CERTIFIED PUBLIC ACCOUNTANT

INTERMEDIATE LEVEL EXAMINATIONS

I1.1: MANAGERIAL FINANCE

DATE: THURSDAY 28, AUGUST 2025

MARKING GUIDE AND MODEL ANSWERS

SECTION A

QUESTION ONE

Marking Guide

		Details		Description	Marks	Total Marks
Q1	a)	Asset Based Model	Bad Debt Adjustment	0.5 Mark Awarded	0.5	
			Fair Value adjustment on PPE	0.5 Mark Awarded	0.5	
			Adjusted Total Asset	1 Mark	1	
			Goodwill Adjustment	0.5 Mark Awarded	0.5	
			Less total Liabilities	0.5 Mark Awarded	0.5	
			Market Value per share under Asset based Model	1 Mark Awarded	1	
		Price Earnings ratio	Computation of EPS	1 Mark Awarded	1	
			Adjusted P/e Ratio	1 Mark Awarded	1	
			Market Value per share under Price Earnings Ratio	1 Mark Awarded	1	
		Dividend Valuation Model	Growth in Dividend	0.5 Mark for Formula, 1 Mark for Computation	1.5	
			Market Value per share under Dividend Valuation Model	0.5 Mark for Formula, 1 Mark for Computation	1.5	
	b)	Dividend Policies	Three Dividend Policies	0.5 Mark for state, 1.5 Mark for Explanation (Maximum 2 Points per policies of 6 Marks)	6	
	c)	Dividend Ratio	Dividend Cover ratio	0.5 Mark for Formula, 1.5 Mark for Computation	2	
			Dividend Payout ratio	0.5 Mark for Formula, 1.5 Mark for Computation	2	
Total Marks						**20**

Model Answer

a)

i) Asset based model	
Total Asset	660,000
Less bad Debt	(10,000)
Add: Fair Value adjustment on PPE	50,000
Adjusted Total Asset	**700,000**
Less Goodwill	(20,000)
Less Total Liabilities	(240,000)
Net Asset Value to equity	**440,000**
Number of shares	3,800
Value per share (Value of Equity / Number of shares)	**116**

Workings:
Bad debt not recovered: FRW 10,000
Fair Value adjustment to PPE = 400,000 – 450,000= 50,000
Number of shares
Ordinary share capital = 380,000
Per value= 100
Number of shares= 380,000 / 100= 3,800

ii) Price/ Earnings ratio

Price/ Earnings ratio= $\frac{Market\ Price\ per\ share}{Earning\ per\ share}$

Market Price per share = P/E ratio * EPS

Earnings per share= $\frac{Profit\ after\ tax}{Number\ of\ hare}$= $\frac{115{,}500}{3{,}800}$ = 30

When an appropriate P/E has been selected this should then be reduced by 20% - 30% to recognize that, shares in unquoted companies are more risky and less marketable than those of quoted companies.

Adjusted P/E Ratio= R/E RATIO *70%
Adjusted P/E Ratio= 8 *70%= 5.6
Market Price per share = Adjusted P/E ratio * EPS
Market Price per share = 5.6 * 30= 170

iii) Dividend Valuation Model

Growth in Dividend= $\sqrt[n]{\frac{Current\ Dividend}{Historical\ Dividend}}$ -1 = $\sqrt[4]{\frac{15}{10}}$- 1= 11%

Ke= $\frac{Do(1+g)}{MPS} + g$

Ke-g = $\frac{Do(1+g)}{MPS}$

MPS= $\frac{Do(1+g)}{Ke-g}$ = $\frac{15(1+0.11)}{0.2-0.11}$ = **185**

b) Briefly discuss three dividend polices to Board member of GASHUMBA Ltd to be used for pay Dividend and attract potential investors.

1. **Constant payout ratio** This is where the firm will pay a fixed dividend rate e.g. 40% of earnings. The DPS would therefore fluctuate as the earnings per share changes. Dividends are directly dependent on the firm's earnings ability and if no profits are made no dividend is paid. This policy creates uncertainty to ordinary shareholders especially who rely on dividend income and they might demand a higher required rate of return.

2. **Constant amount per share (fixed D.P.S.)** The DPS is fixed in amount irrespective of the earnings level. This creates certainty and is therefore preferred by shareholders who have a high reliance on dividend income. It protects the firm from periods of low earnings by fixing, DPS at a low level. This policy treats all shareholders like preferred shareholders by giving a fixed return. The DPS could be increased to a higher level if earnings appear relatively permanent and sustainable.

3. **Constant DPS plus Extra/Surplus**: Under this policy a constant DPS is paid every year. However extra dividends are paid in years of supernormal earnings. It gives the firm flexibility to increase dividends when earnings are high and the shareholders are given a chance to participate in super normal earnings The extra dividends are given in such a way that it is not perceived as a commitment by the firm to continue the extra dividend in the future. It is applied by the firms whose earnings are highly volatile e.g agricultural sector.

4. **Residual dividend policy:** Under this policy dividend is paid out of earnings left over after investment decisions have been financed. Dividend will only be paid if there are no profitable investment opportunities available. The policy is consistent with shareholders wealth maximization.

c) Ratio

i) Dividend Cover ratio= $\frac{Earning\ Per\ share}{Dividend\ per\ share}$= $\frac{30}{15}$= 2

Indicate the number of times dividends can be paid out of earnings of shareholders. The higher the DPS the lower the dividend cover.

ii) Dividend Payout ratio= $\frac{DPS}{EPS} * 100\%$= $\frac{15}{30}$ * 100% = 50%

Shows the proportion of Earnings which was paid out as dividends and how much was retained.

QUESTION TWO

Marking Guide

		Details		**Description**	**Marks**	**Total Marks**
Q2	a)	PROJECT A (NPV)	Contribution or Profit Before Tax	0.5 Marck Each Maximum 2.5 Mark for Line	2.5	
			Tax payment one years in arrears	0.5 Marck Each Maximum 2.5 Mark for Line	2.5	
			Tax saving from Capital allowance	0.5 Marck Each Maximum 2.5 Mark for Line	2.5	
			Initial Investment	0.5 Mark Awarded	0.5	
			Record of Scrap Value	0.5 Mark Awarded	0.5	
			Treatment of Working Capital	0.5 Marck Each Maximum 3 Mark for correct Answer for Line	3	
			Total of Cash flow	N/A		
			Computation of Nominal Cost of capital	0.5 Mark Awarded	0.5	
			Positive Net Present Value	0.5 Mark Awarded	0.5	
		PROJECT B (NPV)	Net cash saving	0.5 Mark Each from Year 2 to 5 Maximum 2 Mark	2	
			Initial Investment	0.5 Mark Awarded	0.5	
			Positive Net Present Value	0.5 Mark Awarded	0.5	
		Comment		0.5 Mark Awarded	0.5	
	b)	Capital Rationing	Computation of Profitability index	0.5 Mark Each, Maximum for both 1 Mark	1	

			Ranking of Project based on PI	0.5 Mark Awarded	0.5	
			If Project are Divisible	0.5 Mark Awarded to selected project and 1 Mark for balancing Figure	1.5	
			If None of Project are Divisible	1 Mark for correct Project	1	
	c)	Asset Replacement	Present Value of Cashflow of each cycle	1 Mark for correct Answer for Each cycle, Maximum 3	3	
			Equivalent Annual Cost for each Cycle	0.5 Mark for correct Answer for Each cycle, Maximum 1.5 Mark	1.5	
			comment	0.5 Mark for correct Answer for Line	0.5	
Total Marks						**25**

Model Answer

NPV Analysis (Project A)

Details		**Year 0**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Sale revenue			95,000,000	118,450,000	185,657,500	218,545,400	287,004,747	
Less Variable cost			(28,500,000)	(35,880,000)	(56,784,000)	(67,491,840)	(89,494,180)	
Contribution or Profit before Tax			**66,500,000**	**82,570,000**	**128,873,500**	**151,053,560**	**197,510,567**	
Tax	30%			(19,950,000)	(24,771,000)	(38,662,050)	(45,316,068)	(59,253,170)
Add Tax saving on Capital allowance				18,750,000	14,062,500	10,546,875	7,910,156	16,230,469
Initial Investment		(250,000,000)						
Scrap Value							25,000,000	
Working capital		(50,000,000)	(2,500,000)	(2,625,000)	(2,756,250)	(2,894,063)	60,775,313	
Cashflow		**(300,000,000)**	**64,000,000**	**78,745,000**	**115,408,750**	**120,044,323**	**245,879,967**	**43,022,701**
Discounting Factor	12%	1	0.893	0.797	0.712	0.636	0.567	0.507

Details		**Year 0**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Present Value of Cashflow		**(300,000,000)**	**57,152,000**	**62,759,765**	**82,171,030**	**76,348,189**	**139,413,942**	**- 21,812,510**
Net Present Value		**96,032,416**						

Working 1

		Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Annual Demand (sq meter)			19,000	23,000	35,000	40,000	51,000
Salling price (sq meter)	3%		5,000	5,150	5,305	5,464	5,628
sale revenue			**95,000,000**	**118,450,000**	**185,657,500**	**218,545,400**	**287,004,747**

Working 2

		Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Annual Demand (sq meter)			19,000	23,000	35,000	40,000	51,000
Variable cost per (sq meter)	4%		1,500	1,560	1,622	1,687	1,755
Variable cost			**28,500,000**	**35,880,000**	**56,784,000**	**67,491,840**	**89,494,180**

Working 3

Tax saving on Capital allowance

	COST/ Reduced Balance	Depreciation rate	Depreciation Amount	Tax rate	Tax saving	Timing
Year 1	250,000,000	25%	62,500,000	30%	18,750,000	Year 2
Year 2	187,500,000	25%	46,875,000	30%	14,062,500	Year 3
Year 3	140,625,000	25%	35,156,250	30%	10,546,875	Year 4
Year 4	105,468,750	25%	26,367,188	30%	7,910,156	Year 5
Year 5	79,101,563		**54,101,563**	30%	16,230,469	Year 6
Scrap Value	(25,000,000)					
Balance figure	**54,101,563**					

Working 4

		Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Working Capital with inflation	5%		50,000,000	52,500,000	55,125,000	57,881,250	60,775,313
Timing working capital required at start of each year		50,000,000	52,500,000	55,125,000	57,881,250	60,775,313	
incremental in working capital		**- 50,000,000**	**- 2,500,000**	**- 2,625,000**	**- 2,756,250**	**- 2,894,063**	**60,775,313**

NB: Those cashflow spent over last wo years was Sunk cost and its was irrelevant

working 5

fisher formula

(1+ Nominal Rate) = (1+Real rate) * (1 + inflation Rate)

Nominal Rate = [(1+ 5.7%) * (1 + 6%)]- 1= 12%

Project B

Details		Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Net Cash Benefit with inflation rate	9%		80,000,000	87,200,000	95,048,000	103,602,320	112,926,529
Initial Investment		(250,000,000)					
Total Cashflow		(250,000,000)	**80,000,000**	**87,200,000**	**95,048,000**	**103,602,320**	**112,926,529**
Discounting Factor	12%	1	0.893	0.797	0.712	0.636	0.567
Present Value of Cashflow		(250,000,000)	71,440,000	69,498,400	67,674,176	65,891,076	64,029,342
Net Present Value		**88,532,993**					

Comment

Both project A & B has Positive NPV, If Company has Sufficient capital required Both can be undertaken due to it can maximize the shareholders wealth

i) Capital Rationing

Project	Investment required	NPV	Profitability Index	Ranking According to NPV	Ranking According to PI
Project A	300,000,000	96,032,416	32%	1	2
Project B	250,000,000	88,532,993	35%	2	1

IF Project are Divisible	Investment	NPV
Project B	250,000,000	88,532,993
Project A (balance)	150,000,000	48,016,208
Total investment available	**400,000,000**	**136,549,201**

If Project are not Divisible

we only look for project that Maximize return as absolute figure (in terms of cash), we will choose project A with NPV of FRW 96,032,416

ii) Asset Replacement

Replace Every 1 Year

Details	**Year 0**	**year 1**
Cost	(25,000,000)	
Runing cost		(3,500,000)
Resale value		7,500,000
Total Cashflow	**(25,000,000)**	**4,000,000**
DF (12%)	1	0.893

PV OF Cashflow	(25,000,000)	3,572,000
PV OF Cost over Replace every year	**(21,428,000)**	
Equivalent Annual Cost	**(23,995,521)**	

Replace Every 2 Year

Details	Year 0	year 1	year 2
Cost	(25,000,000)		
Runing cost		(3,500,000)	(8,000,000)
Resale value			5,000,000
Total Cashflow	(25,000,000)	(3,500,000)	**(3,000,000)**
DF (12%)	1	0.893	0.797
PV OF Cashflow	(25,000,000)	(3,125,500)	**(2,391,000)**
PV OF Cost over Replace every 2 year	(30,516,500)		
Equivalent Annual Cost	(18,057,100)		

Replace Every 3 Year

Details	Year 0	year 1	year 2	year 3
Cost	(25,000,000)			
Runing cost		(3,500,000)	(8,000,000)	(12,500,000)
Resale value				2,500,000
Total Cashflow	(25,000,000)	**(3,500,000)**	**(8,000,000)**	(10,000,000)
DF (12%)	1	0.893	0.797	0.712
PV OF Cashflow	(25,000,000)	(3,125,500)	(6,376,000)	(7,120,000)
PV OF Cost over Replace every 3 year	(41,621,500)			
Equivalent Annual Cost	(17,327,852)			

The optimum replacement cycle is every three years as this has the lowest Equivalent annual cost

QUESTION THREE

Marking Guide

		Details	Description	Marks	Total Marks
Q3	**a)**	The benefits of investing through the capital markets	Award 0.5 Marks for outline 0.5 Marks for Explanation,1 for Each, 5 Mark Maximum	**5**	
	b)	**stages of investment by a venture capitalist**	Award 0.5 Marks for outline 0.5 Marks for Explanation 1 for Each, 5 Mark Maximum	**5**	
	c)	**Five potential causes of Agency Problem and Possible Solution**	Award 0**.5 Mark for Each cause, Maximum 2.5 Marks**	**2.5**	
			Award 0**.5 Mark for Each Solution, Maximum 2.5 Marks**	**2.5**	
Total Marks					**15**

Model Answer

a) The benefits of investing through the capital markets

Savings: Investing in securities that are listed in the Capital or Stock market encourages investors to accumulate their savings in small amounts over time

Income: Investment in the stock market provides a source of income. Shares pay dividends when companies declared profits and decide to distribute part of the profits to shareholders. Bonds pay an interest income to the bondholders. Sometimes the income earned from listed securities is higher than interest earned from the money or banking sector.

Wealth or Capital gain: Whenever the prices of securities listed in the market go up, the value of the investment of the holders of those securities increases. This is called capital gain and is an important way of growing wealth through the stock market. It is important to note that a one –off investment in the Capital market does not make sense. It is therefore the accumulative investment over time that creates opportunities for growth in wealth through the Capital Market.

Securities as Collateral: Listed securities are easily acceptable as collateral against loans from financial institutions.

Liquidity: Liquidity is the ability to convert shares or bonds into cash by selling within the shortest time possible without losing much value. When one needs funds urgently, listed securities could be very useful because they are more liquid than most other forms of assets.

b) **STAGES OF INVESTMENT**

The various stages of investment by a venture capitalist can be defined as follows:

• **Seed Capital** – finance provided to enable a business concept to be developed, perhaps involving production of prototypes and additional research, prior to bringing the product to market.

• **Start-Up** – finance for product development and initial marketing. Companies may be in the process of being set up or may have been in business for a short time but have not sold their product commercially.

• **Expansion** – capital provided for the growth of a company which is breaking even or possibly, trading profitably. Funds may be used to finance increased production capacity, market or product development and/or provide additional working capital. Capital for "turnaround" situations is also included in this category.

• **Management Buy Out (MBO) –** funds provided to enable current operating management and investors to acquire an existing business.

• **Management Buy In (MBI) –** funds provided to enable a manager or group of managers from outside the company to buy into the company

c) The actions of the managers are in conflict with the interest of shareholders will be caused by:

• **Incentive Problem** Managers may have fixed salary and they may have no incentive to work hard and maximize shareholders wealth. This is because irrespective of the profits they make, their reward is fixed. They will therefore maximize leisure and work less which is against the interest of the shareholders

• **Consumption of "Perquisites**" Prerequisites refer to the high salaries and generous fringe benefits which the directors might award themselves. This will constitute directors' remuneration which will reduce the dividends paid to the ordinary shareholders. Therefore, the consumption of perquisites is against the interest of shareholders since it reduces their wealth.

• **Different Risk-profile** Shareholders will usually prefer high-risk-high return investments since they are diversified i.e they have many investments and the collapse of one firm may have insignificant effects on their overall wealth. Managers on the other hand, will prefer low risk-low return investment since they have a personal fear of losing their jobs if the projects collapse. (Human capital is not diversifiable). This difference in risk profile is a source of conflict of interest since shareholders will forego some profits when low return projects are undertaken.

• **Different Evaluation Horizons** Managers might undertake projects which are profitable in short-run. Shareholders on the other hand evaluate investments in long-run horizon which is consistent with the going concern aspect of the firm. The conflict will therefore occur where management pursue short-term profitability while shareholders prefer long term profitability.

• **Management Buy Out (MBO)** The board of directors may attempt to acquire the business of the principal. This is equivalent to the agent buying the firm which belongs to the shareholders. This is inconsistent with the agency relationship and contract between the shareholders and the managers.

• **Pursuing power and self-esteem goals** This is called "empire building" to enlarge the firm through mergers and acquisitions hence increase in the rewards of managers.

• **Creative Accounting** This involves the use of accounting policies to report high profits e.g stock valuation methods, depreciation methods recognizing profits immediately in long term construction contracts etc.

Solutions to Shareholders and Management Conflict of Interest Conflicts between shareholders and management may be resolved as follows:

1. **Pegging/attaching managerial compensation to performance** This will involve restructuring the remuneration scheme of the firm in order to enhance the alignments/harmonization of the interest of the shareholders with those of the management e.g. managers may be given commissions, bonus etc. for superior performance of the firm.
2. **Threat of firing** This is where there is a possibility of firing the entire management team by the shareholders due to poor performance. Management of companies have been fired by the shareholders who have the right to hire and fire the top executive officers e.g the entire management team of Unga Group, IBM, G.M. have been fired by shareholders.
3. **The Threat of Hostile Takeover** If the shares of the firm are undervalued due to poor performance and mismanagement. Shareholders can threaten to sell their shares to competitors. In this case the management team is fired and those who stay on can loose their control and influence in the new firm. This threat is adequate to give incentive to management to avoid conflict of interest.
4. **Direct Intervention by the Shareholders**: Shareholders may intervene as follows:
    - Insist on a more independent board of directors.
    - By sponsoring a proposal to be voted at the AGM
    - Making recommendations to the management on how the firm should be run.

5. Managers should have voluntary code of practice, which would guide them in the performance of their duties.
6. **Executive Share Options Plans** In a share option scheme, selected employees can be given a number of share options, each of which gives the holder the right after a certain date to subscribe for shares in the company at a fixed price.

SECTION B

QUESTION FOUR

Marking Guide

		Details	Description	Marks	Total Marks
Q4	**a)**	i) Cost of Equity.	0.5 for Formula of Cost of Euty, 1.5 Mark for Computation of Cost of Equity	**2**	
		ii) Cost of preferred Shares	0.5 for Formula of Cost of Preference,1.5 Mark for Computation of Cost of Preference Stock	**2**	
		iii) Cost of redeemable Loan Note.	1.5 Mark for Computation of PV of Correct Cash flow, 0.5 Mark for NPV for different DF (Max 4 Mark), 0.5 for Formula of IRR,1.5 Mark for Computation of Cost of Redeemable debt	**6**	
		iv) Weighted average Cost of Capital	1.5 Mark for updated Market Value of source of Finance, 1.5 mark for Weighting and 1 Mark for Computation of WACC	**4**	
	b)	circumstances under which the current WACC can be used in investment appraisal.	Award 2 Marks of each Point 0.5 Mark for outline, 1.5 Marks for Correct Explanation (Maximum Six Points)	**6**	
Total Marks					**20**

Model Answer

i) Cost of Equity

Ke= $\frac{Do(1+g)}{MPS-ex\ Div} + g = \frac{50}{300} + 6\% =$ **22.67%**

Current Dividend = Do
D1= Do(1+g)
Expected Dividend D1= 50
Growth in Dividend g= 6%

ii) Cost of Preference

Kpr= $\frac{Dividend}{MP\ of\ Preference\ Ex\ div}$ = $\frac{15}{130}$ = **11.54%**

Dividend Paid to Preference shareholder= FRW 100* 15%= 15
Market Price of Preference Share excluding Dividend= 130

iii) Cost of redeemable debt

	Details	Cashflow	DF (10%)	PV	DF (15%)	PV
Year 0	Market Value	-90	1	-90	1	-90
Year (1 to 5)	interest * (1-tax)	7	3.791	26.537	3.352	23.464
Year 5	Redeemable Value	113	0.621	70.173	0.497	56.161
Net Present Value				6.71		-10.375

Interest paid to Debtholder
Per Value= FRW 100
Interest rate= 10%
Interest paid after tax = (FRW 100 *10%) * (1-TAX) = 7

Redemption Value

Per Value	100
add: Premium of 13% of Per Value	13
Redemption Value	**113**

Then after we use Internal rate of return formula to get cost of Redeemable debt

IRR= LDF + (HDF-LDF) $\frac{NPV\ @\ LDF}{NPV\ @\ LDH - NPV@HDF}$

IRR= 10%+ [(15% - 10%) $\frac{6.71}{6.71-(-10.38)}$] = 12%

iv) Computation of Weighted Average Cost of Capital

First, we determine the Market value of each source of Finance

Details	**BV of sources of Finance**	**Per Value**	**Number of Share**	**MPS**	**Market Value**
Ordinary Share	13,000,000	100	130,000	300	39,000,000
15% preference share	9,500,000	100	95,000	130	12,350,000
10% Loan Notes	7,000,000	100	70,000	90	6,300,000
	29,500,000				**57,650,000**

Details	Market Value	Weighting	Cost of source of Finance	Weighting * Cost of Finance
Ordinary Share	39,000,000	68%	22.67%	15.3%
15% preference share	12,350,000	21%	11.54%	2.5%
10% Loan Notes	6,300,000	11%	12%	1.31%
	57,650,000			**19%**

WACC= 19%

v) Circumstance under which current WACC can be used under investment appraisal

The weighted average cost of capital is the average cost of the company's finance and represent the average return required as compensation for the risks of the investments

Business risk: The WACC can only be used if the Business risk of the proposed investment is similar to the business risk of existing operations. This would involve the expansion of existing business.

If the proposed investment is in a different type of business, a project-specific cost of capital should be used which reflects the change risk. The techniques to use involves changing the beta in the capital asset pricing model.

Finance Risk: The WACC can only used where the existing capital structure will be maintained. This means that the finance for the project will be raised in the same proportions as the existing finance.

The finance that is raised to fund a new investment might substantially change the capital structure and the alleged finance risk of investing in the company. If this is the case, again a project-specific cost of capital can be calculated which reflects the changing finance risk

Size of the project: The WACC can only be used if the project being appraised id small relatives to the company. If the project is large in scale, it is more likely to cause a change in risk and make WACC inappropriate.

QUESTION FIVE

Marking Guide

		Details		Description	Marks	Total Marks
Q5	a)	Cash Flow Forecast	Total Cash receipt each Month	Awarded 0.5 Mark form Jan to April (Max 2 Mark)	2	
			Computation of Cost of Materials	Awarded 0.5 Mark form Jan to April (Max 2 Mark)	2	
			Salaries Cost Working	Awarded 0.5 Mark form Jan to April (Max 2 Mark)	2	
			Insurance	Awarded 0.5 Mark form Jan to April (Max 2 Mark)	2	
			Positing of Tax payment		0.5	
			Positing of New vehicle Purchase		0.5	
			Correct Cash Balance at end of April	Awarded 1 Marks	1	
	b)	i)	EOQ	Awarded 0.5 Mark for Formula, 1.5 Mark for Computation	2	
		ii)	hording Cost & Ordering Cost	Awarded 0.5 Mark for Formula, 0.5 Mark for Computation for Each	2	
		iii)	Total Inventory Cost	Awarded 0.5 Mark for Formula, 0.5 Mark for Computation	1	
		iv)	Total Cost with Discount	Award 0.5 each for Holding cost, ordering, Purchase cost and Total cost with discount Maximum 2 Marks	2	
	c)		Define Overtrading	Award 1 Marks	1	

			Four Symptoms of Overtrading	Award 0.5 Marks for each	2	
Total Marks						**20**

Model Answer

cash flow forecast from January to April 2025

Cash receipt	**Jan-25**	**Feb-25**	**Mar-25**	**Apr-25**
Sale revenue	332,500,000	367,500,000	271,250,000	236,250,000
Sale of old Vehicle		15,000,000		
Total Receipt	**332,500,000**	**382,500,000**	**271,250,000**	**236,250,000**
Payment				
Construction Material	84,000,000	140,000,000	168,000,000	98,000,000
Salaries of employee	15,000,000	18,000,000	10,500,000	7,500,000
Insurance cost	5,000,000	6,000,000	3,500,000	2,500,000
Tax payment			25,000,000	
Purchase of new Vehicles				55,000,000
Total Payment	**104,000,000**	**164,000,000**	**207,000,000**	**163,000,000**
Receipt less payment	228,500,000	218,500,000	64,250,000	73,250,000
Balance b\f	0	228,500,000	447,000,000	511,250,000
Balance c\f	**228,500,000**	**447,000,000**	**511,250,000**	**584,500,000**

Working 1

Details		**Nov-24**	**Dec-24**	**Jan-25**	**Feb-25**	**Mar-25**	**Apr-25**	**May-25**
House sold		8	6	10	12	7	5	
selling Price per house		35,000,000	35,000,000	35,000,000	35,000,000	35,000,000	35,000,000	

sale revenue		**280,000,000**	**210,000,000**	**350,000,000**	**420,000,000**	**245,000,000**	**175,000,000**	
Cash sales	75%	210,000,000	157,500,000	262,500,000	315,000,000	183,750,000	131,250,000	
Credit sales received after 2 months	25%			70,000,000	52,500,000	87,500,000	105,000,000	61,250,000
Cash Received Each Month		**210,000,000**	**157,500,000**	**332,500,000**	**367,500,000**	**271,250,000**	**236,250,000**	

Working 2

Details		Nov-24	Dec-24	Jan-25	Feb-25	Mar-25	Apr-25	May-25
Sale revenue		280,000,000	210,000,000	350,000,000	420,000,000	245,000,000	175,000,000	
Construction material equal to 40% of total sales paid after on month	40%		112,000,000	84,000,000	140,000,000	168,000,000	98,000,000	

Working 3

Details	Nov-24	Dec-24	Jan-25	Feb-25	Mar-25	Apr-25
House sold	8	6	10	12	7	5
salaries per house	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000
Total salaries paid	**12,000,000**	**9,000,000**	**15,000,000**	**18,000,000**	**10,500,000**	**7,500,000**

Working 4

Insurance Cost

Details	Nov-24	Dec-24	Jan-25	Feb-25	Mar-25	Apr-25
House sold	8	6	10	12	7	5
Insurance cost per house	500,000	500,000	500,000	500,000	500,000	500,000
Total Insurance cost	**4,000,000**	**3,000,000**	**5,000,000**	**6,000,000**	**3,500,000**	**2,500,000**

b)

i) **Economic Order Quantity (Q) =** $\sqrt{\frac{2*Co*D}{Ch}} = = \sqrt{\frac{2*100,000*10,000}{500}}$ **= 2,000 Sucks of Cement**

D= 10,000 sucks

Co= FWR 100,000

Ch= FRW 10,000 *5% = 500

Co= Cost of Placing Order
Ch= Holding cost per items of inventory for one period
Q= Re-order Quantity

ii) **Holding Cost =** $\frac{Q}{2}$ * Ch = $\frac{2,000}{2}$ * 500 = FRW 500,000

Ordering Cost = $\frac{Co* D}{Q} = \frac{FRW\ 100,000 * 10,000}{2,000}$ = FRW 500,000

iii) Total Inventory Cost= Purchase Cost + Holding Cost + Ordering Cost

Purchase Cost= Cost per Suck * Annual Demand

Purchase Cost= FRW 10,000 * 10,000 = FRW 100,000,000

Total Inventory Cost= FRW 100,000,000 + FRW 500,000 + FRW 500,000 = FRW 101,000,000

iv) Taking Discount

Purchase price with a Discount = FRW 10,000 * 95%= FRW 9,500

Holding Cost per Suck= FWR 9,500 * 5%= FRW 475

Holding Cost = $\frac{Q}{2}$ * Ch = $\frac{3{,}000}{2}$ * 475 = FRW 712,500

Ordering Cost = $= \frac{Co * D}{Q} = \frac{FRW\ 100{,}000 * 10{,}000}{3{,}000}$ = FRW 333,333

Purchase Cost= FRW 9,500 * 10,000 = **FRW 95,000,000**

Total Inventory Cost= **FRW 95,000,000**+ FRW 712,500 + FRW 333,333= FRW 96,045,833

The Cheapest Option is to order 3,00 Suck of Cement, the discount offer have to be accepted

c) Overtrading/Undercapitalization

This occurs where a company is attempting to expand rapidly but doesn't have sufficient long-term capital to finance the expansion. Through overtrading, a potentially profitable business can quite easily go bankrupt because of insufficient cash.

Output increases are often obtained by more intensive use of existing fixed assets and growth is financed by more intensive use of working capital. Overtrading can lead to liquidity problems that can cause serious difficulties if they are not dealt with promptly.

Symptoms of Overtrading

• Turnover increases rapidly

• The volume of current assets increases faster than sales (fixed assets may also increase)

• Increase in stock days and debtor days

• The increase in assets is financed by increases in short-term funds such as creditors and bank overdrafts

• The current and quick ratios decline dramatically and Current Assets will be far lower than Current Liabilities

• The cash flow position is heading in a disastrous direction

QUESTION SIX

Marking Guide

		Details		Description	Marks	Total Marks
Q6	a)	**Choose option Btn ASSET A or ASSET B**	Expected return for ASSET A	Awarded 0.5 Mark for each correct line (Max 1.5 Mark)	**1.5**	
			Standard Deviation for ASSET A	Awarded 0.5 Mark for each correct line (Max 1.5 Mark)	**1.5**	
			Expected return for ASSET B	Awarded 0.5 Mark for each correct line (Max 1.5 Mark)	**1.5**	
			Standard Deviation for ASSET A	Awarded 0.5 Mark for each correct line (Max 1.5 Mark)	**1.5**	
			Comment		**1**	
	b)	**Expected Portfolio Return of ASSET A & B**	**Expected Portfolio Return**	Award 0.5 Marks for Formula, 0.5 mark for weighting 1 Marks for Correct Computation	**2**	
	c)	**The correlation coefficient between the two Investments**	Covariance Between Two Asset	Award 0.5 Marks for Formula, 1.5 Marks for Correct Computation	**2**	
			Coefficient of Correlation and Comment	Award 0.5 Marks for Formula, 1 Marks for Correct Computation and 0.5 for Comment	**2**	
	d)	**Portfolio Risk and comment on your Findings**		Award 0.5 Marks for Formula, 1 Marks for Correct Computation and for 0.5 Comment	**2**	
	e)	**Differentiate between Systematic and Unsystematic risk**		Award 1 Mark for systematic risk and 1 Mark for Unsystematic risk	**2**	
		Six assumptions of Capital asset pricing model under Portfolio analysis		Award 0.5 Marks Each Assumption (Maximum 3 Mark)	**3**	
Total Marks						**20**

Model Answer

a)

Analysis when we make investment in asset A					
Probability	Return of ASSET A (%)	Probability * Return	Xa- Er(A)	(Xa- Er(A))^2	P*(Xa-Er(A))^2
0.35	0.1	0.035	(0.046)	0.002116	0.00074060
0.45	0.18	0.081	0.03	0.001156	0.00052020
0.2	0.15	0.030	0.004	0.000016	0.00000320
Expected Rate of return		**14.6%**			**0.00126400**
standard deviation					**0.0356**

Analysis when we make investment in ASSET(B)					
Probability	Return of ASSET B (%)	Probability * Return	Xb- Er(B)	(Xb- Er(B)) ^2	P * (Xb- Er(B)) ^2
0.35	0.09	0.032	(0.0355)	0.001260	0.000441
0.45	0.12	0.054	(0.006)	0.000030	0.000014
0.2	0.2	0.040	0.075	0.005550	0.001110
Expected return		**13%**			**0.00156**
Standard Deviation					**0.0396**

Both investments have Expected return which is above the Required Rate of return of 10% to Shareholders of ITERAMBERE, But ASSET B is A is Lower risk compare to ASSET B

Expected Rate of return= Probability * Return

Standard Déviation= $\sqrt{\boldsymbol{Variance}}$

Standard Déviation= $\sqrt{\boldsymbol{P * (Xa - Er(A))\text{^}2}}$

b)

EXPECTED PORTFOLIO RETURN

Expected return on this Portfolio	**Investment Required**	**Weighting**	**Expected Return**	**Weighting *Expected Return**
Investment in ASSET (A)	300,000,000	**0.6**	14.6%	0.0876
Investment in ASSET (B)	200,000,000	**0.4**	13%	0.0502
Total Investment	**500,000,000**	1		**14%**

Expected return on this Portfolio= [Er(A)*W(A)] + [Er(B)*W(B)]

c)

Covariance of (Return on ASSET A and Return on ASSET B)

Probability	Xa- Er(A)	Xb- Er(B)	P*[Xa- Er(A)] *[Xb- Er(B)]
0.35	(0.046)	(0.0355)	0.0006
0.45	0.03	(0.006)	(0.0001)
0.2	0.004	0.075	0.0001
Covariance of (Return A, Return B			0.0005

Standard Déviation(A)*Standard Déviation (B)= 0.0356 * 0.0396 = 0.0014

Covariance of (Return A, Return B) = Sa * Sb* Coefficient of Correlation A, B

Coefficient of Correlation (Pab)= $\frac{\boldsymbol{Covariance(A,B)}}{\boldsymbol{Standard\ Deviation(A)*StarndardDeviation\ (B)}}$

Coefficient of Correlation (Pab)= $\frac{0.0005}{0.0014}$ = **0.389**

Comment: The project is Positive Correlated (**Positive Correlation)** – when there is positive correlation between investments if one performs well (or badly) it is likely that the other will perform similarly.

d) **Portfolio Risk**

Portfolio Risk= $\sqrt{Wa^2 * Sa^2) + (Wb^2 * Sb^2 + 2 * Wa * Wb * Sa * Sb * Pab}$

Portfolio Risk= $\sqrt{(0.6^2 * 0.0356^2) + (0.4^2 * 0.0396^2) + 2 * 0.6 * 0.4 * 0.0356 * 0.0396 * 0.389}$

Portfolio Risk= $\sqrt{(0.36 * 0.00127) + (0.16 * 0.00157) + 2 * 0.6 * 0.4 * 0.0356 * 0.0396 * 0.389}$

Portfolio Risk= $\sqrt{0.0004572 + 0.0002512 + (2 * 0.6 * 0.4 * 0.0356 * 0.0396 * 0.389)}$ = 0.0312 = **3.12%**

Comment: Combine these two projects in Portfolio reduce risk compare to individual project

Wa = Weighting of Investment in ASSET (A)

Wb= Investment in ASSET (B)

Sa= Standard Deviation of Investment in ASSET (A)

Sb= Standard Deviation of ASSET (B)

Pab= Coefficient of Correction between two investments

e) **Differentiate between Systematic and Unsystematic risk in relation to Portfolio theory**.

When securities are combined in a portfolio part of each security's total risk (its standard deviation) is eliminated. This is the basis of diversification. That part of an individual security's total risk which can be eliminated by combining that security with an efficient portfolio is called unsystematic (or specific) risk. The balance of an individual security's total risk (that part which cannot be eliminated by diversification) is called systematic (or market) risk.

• **Unsystematic Risk –** risk which can be eliminated by diversification. It is the variation in a company's returns due to specific factors affecting that company and not the market as a whole, e.g. strikes, the breakdown of machinery, changes in fashion for that company's products etc. This specific risk is a random fluctuation uncorrelated with the returns on the market portfolio (the market as a whole). Therefore, when a large number of shares are held these random fluctuations tend to cancel out – i.e. there is risk reduction.

• **Systematic Risk** – risk which cannot be eliminated by diversification. This is the fluctuation in returns due to general factors in the market affecting all companies e.g. inflation, government policy, economic conditions etc. It is that part of the fluctuations in returns which is correlated with those of the market portfolio

f) **four assumptions of Capital asset pricing model under Portfolio analysis**

1. Investors are rational and they choose among alternative portfolios on the basis of each portfolio's expected return and standard deviation.
2. Investors are risk averse.
3. Investors maximize the utility of end of period wealth. Thus, CAPM is a single period model.
4. Investors have homogeneous expectations with regard to asset return. Thus, all investors will perceive the same efficient set.
5. There exist a risk-free asset and all investors can borrow and lend at this rate.
6. All assets are marketable and perfectly divisible.
7. The capital market is efficient and perfect.

End of Marking Guide and Model Answers