Calculation

The Macaulay Duration (MacD) is calculated as:

$$\text{MacD} = \frac{\sum_{t=1}^N \frac{CF_t}{(1+Y)^t} \times t}{V_0}$$

| Year (t) | Cash Flow (CFt) | Discount Factor<br>$\frac{1}{(1+0.10)^t}$ | PV of Cash Flow (PV(CFt)) | PV(CFt) × t |
|----------|-----------------|-------------------------------------------|---------------------------|-------------|
| 1        | 8.00            | 0.9091                                    | 7.2728                    | 7.2728      |
| 2        | 8.00            | 0.8264                                    | 6.6112                    | 13.2224     |
| 3        | 8.00            | 0.7513                                    | 6.0104                    | 18.0312     |
| 4        | 8.00            | 0.6830                                    | 5.4640                    | 21.8560     |



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# CPA

## Advanced Financial Management

August 2023

**Level: Advanced Level**

### Question 4a

☐ Financial risk management



Kobe Ltd. is about to replace its existing delivery vehicle with a new design of a vehicle that offers greater fuel economy. The company estimates that replacing the existing vehicle will save running costs of Sh.200,000 per year.

There are two financing options available:

**Option 1: Borrowing funds and purchasing the vehicle**

The vehicle could be purchased for Sh.3,400,000 using a bank loan with an after tax cost of borrowing of 4% per year. The vehicle would have a useful life of four years and would have a residual value of Sh.1,400,000 at the end of that period. Straight line tax allowable depreciation is available on the vehicle. The vehicle would be subject to a special tax of Sh.60,000 at the end of each year of operation. The tax expenses are corporation tax deductible.

**Option 2: Leasing the vehicle**

The vehicle could be leased for a period of four years for a payment of Sh.600,000 per year, payable at the start of each year. The lessor will pay the special tax. Lease payments are a corporation tax deductible expense.

The firm after tax weighted average cost of capital is 8%. The company pays corporation tax at a rate of 30% one year in arrears.

**Required:**

- (i) Advise Kobe Ltd. on whether it should lease or borrow to finance the new vehicle.
- (ii) Examine THREE reasons other than possible after tax cost advantages why Kobe Ltd. may choose to lease rather than buy the new delivery vehicle.

## ✓ Answer for Question 4a

### (i) Lease vs. Borrow/Buy Decision

Discount Rate ( $r$ ) = 4% (After-tax Cost of Borrowing)

Tax Rate ( $t$ ) = 30%

Time ( $T$ ) = 4 years

Annual Savings (after-tax) = Sh. 200,000  $\times$  (1-0.30) = Sh. 140,000

| Option                                               | Workings                                                                    | Net Present Cost (NPC)     |
|------------------------------------------------------|-----------------------------------------------------------------------------|----------------------------|
| <b>Option 1: Borrow/Buy (<math>NPC_{Buy}</math>)</b> |                                                                             |                            |
| Initial cost                                         | Sh. 3,400,000 $\times$ 1.000                                                | (3,400,000)                |
| PV of TAD Tax Shield                                 | Sh. 255,000 $\times$ (0.962 + 0.925 + 0.889 + 0.855)                        | +890,205                   |
| PV of RV                                             | Sh. 1,400,000 $\times$ 0.8548 ( $DF_4$ )                                    | +1,196,720                 |
| PV of After-tax Savings                              | Sh. 140,000 $\times$ 3.6299 ( $Ann_4$ )                                     | +508,186                   |
| PV of After-tax Special Tax                          | Sh. 42,000 $\times$ 3.6299 ( $Ann_4$ )                                      | (152,456)                  |
| <b>NPC of Buying</b>                                 | <b>Sum of above</b>                                                         | <b>(Sh. 957,345)</b>       |
| <b>Option 2: Leasing (<math>NPC_{Lease}</math>)</b>  |                                                                             |                            |
| PV of After-tax Lease Payments                       | $t = 0: (600,000)$<br>$t = 1,2,3: (420,000) \times (0.962 + 0.925 + 0.889)$ | (600,000) +<br>(1,170,060) |
| PV of Final Tax Shield                               | Sh. 180,000 $\times$ 0.8548 ( $DF_4$ )                                      | +153,864                   |
| PV of After-tax Savings                              | Sh. 140,000 $\times$ 3.6299 ( $Ann_4$ )                                     | +508,186                   |
| <b>NPC of Leasing</b>                                | <b>Sum of above</b>                                                         | <b>(Sh. 1,107,980)</b>     |



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# CPA

## Advanced Financial Management

April 2023

Level: Advanced Level

### Question 4b

Financial risk management



Pine Ltd. is considering an investment in one of two corporate bonds namely A and B. Both bonds have a par value of Sh.1,000 and pay coupon interest on an annual basis.

The market price of bond A is Sh.1,079.60 with a coupon rate of 6% and is due to be redeemed at par in five years. Bond B is about to be issued with a coupon rate of 4% and will also be redeemable at par in five years.

**Additional information:**

1. Both bonds are expected to have the same gross redemption yield (yield to maturity).
  2. The yield to maturity of a company bond is determined by its credit rating.
- Pine Ltd. considers duration of the bond to be a key factor when making decisions on which bond to invest in.

**Required:**

- (i) The Macaulay duration for bond A and bond B.
- (ii) Discuss TWO limitations of duration as a measure of a bond price to changes in interest rates.



## ✓ Answer for Question 4b

### (i) Macaulay Duration

#### Bond A:

Price = 1079.60, C = 60, F = 1000, n = 5

Solve for YTM:

$$P = \sum_{t=1}^n \frac{C}{(1+y)^t} + \frac{F}{(1+y)^n}$$

Where:

- $P$  = Bond price
- $C$  = Coupon payment (Par  $\times$  Coupon Rate)
- $F$  = Face value (par value)
- $y$  = Yield to Maturity (YTM)
- $n$  = Number of periods to maturity

$$1079.60 = \sum_{t=1}^5 \frac{60}{(1+y)^t} + \frac{1000}{(1+y)^5}$$

YTM  $\approx$  4.20%

$$\begin{aligned} \text{MacDur} &= \frac{\sum t \cdot PV(CF)}{\text{Price}} \\ &= \frac{4835.26}{1079.60} \approx 4.48 \text{ years} \end{aligned}$$

#### Bond B:

C = 40, F = 1000, n = 5, y = 4.20%

Price = 989.15

$$\text{MacDur} = \frac{4577.32}{989.15} \approx 4.63 \text{ years}$$



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# CPA

## Advanced Financial Management

December 2022

**Level: Advanced Level**

### Question 4c

□ Advanced financing decision



Kilop Ltd. has decided to instal a new milling machine.

**Additional information:**

1. The machine costs Sh.28,000,000 and it would have a useful life of five years with a trade in value of Sh.5,600,000 at the end of year five.
2. The company has two options:

**Option A**

Purchase the machine for cash using a bank facility. The current rate of interest is 15% before tax.

**Option B**

Lease the machine under an agreement which would entail payment of Sh.6,720,000 at the end of each year for the next five years.

3. The corporate rate of tax is 30%.
4. Capital allowance is given at the rate of 100% in year one if the machine is purchased.
5. Tax is payable one year in arrears.

**Required:**

Advise Kilop Ltd. whether to lease or buy the machine.

## ✓ Answer for Question 4c

### Discount Rate

After-tax cost of borrowing:

$$k = 15\% \times (1 - 0.30) = \mathbf{10.5\%}$$

### Option A: NPC<sub>Buy</sub> (Sh. 28M)

#### Capital Allowance (CA) Tax Shield

CA is 100% in Year 1. Tax shield is received one year in arrears (Year 2).

$$\text{Sh. } 28,000,000 \times 30\% = \mathbf{8,400,000}$$

#### Trade-in Value and Tax Effect

The machine is sold for Sh. 5,600,000 in Year 5. Since 100% CA was claimed, the Written Down Value (WDV) is zero. This sale generates a taxable Balancing Charge.

$$\text{Sh. } 5,600,000 \times 30\% = \mathbf{(1,680,000)}$$

| Year (t) | Flow (Sh.)                   | PV Factor<br>@ 10.5% | PV (Sh.)     |
|----------|------------------------------|----------------------|--------------|
| 0        | (28,000,000)                 | 1.0000               | (28,000,000) |
| 2        | 8,400,000 (CA Shield)        | 0.8190               | 6,879,600    |
| 5        | 5,600,000 (Trade-in)         | 0.6070               | 3,399,200    |
| 6        | (1,680,000) (Tax on Salvage) | 0.5493               | (922,824)    |



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# CPA

## Advanced Financial Management

August 2022

**Level: Advanced Level**

### Question 5a

□ International financial management

Summarise four objectives of the International Monetary Fund (IMF).



## ✓ Answer for Question 5a

### **1. Promoting International Monetary Cooperation**

To provide a permanent institution for consultation and collaboration on international monetary problems, fostering a cooperative approach to global economic issues.

### **2. Facilitating the Balanced Expansion of International Trade**

To contribute to the growth of global trade, thereby promoting high levels of employment and real income and the development of productive resources. This is achieved by ensuring currency convertibility and exchange rate stability.

### **3. Promoting Exchange Rate Stability and Orderly Exchange Arrangements**

To avoid competitive currency devaluations and maintain stability in the foreign exchange market, which is essential for the smooth flow of trade and capital.

### **4. Assisting in the Establishment of a Multilateral System of Payments**

To help eliminate foreign exchange restrictions that hinder world trade, making currencies freely convertible for current account transactions.

### **5. Building Confidence by Making Financial Resources Available**

To provide temporary financial assistance and resources to member countries experiencing balance of payments problems. This gives members the confidence to correct maladjustments in their balance of payments without resorting to measures that would destroy national or international prosperity.



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# CPA

## Advanced Financial Management

April 2022

**Level: Advanced Level**

### Question 5b

□ Advanced capital budgeting decision



Popo Ltd. is considering a project requiring an initial cash outlay of Sh.150 million. The project's life is five years after which there would be no expected salvage value. The possible incremental after tax cash inflows and associated probabilities of occurrence are as follows:

| Probability | Year 1<br>Net cash inflows<br>Sh. "million" | Conditional<br>probability | Year 2—5<br>Net cash flows<br>Sh. "million" |
|-------------|---------------------------------------------|----------------------------|---------------------------------------------|
| 0.50        | 40                                          | 0.20                       | 40                                          |
|             |                                             | 0.60                       | 50                                          |
|             |                                             | 0.20                       | 60                                          |
| 0.50        | 45                                          | 0.10                       | 55                                          |
|             |                                             | 0.70                       | 60                                          |
|             |                                             | 0.20                       | 65                                          |

The company's required rate of return for this investment is 12%.

**Required:**

- Using decision tree analysis, compute the Expected Net Present Value (ENPV) of the project.
- Compute the standard deviation of the Expected Net Present Value in (b) (i) above.



## ✓ Answer for Question 5b

### (i). Cash flow scenarios and joint probabilities

| Branch | Year 1 CF<br>(Sh. million) | Years 2-5 CF<br>(Sh. million) | Probability<br>(p) |
|--------|----------------------------|-------------------------------|--------------------|
| A1     | 40                         | 40                            | 0.10               |
| A2     | 40                         | 50                            | 0.30               |
| A3     | 40                         | 60                            | 0.10               |
| B1     | 45                         | 55                            | 0.05               |
| B2     | 45                         | 60                            | 0.35               |
| B3     | 45                         | 65                            | 0.10               |

### Present value factors

- $PVF_{Y1} = \frac{1}{1.12} = 0.892857$

- Annuity factor for Years 2-5 (4 years) at 12%:

$$AF_{2-5} = \frac{1 - (1.12)^{-4}}{0.12} = 3.037349$$

- Present value (at Year 0) of annuity starting Year 2:

$$PV_{Y0} = \frac{AF_{2-5}}{1.12} = \frac{3.037349}{1.12} = 2.711919$$

### NPV for each branch

$$NPV = -150 + (CF_1 \times 0.892857) + (CF_{2-5} \times 2.711919)$$