NOVEMBER 2020 PROFESSIONAL EXAMINATION
FINANCIAL MANAGEMENT (PAPER 2.4)
CHIEF EXAMINER'S REPORT, QUESTIONS AND MARKING SCHEME

STANDARD OF PAPER

The standard of the paper was considered good and commensurate with the level and expectation. Regarding the distribution of questions, it was consistent with the syllabus in terms of coverage and there was an improvement in skewness in favour of quantitative aspect compared to the qualitative or essay aspect noticed in the last sitting. The quantitative aspect covered 70% whilst the theory or essay aspect covered 30%. This was a shift from the last sittings where it was quantitative (78%) and theory (22%) but below past trends of about 60% to 65% quantitative and 35% to 40% essay or theory.

The questions generally appeared clear and unambiguous for candidates to understand and answer. There were no noted sub-standard questions in the paper except few instances of overloaded background information that required a lot of reading and concentration to pick the relevant portions needed to answer the questions.

The allocation of marks was generally good and where there was need to relook at the allocation of marks in the scheme it was done. The marking scheme was relooked at and aligned to the question paper. Where alternative answers were necessary it was recognised and provided.

PERFORMANCE OF CANDIDATES

The performance of the candidates showed significant improvement with the overall pass rate improving to 23% compared to the 13% in the previous sitting. This could partially be attributed to the improvement in confidence level on negative impact of the COVID 19 on candidate's preparation and nervousness towards safety. Better preparations might have also accounted for this development.

The possible reasons for some poor performance which have been highlighted in prior reports still persist and include the following:

- Poor preparation and complacency
- Poor time management and question answering approach.
- Poor and incoherent thoughts exhibited in answering questions
- Uncoordinated and incoherent answers to theory or essay questions
- Inability to identify and apply the right formulas provided to the right questions

NOTABLE STRENTHGS & WEAKNESSES OF CANDIDATES

Candidates who performed well exhibited the following strengths:

- Noticeable improvement in the understanding of the requirements of the questions.
- Good research and preparation in the quantitative areas of the syllabus which carried 70% of the questions.
- Ability to understand the requirement of the question and know which formulas to be used for each question where needed.

- Improvement in understanding of how to handle applied as well as theory or essay questions in the exams.
- Improvement in time management skills to answer all questions within the stipulated time.

Observed reasons of the strengths:

The following reasons still apply;

- Improvement in the quality of digital access to study material and knowledge in the subject area.
- More and better-quality teaching centres and delivery channels.
- Better productivity in exam preparation, and answering of both quantitative and essay questions

The strengths can be enhanced by:

- Continuous review of course materials relevant to the Institute's syllabus
- Further improvement on the contactless digital channels of study
- Facilitation and Sharing of best practices among candidates to benefit colleagues

Observed weaknesses demonstrated by candidates

- Poor and incoherent thoughts exhibited in answering questions
- So many partial answering of questions and scattered across different pages with a lot of cancellations.
- Poor knowledge in identifying the right formulas applicable to questions to be answered.
- Poor and faded handwriting making it difficult for examiners to read and understand

Remedies for observed weaknesses

- More hands on and practice on exercises and past questions,
- Ensure legible and clear handwriting and avoid using faded pens that makes it difficult for examiners to read and understand
- Ensuring correct numbering and labelling of questions and as much as possible avoid spreading one answer to so many pages apart.

QUESTION ONE

a) Demo Gold is a Ghanaian mining company that has been operating on-land deep pit gold mining in Africa since its incorporation. Aiming at increasing the value of shareholders, the directors have signed an agreement with the governments of Tonga and Tuvalu to begin excavating an area of seabed in the Pacific Ocean for ores of copper, gold and other valuable metals.

The idea of mining mineral deposit in the seabed has for many decades been considered as unrealistic because of engineering challenges. However, the recent boom in offshore oil and gas operations has come with it the development of a few advanced deep sea technologies which can be used in mining mineral deposits in the seabed.

Required:

i) It appears that the sole objective of the seabed mining operation is to maximise the value of shareholders. Advice the directors on **FOUR (4)** non-financial objectives that Demo Gold should pursue to achieve a sustainable increase in shareholder value. **(4 marks)**

ii) Advice the directors of Demo Gold on **THREE (3)** likely sources of risk relating to the seabed mining operation. For each point, suggest a way through which the risk could be avoided or minimized. **(6 marks)**

b) The directors of Fameko Ltd (Fameko), a courier delivery services company based in Ghana, are considering a proposal for setting up a subsidiary in the United States of America to provide courier services in North America. The capital of this new subsidiary will be structured as 20% equity and 80% debt.

The directors are not sure of what would be an appropriate discount rate for appraising the North American business. You have been asked to recommend an appropriate discount rate for this project. You have gathered the following information for this exercise.

- **Competition in the U.S. Courier industry**
  The U.S. courier services industry is highly competitive. If Fameko sets up in the U.S., its main competitor will be ExFed Corporation. ExFed's capital structure is 70% equity and 30% debt.

- **Market risk**
  The following statistics have been computed from historical excess returns on the equity stock of ExFed Corporation and that on the S&P 500 Index (a proxy for the market portfolio):

S&P 500 Index		**ExFed Equity Stock**	
Average return	0.0628	Average return	0.0321
Standard Deviation	0.1875	Standard Deviation	0.1521
Sample Variance	0.0352	Sample Variance	0.0231
Kurtosis	-1.4335	Kurtosis	-1.1121
Skewness	-0.2178	Skewness	-0.1601

You analysed the correlation between the excess returns on ExFed and excess returns on the S&P 500 Index and obtained a correlation coefficient of 0.91.

- **The annual risk-free rate and market return:**
  The annual rate of interest on the 10-year U.S. Treasury bond is 2.1%. The expected return on the S&P 500 Index is 7%.

- **Taxation:**
  ExFed pays corporate income tax at the rate of 30%. However, the effective corporate income tax rate on profits from Fameko's North American operations will be 35%.

Required:

i) Compute the equity beta of ExFed. **(3 marks)**
ii) Derive an appropriate equity beta for Fameko's U.S. subsidiary. **(4 marks)**
iii) Using the capital asset pricing model or the Modigliani and Miller Proposition II with tax, compute an appropriate cost of equity for Fameko's U.S. subsidiary. **(3 marks)**

(Total: 20 marks)

QUESTION TWO

The directors of Carmen Ltd, a large conglomerate, are considering the acquisition of the entire share capital of Manon Ltd, a private limited company which manufactures a range of engineering machinery. Neither company has any long-term debt capital. The directors of Carmen Ltd believe that if Manon Ltd is taken over, the business risk of Carmen Ltd will not be affected.

The accounting year of Manon Ltd ends on 31 December. Its Statement of Financial Position as at 31 December 2018 is expected to be as follows:

		GH¢	**GH¢**
Property, Plant and Equipment (PPE)			651,600
Current Assets	-Inventory and work-in-progress	515,900	
	-Debtors	745,000	
	-Bank balances	158,100	
			1,419,000
			2,070,600
Current liabilities	-Creditors	753,600	
	-Bank overdraft	862,900	
			1,616,500
			454,100
Financed by:			
Capital and reserves	-Share capital		50,000
	-Retained earnings		404,100
			454,100

Manon Ltd's summarized statement of profit or loss extract for the five years to 31 December 2018 is as follows:

The following additional information are available:

i) There have been no changes in the issued share capital of Manon Ltd during the past five years.

ii) The estimated values of Manon Ltd's PPE and inventory and work-in-progress as at 31 December 2018 are:

	Replacement cost GH¢	**Realizable value GH¢**
PPE	725,000	450,000
Inventory and work-in-progress	550,000	570,000

iii) It is expected that 2% of Manon's debtors at 31 December 2018 will be uncollectible.

iv) The cost of capital of Carmen Ltd is 9%. The directors of Manon Ltd estimate that the shareholders of Manon Ltd require a minimum return of 12% per annum from their investment in the company.

v) The current P/E ratio of Carmen Ltd is 12. Quoted companies with business activities and profitability similar to those of Manon Ltd have P/E ratios of approximately 10, although these companies tend to be much larger than that of Manon Ltd.

Required:

Estimate the value of the total equity capital of Manon Ltd as at 31 December 2018 using each of the following basis:

a) Book value **(2 marks)**
b) Replacement cost **(4 marks)**
c) Realizable value **(4 marks)**
d) The Gordon dividend growth model **(5 marks)**
e) The P/ E ratio model **(5 marks)**

(Total: 20 marks)

QUESTION THREE

a) The directors of PDS Foods Ltd (PDS) are considering two payment options for the purchase of a new cereal processing plant:

Option 1: Cash purchase option

This option requires immediate payment of the full price of the plant. If PDS chooses this option, it will pay the cash price of GH¢800,379 today. PDS plans to raise the required amount by borrowing from a bank. Conso Bank Ghana has offered to lend the cash price to PDS at an annual interest rate of 15% with monthly compounding. The loan, interest, and other charges are to be amortised by even instalments of GH¢27,952.26 each made at the end of each month over the next three years.

Option 2: Credit purchase plan

Under this option, the vendor requires an immediate down payment followed by a series of even payments. If PDS chooses this option, it will be required to pay GH¢50,000 today. This will be followed by the payment of GH¢116,100 at the end of each quarter over the next two years. The interest rate implicit in this credit purchase plan is 20% per annum.

Required:

i) Find the present value of all the payments under the cash purchase option. **(5 marks)**
ii) Find the present value of all the payments under the credit purchase option. **(4 marks)**
iii) Which of the two options do you recommend to the company? Explain. **(1 mark)**

b)

i) Explain the term ***intrinsic value*** of an option. **(1 mark)**
ii) DUU Ghana Ltd bought USD/GH¢ call options from KASA Ltd. The table below shows the various spot rates and strike prices for the various tenors.

Month	**Spot Rate USD/GH¢**	**Exercise Rate/Price USD/GH¢**
1	5.1	4.8
2	5.3	5.0
3	5.5	5.4
4	5.8	5.8
5	5.7	6.0
6	6.0	6.4

Required:

Determine the intrinsic value of the option for each trading month and clearly indicate the months in which the option is in-the-money, at-the-money or out-of-the-money. **(6 marks)**

c) The recent financial sector clean up in Ghana has created tough economic times for borrowers and investors and has tightened Financial Institutions' appetite for granting credit and depositors appetite for depositing or placing funds with Financial Institutions thereby creating tight liquidity situation in the market.

Required:

As an expert in Financial Management, explain the difference between ***credit risk*** and ***liquidity risk***. **(3 marks)**

(Total: 20 marks)

QUESTION FOUR

a) Rock Beverages Ltd (RBL) is a producer of fresh fruit juice. RBL operates a fruit juice extracting machine, which costs GH¢150,000 to purchase and GH¢10,000 to install. The efficiency of the machine reduces over time. Consequently, the costs associated with its use increases over time. Two costs that are influenced by the level of efficiency of the machine are operational costs and maintenance cost. Operational costs are estimated to be GH¢30,000 during the first year of the machine's use; GH¢35,000 during its second year; and GH¢40,000 during its third year. Maintenance costs are estimated to be GH¢11,000 during the first year of the machine's use; GH¢13,000 during its second year; and GH¢15,000 during its third year. The resale value of the machine is GH¢40,000 at the end of the first year of use; GH¢35,000 at the end of the second year of use; and GH¢28,000 at the end of the third year of use. RBL's cost of capital is 18%.

Required:

Determine the optimal replacement cycle length for the machine using the equivalent annual cost method. **(10 marks)**

b) In the coming years, the company is likely to face restrictions on financing for capital investments.

Required:

i) Distinguish between ***soft capital rationing*** and ***hard capital rationing***. **(2 marks)**
ii) Advice the managers of the company on **THREE (3)** practical ways of dealing with capital rationing. **(3 marks)**

c) There are two major opposing views of dividend policy: the Modigliani and Miller' dividend irrelevance theory and the traditional view of dividend policy.

Required:

i) Distinguish between the **TWO (2)** opposing views of dividend policy. **(2 marks)**
ii) Explain **TWO (2)** of the dividend relevance theories. **(3 marks)**

(Total: 20 marks)

QUESTION FIVE

a) Pee Ltd has been factoring its debtors for the past 5 years. The factor charges a fee of 2% and will lend up to 80% of the volume of debtors purchases for an additional ¾% per month. The firm typically has sales of GH¢500,000 per month, 70% of which are on credit. By using the factor, two savings are effected:

- GH¢2,000 per month that would be required to support a credit department, and
- A bad-debt expense of 1% on credit sales.

Pee Ltd's bank has recently offered to lend it up to 80% of the face value of the debtors shown on the schedule of accounts. The bank would charge 8% per annum interest plus a 2% processing charge per GH¢1 of debtors lending. The firm extends terms of net 30, and all customers who pay their bills do so by the thirtieth of the month.

Required:

If the firm borrows on the average GH¢100,000 per month on its debtors, advice whether the firm should discontinue its factoring arrangement in favour of the bank's offer?

(14 marks)

b) Identify and explain **FOUR (4)** techniques that can be used internally to hedge exchange rate risk. **(6 marks)**

(Total: 20 marks)

SOLUTION TO QUESTIONS

QUESTION ONE

a)

i) Nonfinancial objectives

The following nonfinancial objective can help Demo Gold to achieve a sustainable increase in shareholder value:

- **Customer satisfaction**
  The company should seek to provide minerals of the quality that customers expect for a fair price.
- **Employee satisfaction**
  The company should seek to maintain a safe working environment and provide job security to employees. Again, the company should seek to provide opportunities to employees to develop their professional knowledge and skills, grow in the company.
- **Supplier satisfaction**
  The company should seek to remain loyal to its suppliers and continue to give them business. It should seek to pay it's a reasonable price and them promptly.
- **Market leadership in research and development**
  The company to show a dominant position and leadership in research and development
- **Diversification strategy**
  Seeking to expand and diversify business and product offerings to the market
- **Market Share growth**
  The company should seek to expand to increase its market share
- **Reduction in negative environmental footprint**
  The company should seek to reduce environmental degradation and pollution. It should seek to protect marine life in the area it seeks to operate.

[Marks allocation: 4 nonfinancial objectives @ 1 mark each = 4 marks]

ii) **Likely sources of risk relating to the seabed mining operation.**

Likely sources of conflicts relating to the operating of the sea-bed mining include the following:

- Potential reduction in shareholders' value
- Exposure of employees to risk
- Destruction to marine life
- Loss of livelihoods of the people living in the area
- Technology or system malfunction
- Political risk in the foreign environment

- Economic risk
- Currency risk

(Any 3 points for 3 marks)

Ways through which the risk could be minimized or eliminated.

- **Potential reduction in shareholders' value:**
  The directors should manage the risk of the new business failing by hedging against mineral price, buying an insurance policy to cover operational risks, and taking political risk insurance.
- **Exposure of employees to risk**
  The company should invest in safe machinery
  The directors should disclose to employees any safety issues
  Employees should be trained on offshore mining as it is somehow different from on-land mining the employees are familiar with
  The company should maintain a compensation scheme for employee injuries
- **Destruction to marine life**
  The company should invest in machinery that would not emit gasses that are harmful to marine life.
  The company should carry out refinery operations onshore and avoid discharging untreated waste directly into the sea
- **Loss of livelihoods of the people living in the area**
  The company should provide compensation to the people who may be displaced
  The company should facilitate skill development in fish farming and provide seed capital for them to engage in fish farming
- **Technology or system malfunction**
  Procuring high quality and well tested equipment and systems with proper after sales service and performance guarantees
- **Political risk in the foreign environment**
  The company should take political risk insurance
- **Economic risk**
  Through proper economic forecast and risk management in the economic variables
- **Currency risk**
  Use currency hedging tools to manage that

(Ant 3 points for 3 marks)

b) **The required rate of return and the capital asset pricing model**

i) **Equity beta**

$$\beta_j = \frac{\sigma_j \times \rho_{j,m}}{\sigma_m}$$

$$\beta_j = \frac{0.1521 \times 0.91}{0.1875} = 0.74$$

(Marks allocation: computation = 2 marks; final answer = 1 mark= total: 3 marks)

ii) **Appropriate equity beta for Fameko's subsidiary**

Since Fameko's subsidiary would be carrying out similar business, the level of business risk will fairly be the same as that of ExFed. However, since the capital structure of the subsidiary will be different from that of ExFed, the level of financial risk will differ between the two. We can derive an appropriate equity beta for Fameko's subsidiary from that of ExFed by ungearing the equity beta of the U.S. parent and then regearing it to reflect the capital structure of the subsidiary:

$$\beta_u = \frac{V_e}{V_e + V_d(1-t)} \times \beta_e$$

ExFed, equity beta	0.74	
ExFed, proportion of equity		70%
ExFed, proportion of debt		30%
ExFed, tax rate		30%

$$\beta_a = \frac{70}{70+30(1-0.3)} \times 0.74 = 0.5692$$

Regear the asset beta using the capital structure of the Ghana subsidiary:

$$\beta_e = \frac{V_e + V_d(1-t)}{V_e} \times \beta_u$$

Asset beta	0.5692	
Ghana subsidiary, proportion of equity		20%
Ghana subsidiary, proportion of debt		80%

$$\beta_e = \frac{20 + 80(1-0.3)}{20} \times 0.5692 = 2.163$$

(Marks allocation: asset (ungeared) beta = 2 marks; appropriate equity beta = 2 marks= total : 4 marks)

iii) **The appropriate required rate of return on the equity of the Ghana subsidiary**

Using CAPM:

$$ke = r_f + \beta_e(r_m - r_f)$$

$$ke = 0.021 + 2.163(0.07 - 0.021) = 0.127$$

Using the MM Proposition II with tax:

$$ke_u = r_f + \beta_a(r_m - r_f)$$

$$ke_u = 0.021 + 0.5692(0.07 - 0.021) = 0.0489$$

$$k_e(g) = k_e(u) + (k_e(u) - k_d)\left(\frac{V_d(1-t)}{V_e}\right)$$

Keu = 4.89%
Kd = rf = 2.1%
Vd = 80
Ve = 20
t = 30%

$$k_e(g) = 0.0489 + (0.0489 - 0.021)\left(\frac{80(1-0.3)}{20}\right) = 0.127$$

(Marks allocation: computation = 2mark; final answer = 1 mark= total: 3 marks)

(Total: 20 marks)

EXAMINER'S COMMENTS

This question consisted of a) and b) with sub questions i) and ii) for a) and sub questions i) to iii) for b)

The a) was an essay type question that required the candidates to advice directors of a mining company of four non-financial objectives that could be pursued to achieve a sustainable increase in shareholder value. The ii) aspect was centred on identifying three likely sources of risks of sea bed mining operation and how the identified risks could be minimised or avoided.

This part was straight forward and generally well answered by candidates and the best answered part of the question and carried a total of 10 marks.

The b) part was on Ghana based courier Service Company planning to open a subsidiary in the USA.

The i) part of the question was on computation of equity beta of dominant competitor in the courier delivery service business in the USA, ii) Derivation of equity beta of a subsidiary courier firm in the USA with the parent Company based in Ghana and in the same industry and iii) was requiring the candidates to compute the appropriate cost of equity for the USA subsidiary using capital asset pricing model or Modigliani and Miller proposition II with tax.

This (b) part was the most challenging part to most candidates as only few candidates were able to understand and answer well. This contributed to over the overall low pass rate in this question which carried 10 marks.

Only 10% of the candidates managed to obtain a pass in this question and one of the worst answered question.

QUESTION TWO

a) Book value = GH¢454,100 **(2 marks)**

b) Replacement cost value = GH¢454,100 + (GH¢725,000 - GH¢651,600) + (550,000 - GH¢515,900)

= GH¢561,600

(4 marks)

c) Realizable value = GH¢454,100 + (GH¢450,000 - GH¢651,600) + (GH¢570,000 - GH¢515,900) – 14,900

= GH¢291,700

(4 marks)

Note: GH¢14,900 = 2% x GH¢745,000 (bad debts). Bad debts are assumed not to be of relevance to balance sheet and replacement cost values.

d) Gordon Dividend Growth model vale – obviously depends on estimate of growth, which is far from clear given the wide variation in earnings over the five years.

Lowest possible value, assuming zero growth (most prudent estimate):
Value cum div. = $\frac{GH¢25,000}{0.12}$ + GH¢25,000 = GH¢233,333
It is not likely that this will be the basis taken.

Alternative:
Value ex div. = $\frac{GH¢25,000}{0.12}$ = GH¢208,333

Looking at dividend growth over the past five years:

2018 dividend =GH¢25,000
2014 dividend = GH¢20,500

g (growth rate) = $\left(\frac{25,000}{20,500}\right)^{\frac{1}{4}}$ = 1.051 say 5%

then, MV cum div = $\frac{\text{Dividend in 1 year}}{0.12 - g}$

= $\frac{GH¢25,000(1.05)}{0.07}$ +25,000

= GH¢375,000 +25,000 =400,000

Alternative:
2018 dividend =GH¢25,000
2014 dividend = GH¢20,500

g (growth rate) = $\left(\frac{25,000}{20,500}\right)^{\frac{1}{4}}$ = 1.051 say 5%

then, MV ex div = $\frac{\text{Dividend in 1 year}}{0.12 - g}$

= $\frac{GH¢25,000(1.05)}{0.07}$

= GH¢375,000

Alternatively, Using the rb model

Average proportion retained = b =

$\frac{12,800 + 44,200 + 18,300 + 13,400 + 27,200}{33,300 + 66,800 + 43,300 + 38,400 + 52,200}$ = 0.495 say, b = 0.5

Return on investment this year = r =

$\frac{53,200}{\text{average investment}} = \frac{53,200}{454,100}$ = 11.7%

Then g = 0.5 x 12% = 6%

So MV cum div = $\frac{GH¢25,000(1.06)}{0.06}$ = GH¢441,666.67+25,000 =466,666.67

Alternative:

So MV ex div = $\frac{GH¢25,000(1.06)}{0.06}$ = GH¢441,666.67

(5 marks)

e) **P / E ratio model**

Comparable quoted companies to Manon Ltd have PE ratio of 10. Manon is much smaller and being unquoted its PE would be less than 10, but how much less?

If we take a PE of 5: MV = GH¢53,200 x 5 = GH¢266,000
If we take a PE of 10 x $\frac{2}{5}$, MV = GH¢53,200 x 10 x $\frac{2}{5}$ = 212,800
If we take a PE of 10 (maximum possible), MV = GH¢532,000

Allow for student assumption of P/E ratio between 4 and 9 or 10

(5 marks)

(Total: 20 marks)

EXAMINER'S COMMENTS

Question Two was on Carmen Ltd acquisition of Manon Ltd, a private limited liability company in the manufacturing sector. Valuation was to be done on Manon Ltd to acquire the entire share capital. The question expected candidates to estimate the value of equity capital of Manon Ltd with a given financial statements and an extract

of profit and loss statements for five years together with other additional information on foot notes under a) Book value b)Replacement cost c) Realisable value d) The Gordon dividend growth model and e) the P/E ratio. The a) part carried 2 marks, b) and c) 4 marks each and d) and e) also carrying 5 marks each totalling 20 marks. Candidates had a total understanding of the question and received the best answers. This was the best answered question with 37% of those who answered the question obtaining a pass mark.

QUESTION THREE

a)

i) PV of the payments under the cash purchase option

The payments PDS will make under the cash purchase option are effectively the payments under the loan arrangement, which form an ordinary annuity:

$$\text{PVA} = \text{PMT}\left[\frac{1-\frac{1}{\left(1+\frac{\text{i}}{\text{m}}\right)^{\text{n}}}}{\frac{\text{i}}{\text{m}}}\right]$$

Even payment, PMT = 27,952.26

Annual interest, i = 15%

Frequency, m = 12

Term (in years), t = 3

Number of periods, n = 3 x 12 = 36

$$\text{PVA} = 27{,}952.26\left[\frac{1-\frac{1}{\left(1+\frac{0.15}{12}\right)^{36}}}{\frac{0.15}{12}}\right] = 27{,}952.26 \times 28.84726737 = 806{,}346.318$$

[Marks allocation: Interest factor = 1 mark; Computation of present value = 3 marks; Final answer = 1 mark] (5 marks)

ii) **PV of all the payments under the credit purchase option**

PV of payments = Down payment + PV of instalments (which is an ordinary annuity)

Down payment = 50,000

$$\text{PVA} = \text{PMT}\left[\frac{1 - \frac{1}{\left(1 + \frac{\text{i}}{\text{m}}\right)^{\text{n}}}}{\frac{\text{i}}{\text{m}}}\right]$$

Even payment, PMT = 116,100

Annual interest, i = 20%

Frequency, m = 4

Term (in years), t = 2

Number of periods, n = 2 x 4 = 8

$$\text{PVA} = 116{,}100\left[\frac{1 - \frac{1}{\left(1 + \frac{0.20}{4}\right)^{8}}}{\frac{0.20}{4}}\right] = 116{,}100 \times 6.463212759 = 750{,}379.00$$

$$PV\ of\ payments\ =\ 50{,}000\ +\ 750{,}379 = 800{,}379$$

[Marks allocation: Down payment = 1 mark; Interest factor of annuity = 1 mark; Computation of present value = 1 mark; Final answer = 1 mark] **(4 marks)**

iii) **Recommended option**
The recommended option is the credit purchase plan as its PV is lower. **(1 mark)**

b)

i) **Intrinsic value** in an option is explained as the positive value or gain if an option is exercised today. Technically, the option will be so considered to be in the money. An option has an intrinsic value when it is in-the-money. **(1 marks)**

ii)

Month	**Spot Rate USD/GH¢**	**Exercise Rate/Price USD/GH¢**	**Difference (Spot Rate-Strike rate)**	**Comments/ Interpretation**
1	5.1	4.8	0.3	In-the-money
2	5.3	5.0	0.3	In-the-money
3	5.5	5.4	0.1	In-the-money
4	5.8	5.8	0	At-the-money
5	5.7	6	(0.3)	Out-of-the-money
6	6.0	6.4	(0.4)	Out-of-the-money
			= 3 marks	= 3 marks

DUU ltd was in the money for 1 to month 3, at the money in month 4 and out of the money in month 5 and 6. **(6 marks)**

c) **Credit risk** refers to the risk that the borrower may not be able to repay any credit granted. This therefore exposes the lender or granter of credit to loss for the non-payment or default. **(1.5 marks)**

Liquidity risk on the other hand is the risk that a company may be unable to meet its financial commitments on the due date contrary to expectations from counterparties. **(1.5 marks)**

(Total: 20 marks)

EXAMINER'S COMMENTS

Question Three consisted of a) to c) parts with a) having i) to iii) sub questions for a total of 10 marks, b) i) and ii) for 7 marks and c) carrying 3 marks totalling 20 marks.
The a) was on decision making on payment options on the purchase of a new cereal processing plant. The question expected the candidates to compute and advise whether to purchase under cash option or to purchase under credit purchase plan.
This part of the question attracted good answers from candidates and those who struggle in this question were confused on the right formulas to use in the computation.
The b) part which was on determining the intrinsic value of an option for each trading month and indicate the months the option was *in the money, at the money and out of money* was also well answered except few candidates who struggled on the interpretation. This part contributed to overall good pass rate in the question.
The c) part was essay or theory on credit and liquidity risks and was to test the student's knowledge on these types of risks. It also received good answers from the candidates
On overall basis this was the second-best answered question with a pass rate of 36%.

QUESTIONS FOUR

a) **Determination of optimum replacement cycle length**

With 3-year duration, there are three alternative replacement cycles: every year, every two years, and every three years.

1-year Cycle: If the plant is replaced every year, the firm will incur the initial cost of GH¢160,000 now, operational cost of GH¢30,000 at the end of year one, maintenance cost of GH¢11,000 at the end of year one, and receive the resale value of GH¢40,000 at the end of year one when the asset is replaced.

2-year Cycle: If the plant is replaced every two years, the firm will incur the initial cost of GH¢160,000 now; operational cost of GH¢30,000 and GH¢35,000 at the end

of year one and year two respectively; maintenance cost of GH¢11,000 and GH¢13,000 at the end of year one and year two respectively; and receive the resale value of GH¢35,000 at the end of year two when the plant is replaced.

3-year Cycle: If the plant is replaced every three years, the firm will incur the initial cost of GH¢160,000 now; operational cost of GH¢30,000, GH¢35,000 and GH¢40,000 at the end of year one, year two and year three respectively; maintenance cost of GH¢11,000, GH¢13,000 and GH¢15,000 at the end of year one and year two respectively; and receive the resale value of GH¢28,000 at the end of year two when the plant is replaced.

	DF	Replace every year		Replace every 2 years		Replace every 3 years	
	1/(1.18)^t	Cost	Present Cost	Cost	Present Cost	Cost	Present Cost
EOY 0							
Initial cost	1.0000	(160,000.00)	(160,000.00)	(160,000.00)	(160,000.00)	(160,000.00)	(160,000.00)
EOY 1							
Operational cost	0.8475	(30,000.00)	(25,425.00)	(35,000.00)	(29,662.50)	(35,000.00)	(29,662.50)
Maintenance cost	0.8475	(11,000.00)	(9,322.50)	(13,000.00)	(11,017.50)	(13,000.00)	(11,017.50)
Resale value	0.8475	40,000.00	33,900.00	-	-	-	-
EOY 2							
Operational cost	0.7182	-	-	(35,000.00)	(25,137.00)	(35,000.00)	(25,137.00)
Maintenance cost	0.7182	-	-	(13,000.00)	(9,336.60)	(13,000.00)	(9,336.60)
Resale value	0.7182	-	-	35,000.00	25,137.00	-	-
EOY 3							
Operational cost	0.6086	-	-	-	-	(40,000.00)	(24,344.00)
Maintenance cost	0.6086	-	-	-	-	(15,000.00)	(9,129.00)
Resale value	0.6086	-	-	-	-	28,000.00	17,040.80
Aggregate present cost			(160,847.50)		(210,016.60)		(251,585.80)
Discount factor @ 18%			0.8475		1.5656		2.1743
Equivalent annual cost			(189,790.56)		(134,144.48)		(115,708.87)

The optimal replacement cycle is every three years. This is because it presents the least equivalent annual cost to the firm.

$$EAC = \frac{Aggregate\ Present\ Cost}{PVIFA}$$

$$PVIFA = \left[\frac{1 - \frac{1}{(1+i)^n}}{i}\right]$$

1-year cycle:

$$PVIFA = \left[\frac{1 - \frac{1}{(1+0.18)^1}}{0.18}\right] = 0.8475$$

$$EAC = \frac{-160{,}847.5}{0.8475} = -189{,}790.56$$

2-year cycle:

$$PVIFA = \left[\frac{1 - \frac{1}{(1+0.18)^2}}{0.18}\right] = 1.5656$$

$$EAC = \frac{-210{,}016.6}{1.5656} = -134{,}144.48$$

3-year cycle:

$$PVIFA = \left[\frac{1 - \frac{1}{(1+0.18)^3}}{0.18}\right] = 2.1743$$

$$EAC = \frac{-251{,}585.8}{2.1743} = -115{,}708.87$$

[Marks allocation: 1 mark for cash flows of each of three cycles = 3 marks; 1 marks for cash flows of each of three cycles = 3 marks; 0.5 marks for present cost for each of three cycles = 1.5 marks; 0.5 marks for equivalent annual cost for each of three cycles = 1.5 marks; optimum replacement cycle = 1 mark] **(10marks)**

b) **Capital rationing**

i) The distinction between soft and hard capital rationing.

Soft capital rationing is when the restriction on capital allocation to capital projects is due to internally imposed constraints such as managerial decisions.

Hard capital rationing is when the restriction on capital allocation to capital projects is due to the difficulty in raising capital from the capital market.

(**2 marks)**

ii) Practical ways of dealing with capital rationing include the following:

- Delay the start of projects that could not be financed immediately
- Seek joint venture with other firms to reduce the capital requirements on the firm
- Subcontract portions of the investment phase with the agreement that subcontractors pre-finance

(3 point @ 1 mark each = 3 marks)

c) **Dividend theories**

i) Dividend irrelevance theory vs the traditional view

On the back of the assumption of a perfect market, the dividend irrelevance theory of Modigliani and Miller explains that the level of dividend does not affect the wealth of shareholders.

Based on the argument of imperfections in the market, the traditional view (dividend relevance theory) explains that the level of dividend payment affects the wealth of shareholders. Thus, dividend policy can be designed to maximise the value of shareholders. **(2 marks)**

ii) **Dividend relevance theories**

Dividend relevant theories include the clientele effect, the bird-in-hand effect, and dividend signalling effect.

The clientele effect:

On the recognition of differences in tax treatments of dividends and capital gains and the existence of transaction costs, the clientele effect explains that investors would prefer the dividend policy that provides the most advantages in terms of taxes and transaction costs relating to investments in shares. Thus, companies should consistently apply the dividend policy that attracts to them a clientele of investors who like the policy.

***The bird-in-hand effect*:**

This explains that investors, in general, prefer dividends to capital gains because a dividend now is more certain than either a promised future dividend from reinvested profit or a capital gain in the future. Thus, companies should pay some dividends now.

***Dividend signalling effect*:**

Dividend payment decisions give signals about the company's future financial performance. In general, a higher than expected dividend signal that the directors are confident about future financial performance, which may result in an increase in the stock price. A lower than expected dividend may be a signal of financial difficulty in the future, which may cause the stock price to fall.

(2 theories @ 1.5 marks each = 3 marks)

(Total: 20 marks)

EXAMINER'S COMMENTS

Question Four was on optimal replacement cycle length of a machine for a) part (10 marks), soft and hard capital rationing and the three practical ways of dealing with capital rationing for b) part (5 marks) and the c) part on two opposing views of dividend policy: Modigliani and Miller dividend irrelevance theory and traditional view of dividend policy (5 marks)

All parts of the question received good answers. On the a) part, the candidates had a good understanding of how to compute and interpret the results. Candidates had good understanding of the meaning and practical ways of dealing with capital rationing. Some candidates however, struggled to explain the practical ways of dealing with the question. Candidates also exhibited some good understanding of the two opposing views of the dividend policy.

This was the third best answered question with 32% of candidates who answered this question obtaining a pass.

QUESTION FIVE

a)

		Monthly
Factoring Cost:		
Purchase of debtors:		
		GH¢
(.02) (.7) (500,000)	=	7,000
Lending: (.0075) (100,000)	=	750
		7,750

		GH¢
Bank Financing		
Interest (.0067) (100,000)	=	**670**
Processing (.02) (100,000)	=	**2,000**
Credit debt	=	**2,000**
Bad debt expense	=	**3,500**
		8,170

The firm should continue its factoring arrangement.

(14 marks evenly spread)

ALTERNATIVE

		Annual
Factoring Cost:		
Purchase of debtors:		
		GH¢
(.02) (0.7) (6,000,000)	=	84,000
Lending: (0.09) (100,000)	=	9,000
		93,000

		GH¢
Bank Financing		
Interest 0(.08) (100,000)	=	**8,000**
Processing (.02) (100,000) X12	=	**24,000**
Credit debt (2,000 X 12)	=	**24,000**
Bad debt expense (0.01 X4,200,000)		**42,000**
=		
		98,000

The firm should continue its factoring arrangement.

(14 marks evenly spread)

b) **The internal hedging techniques are:**

- **Matching:** The matching technique is a strategy of working capital financing wherein we finance short term requirements with short-term debts and long-term requirements with long-term debts. The underlying principle is that each asset should be financed with a financial instrument having almost the same maturity. This can help manage transaction and translation risk.
- **Netting:** Netting is a method of reducing risks in financial contracts by combining or aggregating multiple financial obligations to arrive at a net obligation amount. Netting is used to reduce settlement, credit, and other financial risks between two or more parties.
- **Leading and lagging:** leading and lagging refer to the expediting or delaying, respectively, of settlement of payments or receipts in a foreign exchange transaction because of an expected change in exchange rates.
- **Invoicing in local currency:** This technique can give you the advantage in sales price negotiations and the opportunity to increase your margins, because all the foreign exchange risk has been absorbed and is no longer your customer's concern.

(4 points well explained @ 1.5 marks = 6 marks)

(Total: 20 marks)

EXAMINER'S COMMENTS

Question Five had two parts a) and b) with a) part carrying 14 marks and the b) part carrying 6 marks totalling 20 marks.

The a) part was on decision making on the use of a factor in debt management and whether to discontinue the factoring approach and favour bank financing approach.

Candidates struggled to understand and compute the relevant numbers to arrive at the decision making. Additionally, candidates were computing the various numbers on annual basis whilst others did on monthly basis for the decision but both approaches were considered. The performance in the a) was poor and that carried a lot of marks and therefore impacted the overall pass rate.

The b) part was a theory or essay question on identifying four techniques that can be internally used to hedge exchange rate risk. Those who understood the question provided good answers to earn the maximum marks. Some candidates however confused this with general hedging methods for exchange rate risk management and deviated.

Performance was poor as only 9% of the candidates obtained pass rate in this question.