CERTIFIED PUBLIC ACCOUNTANTS

OPERATIONAL LEVEL EXAMINATION

FM2.3 FINANCIAL MANAGEMENT

DATE: THURSDAY 27, AUGUST 2026

INSTRUCTIONS:

1. Time allowed: **3 hours and 15 minutes**
2. The examination has three sections: A, B and C
3. Section **A** has **15 compulsory multiple-choice questions** equal to 2 marks each.
4. Section **B** has **3 compulsory multiple-task questions** equal to 10 marks each.
5. Section **C** has **2 compulsory questions** equal to 20 marks each.
6. Questions marked **"select all that apply**" have multiple correct answers. Candidates must choose all correct options in order to be awarded 2 marks.
7. The question paper should not be taken out of the examination room.

SECTION A

QUESTION ONE

A public referral hospital, funded primarily by government grants and supplementary cost-recovery user fees that cover only 8% of its FRW4.2 billion annual operating budget, has adopted the 3 Es framework (Economy, Efficiency, Effectiveness) alongside a formal Value for Money (VFM) audit, rather than measuring profit or return on capital employed.

Which of the following statements correctly explain why profit maximization is not an appropriate primary objective for this hospital, and why the 3 Es framework, reinforced by VFM auditing, is more appropriate? (Select all that apply)

A Because the hospital's overriding objective is to deliver the best achievable service within its resource constraints, and the 3 Es framework captures how well inputs are converted into desired health outcomes, which a financial surplus figure would not meaningfully measure for a grant-funded body.

B Because International Public Sector Accounting Standards (IPSAS) prohibit any public body from reporting a profit figure, obliging the hospital to disclose Economy, Efficiency and Effectiveness ratios instead.

C Because independent VFM auditing provides external, comparable accountability to the government and taxpayers who fund the hospital, performing a broadly similar monitoring role to that which reported profit and return on capital employed perform for the shareholders of a commercial company.

D Because the 8% cost-recovery income is too small to ever generate an accounting profit, so the 3 Es framework is adopted purely as a substitute measure of revenue growth until fee income becomes more substantial.

(2 Marks)

QUESTION TWO

A listed manufacturing company is proposing to close a loss-making factory, making 400 employees redundant, while simultaneously announcing a special dividend funded from the proceeds of selling the factory's land, and separately entering a five-year exclusive supply agreement with a single overseas supplier that will replace several long-standing local suppliers. The local government had offered a wage subsidy to any acquirer willing to keep the factory operational, which the board has declined.

Which pair of stakeholders is most likely to experience the most direct and severe conflict of interest as a result of these combined decisions, and why?

A Shareholders and employees, because the redundancies and the asset-stripping special dividend directly increase shareholder wealth at the direct expense of employees' jobs and benefits, while the declined wage subsidy removes an alternative that could have preserved those jobs.

B The overseas supplier and the local government, because the new exclusive supply agreement makes the overseas supplier a connected stakeholder whose interests now align exactly with those of the local government, eliminating any scope for conflict between them.

C Existing local suppliers and lenders, because lenders, as holders of fixed-return claims with no exposure to changes in the supply chain, share an identical risk position with the displaced local suppliers, whose relationship with the company is being terminated entirely.
D Customers and the local government, because both are classified as external stakeholders and will therefore always experience financial outcomes in the same direction as each other, regardless of the specific decision taken.

(2 Marks)

QUESTION THREE

In a certain market, the demand and supply functions for a particular commodity are: Qd = 900 - 6P and Qs = -150 + 9P (P in FRW, Q in units). The government imposes a specific tax of FRW10 per unit on this commodity, collected directly from suppliers, and simultaneously pays consumers a per-unit subsidy of FRW5 on every unit purchased, in order to cushion the impact of the tax on household budgets. Once the new equilibrium is reached, **what is the government's net revenue position?**

A FRW2,220
B FRW2,310
C FRW2,460
D FRW4,620

(2 Marks)

QUESTION FOUR

A monopolist's output, total revenue (TR) and total cost (TC, excluding the step cost described below) at six output levels are shown below:

1. A step increase of FRW2,500 in fixed overheads (an additional supervisory shift) is incurred whenever output exceeds 250 units, and this amount is not included in the Total Cost figures shown.
2. The sales director instructed the factory to produce 300 units, reasoning that total revenue was still rising between 200 and 250 units, so profit must rise too if output is pushed even higher.

Output (units)	**100**	**150**	**200**	**250**	**300**	**350**
Total Revenue (FRW)	14,800	18,900	20,400	19,100	16,500	13,200
Total Cost (FRW)	11,200	12,300	13,950	15,200	17,500	20,100

Taking the step increase in fixed overheads into account where relevant, **how much profit is lost as a result of producing 300 units instead of the profit-maximising output level shown in the table?**

A FRW9,950
B FRW7,600
C FRW7,400
D FRW10,100

(2 Marks)

QUESTION FIVE

A small open economy has a national income (GDP) of FRW2,000 million. The marginal propensity to consume out of after-tax income is 0.75, the marginal (and average) rate of income tax is 20%, and the marginal propensity to import is 0.10. In the same period the government increases its spending by FRW50 million, raises (autonomous, lump-sum) taxation by FRW30 million, and export earnings rise by a further FRW20 million due to a one-off trade deal. The three changes are not related to one another as a balanced-budget package. Using the appropriate open-economy multipliers, **what is the resulting percentage change in GDP?**

A 5.94%
B 2.75%
C 4.75%
D 4.00%

(2 Marks)

QUESTION SIX

A project requires an initial investment in non-current assets of FRW380,000 and additional working capital of FRW50,000, both payable at the start of the project. The project generates net operating cash inflows of FRW95,000 in Year 1, FRW140,000 in Year 2, FRW160,000 in Year 3 and FRW185,000 in Year 4. At the start of Year 2 a further FRW20,000 of working capital must be injected to support higher sales volumes; the full cumulative working capital balance is recovered at the end of Year 4. The company's cost of capital is 10%.

What is the discounted payback period of the project?
A 3 years 7 months
B 3 years 9 months
C 3 years 8 months
D 3 years 11 months **(2 Marks)**

QUESTION SEVEN

Zeta Ltd is evaluating a project requiring initial investment in machinery costing FRW650,000. The machinery qualifies for tax-allowable depreciation (capital allowances) of 25% per year on a reducing-balance basis, and will be sold for FRW90,000 at the end of Year 3, with any shortfall against tax written-down value treated as a balancing allowance. Corporate tax is paid one year in arrears at the rate of 30% in Years 1 and 2, but a newly enacted rate of 32% applies in Year 3. In current (Year 0) price terms the project generates operating cash inflows (before tax and capital allowances) of FRW300,000 per year for each of the 3 years, inflating at 6% per year. Zeta Ltd's post-tax nominal discount rate is 12%.

What is the project's NPV?
A FRW121,336
B FRW122,375
C FRW115,793
D FRW109,384 **(2 Marks)**

QUESTION EIGHT

A four-year project requires an initial investment of FRW1,200,000, on which straight-line tax-allowable capital allowances of 25% per year are available (assume no residual value for tax purposes). Each unit sold generates a selling price of FRW1,300 and a variable cost of FRW500, and the project incurs fixed costs of FRW250,000 per year. Corporate tax is 25%, payable in the same year as the related cash flow. The company's discount rate is 10%.

What is the minimum whole number of units that must be sold, constantly, every year for the project's post-tax NPV to be zero or positive?

A 786 units
B 944 units
C 828 units
D 819 units **(2 Marks)**

QUESTION NINE

A company owes a supplier FRW650,000, due under normal 60 days' credit terms. The supplier offers two alternative early-settlement discounts: 2% if paid within 10 days, or 1% if paid within 25 days. The company's banking facilities are limited: it can fund only 70% of any early payment via a new fixed-rate short-term loan at 11.5% per year, with the remaining 30% necessarily drawn on its overdraft at an effective annual rate of 15%. Assume daily compounding on a 365-day year, based on the single blended annual financing rate implied by this 70/30 split.

Which combination of discount and financing gives the better outcome, and what is the resulting net benefit or cost?

A Take the 2% discount (paying within 10 days): net benefit of FRW2,049
B Take the 2% discount (paying within 10 days): net benefit of FRW1,502
C Take the 2% discount (paying within 10 days): net benefit of FRW2,599
D Take the 1% discount (paying within 25 days): net cost of FRW837

(2 Marks)

QUESTION 10

X Ltd has an equity beta of 1.6 and is financed by equity (market value FRW80 million) and debt treated as risk-free (market value FRW20 million, debt beta = 0). The corporate tax rate is 28%. Omega Ltd is identical to X Ltd in business risk but has a different capital structure: equity (market value FRW60 million) and debt (market value FRW40 million) that is NOT risk-free and has a debt beta of 0.1. The risk-free rate is 6% and the market return is 13%. Using Modigliani and Miller's theory (with tax).

What is Omega Ltd's Weighted Average Cost of Capital (WACC)?

A 14.51%
B 13.76%
C 14.74%
D 12.27% **(2 Marks)**

QUESTION 11

P Ltd is financed entirely by equity and has a total market value of FRW50 million. Q Ltd is identical to P Ltd in every respect except that it also has FRW20 million (market value) of debt in issue. The corporate tax rate is 25% and the personal tax rate on equity income is 15%. Q Ltd's debt is held 40% by tax-exempt pension funds and 60% by taxable individual investors who pay personal tax on debt income at 30%. Using Miller's theory of capital structure, **what is Q Ltd's total market value?**

A FRW54.45 million
B FRW55.51 million
C FRW55.00 million
D FRW51.71 million **(2 Marks)**

QUESTION 12

A company uses 24,000 units per year of a raw material currently costing FRW15.00 per unit. The cost of placing an order is FRW100, and the annual holding cost is 10% of the purchase price per unit. The supplier offers a tiered discount: orders of 800 units or more qualify for a price of FRW13.50 per unit, and orders of 2,000 units or more qualify for FRW12.50 per unit (holding cost remains 10% of whichever price applies).

What is the company's optimal ordering policy, and its net annual benefit compared with ordering the undiscounted EOQ at full price?

A Order in batches of 2,000 units: net benefit of FRW59,983
B Order in batches of 1,886 units: net benefit of FRW36,138
C Order in batches of 2,000 units: net benefit of FRW60,233
D Order in batches of 800 units: net benefit of FRW59,183

(2 Marks)

QUESTION 13

A company applies the Miller-Orr cash management model with a lower cash limit of FRW10,000, a fixed transaction cost of FRW150, a standard deviation of daily cash flows of FRW3,000, and an annual interest rate of 8%, compounded quarterly.

What is the model's return point?
A FRW26,655
B FRW26,489
C FRW16,655
D FRW26,709 **(2 Marks)**

QUESTION 14

A company's dividend history over the last five years was: Year 1: FRW1.80; Year 2: FRW2.05; Year 3: FRW2.25; Year 4: FRW2.50; Year 5: FRW2.85. Shareholders require a return of 20%. Because of a temporary capacity expansion, dividends are expected to grow at 15% per year for the next two years (Years 6-7), then grow for a single transitional year (Year 8) at the simple average of 15% and the long-run growth rate implied by the last five years of historical dividends, before reverting permanently from Year 9 onward to that same long-run historical growth rate.

What is the current theoretical share price, using this three-stage dividend discount model?

A FRW43.41
B FRW42.87
C FRW43.34
D FRW37.42 **(2 Marks)**

QUESTION 15

Following unexpectedly strong quarterly earnings, a company's share price rose immediately by 8% within minutes of the announcement. Trading volume spiked sharply that day, and over the following ten trading days the price continued to drift upward by a further 1% per day on average before levelling off. A separate study of the same company's historical price movements finds no exploitable pattern that would have allowed an investor to predict the announcement in advance using past prices alone.

Which of the following best describes what this combined evidence implies about the market's efficiency?

A The absence of any exploitable pattern in past prices is consistent with weak form efficiency, but the continued post-announcement drift is inconsistent with semi-strong form efficiency, since a semi-strong efficient market would impound new information fully and instantly rather than drifting for ten further days, a pattern often called post-earnings-announcement drift.
B Both pieces of evidence together confirm strong form efficiency, since no investor group, including insiders, could have used any information to earn abnormal returns.
C The ten-day drift is fully consistent with semi-strong form efficiency, because market prices are always allowed a short adjustment window of approximately two trading weeks under the semi-strong form definition.
D The absence of an exploitable pattern in past prices actually contradicts weak form efficiency, because it shows technical analysis could never be used to earn any return at all, even a normal one.

(2 Marks)

SECTION B

QUESTION 16

Kivu Beverages Ltd (KBL) operates in Kageyo, a small open economy. The finance director has asked the chief accountant to prepare a briefing covering the company's shareholder performance and the wider economic environment in which KBL operates. The following information has been gathered:

- During the most recent financial year, KBL declared and paid an ordinary dividend equivalent to 10% of the nominal value of its shares, each share carrying a par value of FRW65. Dividend income is subject to a 15% withholding tax. The share price stood at FRW146 at the beginning of the year and rose to FRW168 by the end of the year.
- KBL's management is evaluating a proposed factory expansion requiring an initial investment of FRW10,000,000, with an estimated residual value of FRW1,000,000 after a 5-year useful life, generating an average annual net operating cash inflow of FRW3,000,000. For this project, KBL depreciates the asset on a reducing-balance basis (at whatever rate reduces FRW10,000,000 to FRW1,000,000 over 5 years) and computes average investment as the simple average of the asset's book value at the start of the project and at the end of each of the 5 years (i.e. the average of 6 values). The minimum acceptable Accounting Rate of Return (ARR), on this average-investment basis, is 15%.
- Nominal Gross Domestic Product (GDP) within Kageyo grew by 9.5% over the year. Inflation ran at an effective rate of 1.227% per quarter, compounded quarterly. Nominal GDP at the start of the year was FRW180 billion.
- The nominal interest rate on Kageyo government treasury bills was 8.0% per year, compounded daily on a 365-day year. KBL bought FRW500,000 of these bills at the start of the year and sold them after exactly 270 days; interest income is subject to a 5% withholding tax. Inflation over the same 270 days should be derived from the annual rate by compounding.
- KBL relies on a packaging input purchased on the open market, where Qd = 1,200 - 8P and Qs = -300 + 12P (P in FRW per unit, Q in thousands of units per year). Kageyo's government has imposed a maximum legal price of FRW70 per unit, pays suppliers a FRW5 per unit production subsidy, and simultaneously imposes a FRW3 per unit sales tax collected from consumers on top of the FRW70 ceiling price.

Q16a) Using the average-investment method described above**, what is the Accounting Rate of Return (ARR) for the expansion?**

A 24.6%
B 21.8%
C 39.0%
D 28.4% **(2 Marks)**

Q16b) What is KBL's net of tax total shareholder return for the year, expressed as a percentage of the opening share price?

A 19.5%
B 18.9%

C 16.6%
D 22.0% **(2 Marks)**

Q16c) What is Kageyo's real GDP at the end of the year?
A FRW187.71 billion
B FRW187.88 billion
C FRW188.10 billion
D FRW189.00 billion **(2 Marks)**

Q16d) What is the interest KBL earned, on its FRW500,000 treasury bill holding over the 270 days it held them, net of the 5% withholding tax?
A FRW 30,479
B FRW 29,369
C FRW 28,110
D FRW 28,955 **(2 Marks)**

Q16e) What is the resulting shortage (excess demand) in the packaging input market once both the ceiling price, the supplier subsidy and the consumer sales tax are all in effect?
A 40,000 units
B 60,000 units
C 76,000 units
D 16,000 units **(2 Marks)**

QUESTION 17

Ramiro Engineering Ltd (REL) is planning a major capital investment in new automated equipment and is reviewing its investment appraisal and financing options. The following information is available:

- The new equipment requires an initial investment of FRW380,000 and is expected to generate net operating cash inflows, rising as capacity is phased in, of FRW80,000, FRW100,000, FRW120,000, FRW140,000 and FRW160,000 in Years 1 to 5 respectively. The Present Value factors: at 15%; Year 1: 0.870, Year 2: 0.756, Year 3: 0.658, Year 4: 0.572, Year 5: 0.497; at 20%; Year 1: 0.833, Year 2: 0.694, Year 3: 0.579, Year 4: 0.482, Year 5: 0.402.
- As an alternative to purchasing, REL could lease a different specification of the equipment for FRW135,000 per year (payable at the end of each of the next 4 years), plus maintenance starting at FRW10,000 in Year 1 and rising by 5% per year thereafter, and a non-refundable deposit of FRW50,000 payable immediately. Purchasing the equivalent machine outright would cost FRW450,000, with annual maintenance of FRW20,000 per year from Year 2 onward only (Year 1 is covered under the manufacturer's warranty). REL's relevant discount rate for this financing decision is 8%.
- REL currently has 4,500,000 ordinary shares in issue, trading at FRW35.80 each, and is considering a 3 for 10 rights issue at FRW27.50 per share, or alternatively a placing at the same issue price, to raise new equity finance.

- REL has FRW3,200,000 (nominal value) of loan notes in issue. The notes carry a stepped coupon of 8% per year in Years 1 to 2 and 10% per year in Years 3 to 5, are redeemable at a premium of FRW105 per FRW100 nominal at the end of Year 5, and are currently trading at FRW93 per FRW100 nominal. The corporate tax rate is 28%.
- REL's total equity (market value) is FRW130 million and total debt (market value) is FRW42 million; this excludes FRW15 million of lease liabilities that were, until recently, kept off-balance sheet as operating leases but which, under IFRS 16, must now be capitalized as debt.

Q17a) Using the linear interpolation between 15% and 20%, **what is the project's IRR?**

A 15.4%
B 17.6%
C 19.9%
D 20.9% **(2 Marks)**

Q17b) What is the difference in present value between leasing and buying, and which option is cheaper?

A Buying is cheaper than leasing by FRW32,520
B Buying is cheaper than leasing by FRW16,401
C Buying is cheaper than leasing by FRW34,921
D Leasing is cheaper than buying by FRW15,079 **(2 Marks)**

Q17c) What is the theoretical ex-rights price (TERP) following the proposed rights issue, and which option also correctly identifies the key disadvantage to existing shareholders of raising the finance through a placing instead?

A TERP = FRW31.65; a placing would dilute existing shareholders' proportional ownership since the new shares are not offered to them pro-rata, whereas the rights issue preserves it.
B TERP = FRW29.42; a placing would dilute existing shareholders' proportional ownership since the new shares are not offered to them pro-rata, whereas the rights issue preserves it.
C TERP = FRW33.88; a placing must always be priced at a smaller discount to the market price than a rights issue.
D TERP = FRW33.88; a placing would dilute existing shareholders' proportional ownership since the new shares are not offered to them pro-rata, whereas the rights issue preserves it.

(2 Marks)

Q17d) What is REL's after-tax cost of debt?

A 8.3%
B 9.2%
C 8.4%
D 7.4% **(2 Marks)**

Q17e) Once the FRW15 million of previously off-balance-sheet lease liabilities are capitalised as debt under IFRS 16, **by how many percentage points does REL's market-value gearing ratio change compared with the (superseded) basis that excluded them, and in which direction?**

A Increases by 6.1 percentage points
B Increases by 3.8 percentage points
C Increases by 11.5 percentage points
D Decreases by 2.0 percentage points **(2 Marks)**

QUESTION 18

Nyagatare Retailers Ltd (NRL) operates a chain of general merchandise stores and is negotiating an extension of its working capital facility ahead of a planned rollout of three new stores next year. As part of the loan renewal discussions, the bank has asked NRL to demonstrate how efficiently it manages its trade receivables, inventory and payables, and to clarify its approach to factoring, cash planning and shareholder returns. The following information relates to the year just ended:

- Cost of sales: FRW9,125,000; Purchases: FRW6,200,000 inclusive of 18% VAT; Credit sales inclusive of 18% VAT: FRW17,228,000. Assume 365 days per year.
- Average inventory is held across three stages: raw materials FRW620,000, work-in-progress FRW410,000, and finished goods FRW430,000.
- Trade receivables: FRW1,650,000 at the start of the year, FRW1,950,000 at the end. Trade payables: FRW980,000 at the start, FRW1,120,000 at the end.
- NRL is considering factoring its trade receivables, currently valued at FRW2,400,000. The factor would advance 80% of the value factored immediately, charge a fee of 2.5% of the value factored, and charge interest at a nominal 13% per year, compounded monthly, on the funds advanced for the average 50-day collection period. If NRL factors, it will close its in-house credit control department, saving FRW48,000 per year, and the factor's non-recourse arrangement will eliminate NRL's bad debts, which run at 1.5% of annual credit sales (excluding VAT).
- NRL had 5,600,000 ordinary shares in issue at the start of the year. A 1 for 20 bonus issue took effect on 1 April. Separately, on 1 October, NRL issued 400,000 new shares under a scrip dividend election relating to the previous year's final dividend. These are genuinely new shares, time apportioned rather than treated as a bonus. Net profit after tax for the year was FRW18,000,000.
- NRL paid an interim dividend of FRW0.60 per share at the half year stage (on the shares in issue at that date, i.e. after the April bonus but before the October scrip issue), and a final dividend of FRW1.80 per share after the year end (on the full year-end share count). The current share price is FRW24.
- NRL's monthly cash budget for the coming year shows a projected cash deficit of FRW3,200,000 in the specific month the three new stores are fitted out and stocked, just before they open, a deficit that exceeds NRL's overdraft facility limit of FRW2,800,000. The annual profit forecast for that year shows an overall projected profit of FRW18,500,000.
- A shareholder who held 4,300 shares immediately before the April bonus issue elects to take their full year's cash dividend entitlement as scrip, at a scrip issue price set at a 3% discount to the FRW24 market price.

Q18a) Which of the following is the NRL's cash conversion cycle?

A 48 days
B 49 days
C 53 days
D 42 days **(2 Marks)**

Q18b) What is the net annual benefit to NRL of proceeding with the factoring arrangement?

A FRW172,689 net benefit
B FRW172,808 net benefit
C FRW164,111 net benefit
D FRW184,689 net benefit **(2 Marks)**

Q18c) Given that the bank has asked NRL to explain its approach to cash planning as part of the loan renewal, **why is the monthly cash budget more useful to the bank than the annual profit forecast in this situation in light of NRL's overdraft limit?**

A The FRW3,200,000 deficit relates to depreciation on the cost of preparing the new stores, a non-cash expense, so it will reverse automatically and will not actually require any additional financing from the bank.
B IAS 7 requires NRL to disclose monthly cash flow figures in its Statement of Cash Flows, so the bank could simply have used NRL's published financial statements instead of requesting a separate cash budget.
C Since the profit forecast confirms NRL will be profitable overall, the timing of cash flows during the year is not something the bank needs to worry about when renewing a working capital facility.
D The cash budget shows exactly which month the FRW3,200,000 shortfall occurs in, and that this shortfall exceeds the current overdraft limit. The profit forecast gives only one total figure for the whole year and cannot reveal either the timing or the size of the financing gap, even though the year as a whole is profitable.

(2 Marks)

Q18d) What is NRL's dividend cover for the year?

A 1.25 times
B 1.27 times
C 1.21 times
D 1.32 times **(2 Marks)**

Q18e) How many additional shares will the shareholder who held 4,300 shares before the bonus issue receives under the scrip dividend election?

A 465 shares
B 452 shares
C 443 shares
D 432 shares **(2 Marks)**

SECTION C

QUESTION 19

Kagarama Manufacturing Ltd (KML) produces plastic packaging components for the domestic food and beverage industry. Following a sharp rise in orders from its major customers over the past 18 months, KML's production director has proposed installing a new, faster production line to relieve a growing capacity bottleneck at the company's main factory. The proposal has reached the board for formal appraisal, and the finance director has asked that the investment be evaluated as rigorously as possible, given that KML has never previously modelled a project of this size incorporating differing inflation assumptions for revenue and costs, capital allowances, and working capital effects together in a single appraisal.

The following information has been assembled by KML's finance team for this appraisal:

- Initial investment in machinery: FRW900,000, payable immediately. The machinery qualifies for tax-allowable depreciation (Capital Allowance) of 25% per year on a reducing-balance basis.
- Project life is 4 years. Due to a commissioning and settling-in period, the line will produce only 800 units in Year 1. From Year 2 onwards, it will run at its full capacity of 1,000 units per year.
- At the end of Year 4, the machinery will be sold for FRW420,000. Any difference between its tax written-down value and the sale proceeds at that point is treated as a balancing allowance or balancing charge, as appropriate, in Year 4.
- In current (year 0) price terms, each unit sells for FRW620 and has a variable cost of FRW280. Incremental fixed overheads of FRW45,000 (year 0) per year will also be incurred.
- Selling price is expected to inflate at 7% per year; variable cost per unit is expected to inflate at 5% per year; fixed overheads are expected to inflate at 6% per year.
- The project will require additional net working capital equal to 10% of the following year's projected sales revenue. This is to be introduced at the start of the year to which it relates with further incremental amounts introduced as sales revenue grows, and the full closing balance recovered in total at the end of Year 4.
- Corporate tax is payable at 28%, in areas. KML's real cost of capital is 10% per year. General inflation is forecast at 5% per year.

KML's capital structure, at market values, is as follows:

- Ordinary shares: FRW7,500,000 (cost of equity, Ke = 16%).
- Irredeemable preference shares: FRW1,000,000 (cost of preference shares, Kp = 9%).
- Irredeemable loan notes: FRW2,500,000 (cost of debt before tax, Kd = 9%; corporate tax rate = 28%).

Required:

a) By using appropriate discount rate, **calculate the Net Present Value (NPV) of the project at KML's and advise whether the project should be accepted or rejected.** (12 Marks)

b) **Calculate the project's IRR by linear interpolation of the project by using the discount factor obtained from (a) and 25%.** (1 Marks)

c) **Calculate the discounted payback period of the project using the discount factor obtained from (a).** (2 Marks)

d) **Calculate KML's Weighted Average Cost of Capital (WACC).** (3 Marks)

e) **Discuss one limitation on each of the NPV and IRR investment appraisal techniques, and advise the directors of KML on which technique provides a more reliable basis for investment decision-making.** (2 Marks)

(Total: 20 Marks)

QUESTION 20

Nyanza Traders Ltd (NTL) is a wholesale distribution company supplying retailers across the eastern part of the country. Following a period of steady sales growth, NTL's directors have become increasingly focused on two related concerns raised at the last board meeting: first, whether the company's working capital is being managed as efficiently as it could be, given the amount of cash currently tied up in raw materials, work-in-progress and finished goods, receivables and payables; and second, whether the company's dividend policy, which has seen dividends grow steadily over the last five years remains sustainable as the business continues to expand. The board has asked the finance team to prepare a full analysis addressing both concerns ahead of the next shareholders' meeting.

The following information has been provided for the year just ended:

- NTL recorded annual credit sales of FRW14,600,000, alongside annual purchases totaling FRW6,200,000, while the cost of sales for the period amounted to FRW9,125,000.
- Over the course of the year, NTL maintained an average balance of trade receivables amounting to FRW1,800,000, while its average trade payables stood at FRW1,050,000, reflecting the company's typical credit terms with customers and suppliers respectively.
- The company's average inventory is distributed across three distinct stages of production and sale: raw materials valued at FRW520,000, work-in-progress amounting to FRW340,000, and finished goods totaling FRW600,000.
- With respect to a key raw material used in production, NTL faces an annual demand of 24,000 units. The cost associated with placing each order is FRW75, while the annual cost of holding one unit in inventory is FRW6. The supplier operates with a lead time of 12 days between order placement and delivery, and as a precaution against stockouts or delivery delays, NTL maintains a safety stock equivalent to 10 days' average usage. For the purposes of these calculations, a 365-day year is assumed
- NTL's shares have an equity beta of 1.3. The risk-free rate of return is 6% and the return on the market portfolio is 12.15%.

- NTL's dividend payments to ordinary shareholders over the past five years have shown a consistent upward trend: FRW2.10 per share in Year 1, rising to FRW2.35 in Year 2, FRW2.60 in Year 3, FRW2.80 in Year 4, and reaching FRW3.00 per share in Year 5.
- Earnings per share (EPS) for the year: FRW5.20; number of ordinary shares in issue: 8,000,000; current share price: FRW32.50.

Required:

a) Calculate the number of days held for each of the three inventory stages, the receivables collection period, and the payables payment period, and hence calculate NTL's cash conversion cycle. (6 Marks)

b) Calculate the Economic Order Quantity (EOQ) for the raw material, and hence NTL's reorder level. (4 Marks)

c) Using the Capital Asset Pricing Model and the Dividend Growth Model, **calculate the current theoretical value of one NTL ordinary share.** (4 Marks)

d) Calculate the total dividends paid for the year, the dividend cover, the dividend payout ratio, and the dividend yield. (2 Marks)

e) Discuss the factors a company should consider when formulating its dividend policy, and advise the directors of NTL on whether the current level of payout appears sustainable. (4 Marks)

(Total: 20 Marks)

End of question paper

PRESENT VALUE TABLES

Present value of FRW 1: (1+r)^-n where r = discount rate; n = number of periods

n	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%
1	0.990	0.980	0.971	0.962	0.952	0.943	0.935	0.926	0.917	0.909	0.901	0.893
2	0.980	0.961	0.943	0.925	0.907	0.890	0.873	0.857	0.842	0.826	0.812	0.797
3	0.971	0.942	0.915	0.889	0.864	0.840	0.816	0.794	0.772	0.751	0.731	0.712
4	0.961	0.924	0.888	0.855	0.823	0.792	0.763	0.735	0.708	0.683	0.659	0.636
5	0.951	0.906	0.863	0.822	0.784	0.747	0.713	0.681	0.650	0.621	0.593	0.567
6	0.942	0.888	0.837	0.790	0.746	0.705	0.666	0.630	0.596	0.564	0.535	0.507
7	0.933	0.871	0.813	0.760	0.711	0.665	0.623	0.583	0.547	0.513	0.482	0.452
8	0.923	0.853	0.789	0.731	0.677	0.627	0.582	0.540	0.502	0.467	0.434	0.404
9	0.914	0.837	0.766	0.703	0.645	0.592	0.544	0.500	0.460	0.424	0.391	0.361
10	0.905	0.820	0.744	0.676	0.614	0.558	0.508	0.463	0.422	0.386	0.352	0.322
11	0.896	0.804	0.722	0.650	0.585	0.527	0.475	0.429	0.388	0.350	0.317	0.287
12	0.887	0.788	0.701	0.625	0.557	0.497	0.444	0.397	0.356	0.319	0.286	0.257
13	0.879	0.773	0.681	0.601	0.530	0.469	0.415	0.368	0.326	0.290	0.258	0.229
14	0.870	0.758	0.661	0.577	0.505	0.442	0.388	0.340	0.299	0.263	0.232	0.205
15	0.861	0.743	0.642	0.555	0.481	0.417	0.362	0.315	0.275	0.239	0.209	0.183

ANNUITY TABLE

Present value of FRW 1 per period: [1-(1+r)^-n] / r

n	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%
1	0.990	0.980	0.971	0.962	0.952	0.943	0.935	0.926	0.917	0.909	0.901	0.893
2	1.970	1.942	1.913	1.886	1.859	1.833	1.808	1.783	1.759	1.736	1.713	1.690
3	2.941	2.884	2.829	2.775	2.723	2.673	2.624	2.577	2.531	2.487	2.444	2.402
4	3.902	3.808	3.717	3.630	3.546	3.465	3.387	3.312	3.240	3.170	3.102	3.037
5	4.853	4.713	4.580	4.452	4.329	4.212	4.100	3.993	3.890	3.791	3.696	3.605
6	5.795	5.601	5.417	5.242	5.076	4.917	4.767	4.623	4.486	4.355	4.231	4.111
7	6.728	6.472	6.230	6.002	5.786	5.582	5.389	5.206	5.033	4.868	4.712	4.564
8	7.652	7.325	7.020	6.733	6.463	6.210	5.971	5.747	5.535	5.335	5.146	4.968
9	8.566	8.162	7.786	7.435	7.108	6.802	6.515	6.247	5.995	5.759	5.537	5.328
10	9.471	8.983	8.530	8.111	7.722	7.360	7.024	6.710	6.418	6.145	5.889	5.650
11	10.368	9.787	9.253	8.760	8.306	7.887	7.499	7.139	6.805	6.495	6.207	5.938
12	11.255	10.575	9.954	9.385	8.863	8.384	7.943	7.536	7.161	6.814	6.492	6.194
13	12.134	11.348	10.635	9.986	9.394	8.853	8.358	7.904	7.487	7.103	6.750	6.424
14	13.004	12.106	11.296	10.563	9.899	9.295	8.745	8.244	7.786	7.367	6.982	6.628
15	13.865	12.849	11.938	11.118	10.380	9.712	9.108	8.559	8.061	7.606	7.191	6.811