

**NOVEMBER 2018 PROFESSIONAL EXAMINATION  
ADVANCED FINANCIAL MANAGEMENT (PAPER 3.3)  
CHIEF EXAMINER'S REPORT, QUESTIONS & MARKING SCHEME**

**EXAMINER'S GENERAL COMMENTS**

The performance of the students in this paper was an improvement over the previous diets. There was fair understanding of the questions. Students are advised to cultivate the habit of reading generally and more on fundamental principles of financial management. This is so because the AFM is built on general knowledge in business and the principles of financial management.

**STANDARD OF THE PAPER**

The questions were of the highest standard of the recent examination papers. They fairly represented the syllabus of the Advanced Financial Management.

Question one assessed the students on financing of a project using government subsidy. Thus, dealing with Adjusted Present Values. Students were also examined on cost of capital and risk. This question and the instructions were clear. The marks allocated were also fair for the efforts needed to answer the question.

Question two examined the students on International Capital Budgeting and how Multinational Companies can deal with blocked funds. The question was not ambiguous and the instructions were certain on what students were to do.

Question three sought to test students understanding on issues such as why takeovers and mergers fail, economic and financial essence of a takeover, and valuation of a business for a takeover using Free Cash Flow concepts. The question tested students understanding on how to adjust financial statements to obtain free cash flows. Marks allotted were fair.

Question four was on economic value-added (EVA) computation and the differences between spin-off and sell-off. This question was very comprehensive on the principles behind EVA. The problem with the question was that students were made to compute value based on EVA in (a) and the net operating profit (NOPAT) in (b). It should have been the other way round. This was an anomaly in the question.

Question five was the only strange question for the reason that it sought to test students understanding of choosing from a cheaper source of finance by calculating interest cost and adjusting by depreciation of currencies. The question was a little ambiguous in the sense that a lot of assumptions would have to be made.

**PERFORMANCE OF CANDIDATES**

Generally, the performance of the students was far better than in recent years. It was average performance though. More than 36 percent of the students passed the paper compared to less than 12 percent in recent diets.

The reasons could be as follows: It is strongly believed that the students did well because the standard of the questions was fairly good.

The students have now realised that the subject is not principles of Financial Management but Advanced Financial Management and demands more efforts to pass. It was clear that students are putting more efforts.

There is evidence that the students are having a better tuition now. However, some of the students did not show any evidence of good understanding of the basics of financial management.

Those students who did not perform well do not understand financing activities so well. This area of finance was not examined specifically but featured in almost all the questions.

### **NOTABLE STRENGTHS & WEAKNESS OF CANDIDATES**

It was evident that the exemption policy on financial management is not the best and has not helped the students. It is assumed that the students have good knowledge on the principles of financial management. But this assumption is flawed. This is because it is strange that more than 90% of Advanced Financial Management students could not explain bankers' Acceptance and Commercial paper.

Most of the students did not see the need to pay attention to the financing activities such as types of funds, financial market and institutions, cost of capital, capital structure decisions and debt/equity financing. Strangely, these topics are clearly indicated in the AFM syllabus. Students will enhance their chances of passing the paper if they pay attention to the financing function. No student should go to the examination room without firm understanding of the various types of funds, cost of funds (or capital) and their computation.

Students concentrated on the capital budgeting decisions. Most of the students were able to deal with the cash flows aspects of the investment appraisal questions on capital budgeting but it was worrying that they could not compute the cost of capital to be used to discount the cash flows. This is the problem stated in the paragraph above.

One of the prominent areas in the AFM is Mergers and acquisitions. It seems students do concentrate only on certain aspects of the topic. Over the recent past, questions on mergers and acquisitions have centred on 'assessment and evaluation' of mergers and acquisitions. This diet examined students on 'valuation of businesses for acquisition'. Students should be made to know that Type I, Type II and Type III acquisitions and their valuation is also critical in understanding mergers and acquisitions. Students fairly appreciate why mergers, reasons for mergers, bid defences and why mergers fail.

Capital Re-organisation continue to be an area where students find it difficult to figure out what is expected of them. Students should pay attention to financial reconstruction, portfolio reconstruction and organisational reconstruction. These are the three areas that are very important in the topic. Most students could not distinguish spin-off from sell-off and that is a clear indication that they don't know what to read under this topic.

## QUESTION ONE

- a) One-Village Water Resources Ltd (One-Village) is considering a damming and irrigation project that will supply water to tomato farms around the Oti River. One-Village plans to commence the construction and installation phase of the project immediately and complete it in three years' time. One-Village will invest GH¢3 million in new plants and equipment now. Mobilisation to the project site will cost GH¢0.5 million now. Development costs are expected to be GH¢3 million in the first year, GH¢4 million in the second year and GH¢2 million in the third year.

The commercial phase of the project will commence in the fourth year and run indefinitely. The project will generate after-tax net cash flows of GH¢6 million in the fourth year and GH¢8 million in the fifth year. Beyond the fifth year, cash flows will grow by 5% every year to perpetuity.

One-Village has 10 million shares outstanding, which are currently trading at GH¢3.5 each. The total value of its debt stock is GH¢20 million. One-Village plans to finance the investment requirements of the construction and installation phase of the project with new debt. Its borrowing cost is 20% while its cost of equity is 25%. Currently, the Government of Ghana is promoting large-scale farming to provide food and jobs. The Government of Ghana is encouraged by this project, and so is willing to give a subsidised loan of up to GH¢10 million at 15% annual interest to One-Village to help finance the project. One-Village plans to take up the maximum of the subsidised loan from the Government of Ghana and finance the balance with a bank loan. Issue costs, which are tax-deductible outgoings, are expected to be GH¢0.6 million. Both loans will be repaid in five years' time.

One-Village falls into the 22% corporate income tax category. The risk-free interest rate is 14% and the return on the market portfolio is 18%.

### Required:

Evaluate the project using the adjusted present value technique and recommend whether it should be implemented or not. **(12 marks)**

- b) The directors of One-Village are considering another irrigation project in a country in Sub-Saharan Africa. The World Bank's Doing Business Report for 2017 ranked the destination country 140th out of 190 countries on the ease of doing business. Below is ease of doing business statistics for the destination country and One-Village's home country as reported in the Doing Business 2017 report.

Ease of doing business indicator		Home Country		Destination Country	
		Rank	Score	Rank	Score
1	Starting a business	110	83.73	138	78.62
2	Dealing with construction permits	117	65.34	174	49.63
3	Getting electricity	120	60.30	180	29.43
4	Registering property	77	65.99	182	31.44

5	Getting credit	44	65.00	44	65.00
6	Protecting minority investors	87	53.33	32	65.00
7	Paying taxes	122	62.91	182	28.09
8	Trading across borders	154	52.32	181	19.93
9	Enforcing contracts	114	54.00	139	48.59
10	Resolving insolvency	155	25.27	140	30.60

**Required:**

Advise the directors on four risks or issues One-Village should consider when deciding on whether to implement the proposed irrigation project in the destination country, and suggest how the risks or issues may be mitigated or resolved. **(8 marks)**

**(Total: 20 marks)**

## QUESTION TWO

- a) Rock Minerals Ltd (Rock) is a minerals mining company based in Ghana. Rock is considering an investment opportunity in South Africa, which involves developing and operating a gold mine and later transferring the mine to the South African government.

Last year, the directors commissioned a special committee to assess investments and regulatory requirements relating to the project. Based on the committee's report, the directors estimate that it will take two years to develop the mine. Development of the mine entails an immediate outlay of ZAR1.2 million in regulatory requirement expenditures, an investment of ZAR20 million in plants and equipment in the first year and ZAR15 million for development expenditure in the second year. The directors also estimate that Rock will invest ZAR2 million in net working capital at the beginning of the third year. The investment in net working capital is expected to be increased to ZAR3 million at the beginning of the fifth year.

Commercial production and sales are expected to begin in the third year. Below are estimated operating cash flows before tax in the first three years of commercial production:

End of year	3	4	5
Revenue collections (ZAR' millions)	100	150	210
Variable operating costs (ZAR' millions)	40	50	80
Fixed operating costs (ZAR' millions)	20	25	30

At the end of the fifth year, Rock will transfer ownership and control of the mine to the South African government for an after-tax consideration of ZAR100 million. The special committee also reports that income tax rate for mining operations is 30% and capital expenditure in relation to acquisition of property, plant and equipment and development expenditure qualify for capital allowance at the rate of 20% per annum on straight line basis. Capital allowance is granted at the end of each year of commercial production. On repatriation of profit, the committee reports that the South African government does not restrict repatriation of profit

and there are no profit repatriation taxes. Rock would repatriate cash returns as they become available.

Rock plans to finance this project using existing capital. Rock's after-tax cost of capital is 25% in Ghana. Annual rate of inflation is expected to be 11% in Ghana and 5% in South Africa in the coming years. Currently, the rate of exchange between the Ghanaian cedi (GH¢) and the South African rand (ZAR) is GH¢0.3822 = ZAR1.

**Required:**

- a) Evaluate the project on financial grounds using the net present value (NPV) approach, and recommend whether the investment proposal should be accepted for implementation or not. **(12 marks)**
- b) Suppose the South African government changes its policy on profit repatriation and legislates that profit cannot be repatriated until termination or exit.
  - i) If Rock can invest blocked funds in South Africa for 12% annual rate of return, by how much would the project's NPV differ from your results in sub-question (a) above? **(5 marks)**
  - ii) Suggest **THREE (3)** ways through which Rock can deal with the risk of blocked funds. **(3 marks)**

**(Total: 20 marks)**

**QUESTION THREE**

- a) Despite substantial evidence, drawn from different countries and different time periods, that suggests the wealth of shareholders in a bidding company is unlikely to be increased as a result of taking over another company, takeovers remain an important part of the business landscape.

**Required:**

- i) Explain briefly when takeover will make economic and financial sense. **(3 marks)**
  - ii) Discuss briefly **FIVE (5)** reasons why a takeover may fail to deliver an expected increase in wealth for the bidding company's shareholders. **(5 marks)**
- b) DoGood Ltd is evaluating Phinex Ltd using the Free Cash Flow to the Firm (FCFF) and Free Cash Flow to Equity (FCFE) valuation approaches.

DoGood Ltd has gathered the following information (in current Ghana Cedis terms):

- Phinex Ltd has net income of GH¢250 million, depreciation of GH¢90 million, capital expenditures of GH¢170 million, and an increase in working capital of GH¢40 million.
- Phinex Ltd will finance 40% of the increase in net fixed assets (capital expenditures less depreciation) and 40 % of the increase in working capital with debt financing.
- Interest expenses are GH¢150 million. The current market value of Phinex's outstanding debt is GH¢1,800 million.

- FCFF is expected to grow at 6.0% indefinitely, and FCFE is expected to grow at 7.0%.
- The tax rate is 30%.
- Phinex Ltd is financed with 40 % debt and 60% equity. The before-tax cost of debt is 9% and the before-tax cost of equity is 13%.
- Phinex Ltd has 10 million outstanding shares.

**Required:**

- i) Using the FCFF valuation approach, estimate the total value of the firm, the total market value of equity, and the value per share. **(6 marks)**
- ii) Using the FCFE valuation approach, estimate the total market value of equity and the value per share. **(6 marks)**

**(Total: 20 marks)**

## QUESTION FOUR

Jabesh Company limited income statements for the years 2016 and 2017 are provided below:

	2017	2016
	GH¢'000	GH¢'000
Operating profit	6,500	5,500
Interest expenses	(1,000)	(900)
Profit before tax	5,500	4,600
Tax at 25%	(1,375)	(1,150)
<b>Profit after tax</b>	<b><u>4,125</u></b>	<b><u>3,450</u></b>

The company directors at a meeting argued that the use of Economic Value Added as a measure of corporate performance is more relevant to current developments in financial markets and agreed to employ it in assessing its performance for year 2017 and 2016.

### **Additional information is as follows:**

- The allowance for doubtful debts was GH¢300,000 at 1 January 2016, GH¢250,000 at 31 December 2016 and GH¢350,000 at 31 December 2017.
- Research and development costs of GH¢500,000 were incurred during each of the years 2016 and 2017 on Project Z. These costs were expensed in the income statement, as they did not meet the requirements of financial reporting standards for capitalization. Project Z is not complete yet.
- At the end of 2015, the company had completed another research and development project, Project X. Total expenditure on this project had been GH¢1,500,000, none of which had been capitalised in the financial statements. The product developed by Project X went on sale on 1 January 2016, and the product was a great success. The product's lifecycle was only two years, so no further sales of the product are expected after 31 December 2017.
- The company incurred non-cash expenses of GH¢15,000 in both years.
- Capital employed (equity plus debt) per the statement of financial position was GH¢33,500 at 1 January 2016, and GH¢37,000 at 1 January 2017.
- The pre-tax cost of debt was 5% in each year. The estimated cost of equity was 12% in 2016 and 14% in 2017. The rate of corporate tax was 25% during both years.
- The company's capital structure was 60% equity and 40% debt.
- There was no provision for deferred tax.

### **Required:**

- Explain what the directors meant by Economic Value Added (EVA). **(2 marks)**
- Calculate the company's Economic Value Added (EVA) for the years ended 2017 and 2016. **(5 marks)**
- Calculate the Net Operating Profit after tax (NOPAT) for the years ended 2017 and 2016. **(6 marks)**
- Explain Spin-offs and sell-off and identify **THREE (3)** reasons for Spin-offs. **(7 marks)**

**(Total: 20 marks)**

## QUESTION FIVE

- a) The Ghana Cocoa Board (GCB) is contemplating borrowing one year funds in anticipation of the coming cocoa season which starts in September/October, 2017. GCB can borrow from the local financial market in Ghana or borrow a portfolio of funds made up of UK pounds and Euros. The information below is the borrowing rates, and the probabilities of expected strengthening of the international currencies vis-à-vis the cedi.

### Borrowing Rates

Ghana Cedis	-	18%
UK Pounds	-	10%
Euros	-	8%

### Strengthening of UK Pounds

Probability	% Change in Spot Rate
30%	10%
70%	5%

### Strengthening of Euros

Probability	% Change in Spot Rate
40%	8%
60%	6%

### Required:

If GCB should borrow a portfolio made up of 60% UK pounds and 40% euros, determine whether GCB should borrow from the local financial market or borrow the portfolio of funds made up of UK pound and the euros. **(10 marks)**

- b) The money market deals primarily with short term instruments with short term maturities and the repayment of funds borrowed is required within a short period of time.

### Required:

Explain the following in the money markets:

- Securitization.
- A “Reversed Repurchase Agreement”.
- Banker’s Acceptance.
- Commercial Paper.

**(10 marks)**

**(Total: 20 marks)**



## SOLUTION TO QUESTIONS

### QUESTION ONE

#### Marking Scheme

	Marks
(a) Evaluation of damming and irrigation project in Ghana	
Computation of terminal value	2.0
Estimation of ungeared ke	2.0
Schedule of cash flows	1.0
Discount factors, PV of NCFs and base NPV	2.5
Issue cost effects	1.5
Interest payment effect	1.0
Loan subsidy effect	1.0
APV	0.5
Recommendation	0.5
	<hr/>
	12
(b) Advise on risks/issues relating to irrigation project in a foreign country	
Risks or issues (4 risks or issues for 1.0 each)	4.0
Suggestions for mitigating or resolving the risks or issues	4.0
<b>Total</b>	<hr/>
	20

**(a) Appraisal of Irrigation Project in Ghana using Adjusted present value (APV)**

**Step 1: Computation of the base NPV**

	End of year						
	0	1	2	3	4	5	
	GHS' million						
Mobilisation costs	(0.500)						
Plants and equipment	(3.000)						
Development costs		(3.000)	(4.000)	(2.000)			
After-tax net operating cash flows					6.000	8.000	
Terminal value						50.602	
Net cash flows	(3.500)	(3.000)	(4.000)	(2.000)	6.000	58.602	
Discount factor @ 21.6%	1.000	0.822	0.676	0.556	0.457	0.376	
PV of NCF	(3.500)	(2.467)	(2.705)	(1.112)	2.744	22.042	
Base case NPV	15.001						
Cash exposure	(3.500)	(6.500)	(10.500)	(12.500)	<--- Total financing needs		

**Step 2: Calculation of PV of financing side effects**

Financing side effects that apply in this case are –

- the issue cost and its associated tax shield
- annual interest payments on debt financing
- benefit from subsidized loan from the government

Necessary adjustments for the financing side effects follow.

		GHC' million
Issue costs		(0.600)
Tax shield from issue cost discounted @ risk-free rate	$\text{GH}\text{¢}0.6\text{m} \times 0.22 \times 0.877$	0.116
Tax shield from interest payments discounted @ risk-free rate	$[(\text{GH}\text{¢}10\text{m} \times 0.15 \times 0.22) + (\text{GH}\text{¢}2.5\text{m} \times 0.2 \times 0.22)] \times 3.433 = \text{GH}\text{¢}0.44\text{m} \times 3.433$	1.511
After-tax benefit from loan subsidy discounted @ risk-free rate	$(\text{GH}\text{¢}10\text{m} \times 0.05 \times (1 - 0.22) \times 3.433 = \text{GH}\text{¢}0.39\text{m} \times 3.433$	1.339
Total benefit from financing side effects		2.366

**Notes:**

- It is assumed that the entire issue costs will be expensed in the first year.
- PV of tax shield and subsidy benefit are based on the risk-free interest rate. It may be discounted at the company's cost of debt.

**Step 3: Compute APV by adjusting base case NPV for financing side effects**

	GH¢' million
Base NPV	15.001
PV of financing side effects	2.366
<b>Adjusted present value</b>	<b>17.366</b>

**Conclusion:** As the APV is positive, the value of One-Village will increase if the proposed damming and irrigation project is implemented. It should be implemented.

**Workings:**

**1. Ungear cost of equity**

The ungeared cost of equity may be estimated based on MM Proposition II with tax or the CAPM.

Using MM Proposition II with tax:

$$Ke(g) = ke(u) + (ke(u) - kd) \left( \frac{Vd(1 - t)}{Ve} \right)$$

One-Village's geared cost of equity,  $ke(g) = 25\%$

Value of One-Village's equity =  $10m \times GH¢3.5 = GH¢35m$

Value of One-Village's debt =  $GH¢10m$

One-Village's tax rate,  $t = 22\%$

Cost of debt,  $kd = 14\%$  (taken to be the risk-free interest rate as per MM view)

$$0.25 = ke(u) + (ke(u) - 0.14) \left( \frac{GHS20m (1 - 0.22)}{GHS35m} \right)$$

$$0.25 = ke(u) + 0.4457ke(u) - 0.0624$$

$$0.25 = 1.4457ke(u) - 0.0624$$

$$ke(u) = \frac{0.25 + 0.0624}{1.4457} = 0.216$$

### Using the CAPM:

With CAPM, obtain ungeared (or asset) beta of One-Village and put it into CAPM to obtain ungeared cost of equity as under:

Equity beta of One-Village is 2.75:

$$0.25 = 0.14 + \beta_e(0.18 - 0.14)$$

$$\beta_e = \frac{0.25 - 0.14}{0.04} = 2.75$$

Ungeared (or asset) beta of One-Village is 1.9022:

$$\beta_a = \frac{GHS35m}{GHS35 + GHS20(1 - .22)} \times 2.75 = 1.9022$$

Putting ungeared (or asset) beta into CAPM yields an ungeared cost of equity of 21.6%:

$$ke(u) = 0.14 + 1.9022(0.18 - 0.14) = 0.216$$

**Note: The ungeared cost of equity may be rounded to 22% to read present value interest factors from interest factor tables.**

### Using WACC

$$WACC = \frac{(K_e MVe) + (K_d MVd)}{MVe + MVd}$$

$$K_e = 25\%$$

$$\begin{aligned} MVe &= \text{No. of shares} * MPS \\ &= 10m * GH¢3.5 \\ &= GH¢35m \end{aligned}$$

$$\begin{aligned} K_d &= I(1-t) \\ &= 20(1-0.22) \\ &= 15.6\% \end{aligned}$$

$$MVd = GH¢20m$$

$$WACC = \frac{(0.25 * 35) + (0.156 * 20)}{35 + 20} \times 100$$

$$\begin{aligned} &= 11.87 / 55 * 100 \\ &= 21.6\% \text{ or } 22\% \end{aligned}$$

## 2. Terminal value

As after-tax operating cash flows will grow at a constant rate of 5% every year after year five to perpetuity, the terminal value at the end of the fifth year is computed using the Gordon's growth model as under:

$$TV_5 = \frac{GHS8m(1 + 0.05)}{0.216 - 0.05} = GHS50.602m$$

(12 marks)

### (b) Risks and issues relating to One-Village's proposed project in a foreign country

Considering the target country's lower ranking on the ease of doing business, the directors of One-Village should expect some political risks, legal risks, and other issues that may make it difficult for them to set up and operate successfully. Below are some risks and ways of addressing them.

- **Risks or issues**

Lower rank for dealing with construction permits suggests that One-Village may face the **risk of government frustration** which might create room for bribery and corruption.

- The lower score for paying taxes suggests that One-Village may face **uncertainty and inconvenience about taxes**, which may make its compliance with tax laws difficult. Frequent changes in tax laws and ambiguity about the position of the tax law would increase the risk of One-Village failing to honour its tax obligations.
- The lower rank for trading across borders suggests that country may be restricting free flow international trade or the country is otherwise not accessible to other countries. The **risk of trade restrictions** may make it difficult for One-Village to import machinery and inputs into the country.
- One-Village may face **legal risks, particularly those related to enforcement of intellectual and other property rights and enforcing contracts**. The lower score for registering property and enforcing contracts are testaments to the presence of this risk.
- Besides the political and legal risks, One-Village may also face some financial risks. Key of them is the **risk of bankruptcy**. Although it appears that it is easier to get credit in the destination country, the directors should be concerned about risk of insolvency as the score for resolving insolvency is low.
- **Other issues that should be considered are the following:**
  1. Impact of its operations on the environment. For instance, the effect of damming a river to create water reservoirs on shelters around the river bank.
  2. Ethical issues relating to recruitment, compensations to residents affected by their operations, abuse of market power when dealing with suppliers and customers etc.
  3. Cultural differences between its home country and the destination country.

(Any 4 points for 4 marks)

### **Suggested solutions/recommendations**

- On the risk of government frustration, One-Village should negotiate with the government for a favourable investment environment. Further, it should begin regulatory processes early, so it can complete the project on schedule even when there are delays granting permits. The directors should be mindful of bribery and corruption as the firm goes through regulatory procedures.
- On tax compliance, One-Village should engage experts in the destination country's tax system for advice on meeting tax obligations. Considering the importance of irrigation to farming in Sub-Saharan Africa, One-Village could negotiate for a stable tax regime during its presence in the country.
- On the legal risks, One-Village should consider international arbitration to enforce property rights and contracts. It should also do well to comply with existing laws and plan for changes in them. In case of intellectual property, operations should be structured to limit technology transfer.
- On the risk of bankruptcy, One-Village should reduce debt financing for the project as resolving insolvency could be difficult.

**(4 points for 4 marks)**

**(Total: 20 marks)**

### **EXAMINER'S COMMENTS**

The following issues and principles were examined in the question:

- 1) Identification of relevant cash flows and their relevant years of occurrence. Most of the students were able to identify the relevant cash flows but few of them could not identify correctly their year of occurrence for discounting purposes. Students should pay more attention to this since disclosing a cash flow inappropriately will make the whole Net Cash Flow (NCF) to be wrong.
- 2) The concept of terminal value and its computation. It seems students have the idea of terminal value but most of the students could not compute the figure in the question. The problem is that students do not have a good understanding of the concept of debt and equity valuation. Paying more attention to basic debt and equity valuation will enhance candidates' chances of dealing with future questions on terminal values.
- 3) The cost of equity for base case NPV computation. Few students were able to apply the principle that we use cost of equity to discount cash flows for base case NPV. Majority of the students were using the company's cost of capital to discount the cash flows for the base case NPV.
- 4) Present Value (PV) of financing side-effects. This computation involves three distinctive computation:
  - i) PV of the issues cost. It is assumed that the entire issue costs will be expensed in the first year. And secondly the discounting of the issue cost if it occurs in the first year.

Students should always look out for the tax shield on issue cost. It happens only when the issue cost is tax deductible.

- ii) PV of tax shield on the payment of interest. The idea is that the payment of interest and the tax benefits on such interest, reduces the cost of the project and therefore enhances value of the project. Majority of the students were able to calculate this figure
  - iii) PV of the interest saved on government subsidy and the PV of tax shield lost as a result of using the government subsidy. This distinction should be clearly understood by students.
- 5) The main principle being examined in the part (b) of the question is how to deal with risk in foreign capital investment appraisal. It is unfortunate that the question was not properly understood and most of the students were rather commenting on the figures given in the question instead of providing risk factors when embarking on international capital budgeting decisions. It was evident that students might have read about risk in international business but do not know how to apply them. This is application paper and the lack of application of the principles is worrying.

## QUESTION TWO

### Marking Scheme

	Marks
(a) Evaluation of mining project based on NPV and no restrictions on repatriation	
Capital allowance	0.5
Cash flow projections	7.0
Exchange rates	1.0
Discount factors	1.0
Present values and NPV	1.5
Recommendation	1.0
	<hr/> 12
(b) Evaluation of mining project based on NPV with restrictions on repatriation	
Future value of cash returns	2.0
Cash flow schedule, Discount factors, present values and NPV	2.5
Change in NPV	0.5
	<hr/> 5
(c) Ways of dealing with blocked funds	
3 suggestions for 1 mark each	3
<b>Total</b>	<hr/> <b>20</b>



**a) Evaluation of mining project using NPV with no restriction on repatriation**  
**The project's NPV**

	End of Year					
	0	1	2	3	4	5
<i>Investment requirements in ZAR' millions:</i>						
Regulatory requirement expenditure	(1.200)					
Plants and equipment		(20.000)				
Development expenditure			(15.000)			
Net working capital			(2.000)		(1.000)	
<i>Operating cash flows in ZAR' millions:</i>						
Revenue collections				100.000	150.000	210.000
Variable operating costs				(40.000)	(50.000)	(80.000)
Fixed operating costs				(20.000)	(25.000)	(30.000)
Capital allowance				(7.000)	(7.000)	(7.000)
Taxable operating income	-	-	-	33.000	68.000	93.000
Tax at 30%	-	-	-	(9.900)	(20.400)	(27.900)
After-tax operating income	-	-	-	23.100	47.600	65.100
Add back capital allowance	-	-	-	7.000	7.000	7.000
After-tax net operating cash flows	-	-	-	30.100	54.600	72.100
<i>Terminal cash flow in ZAR' millions:</i>						
After-tax consideration						100.000
Net cash flows in ZAR' millions	(1.200)	(20.000)	(17.000)	30.100	53.600	172.100
Exchange rate (GH¢ per ZAR1)	0.3822	0.4040	0.4271	0.4515	0.4773	0.5046
Net cash flows in GH¢' millions	(0.459)	(8.081)	(7.261)	13.591	25.585	86.844
Discount factor at 25%	1.000	0.800	0.640	0.512	0.410	0.328
PV of NCF in GH¢' millions	(0.459)	(6.465)	(4.647)	6.959	10.480	28.457
NPV in GH¢' million	34.325					

The NPV of the operation is GH¢34.325 million. The positive NPV suggests that implementation of the proposed mining operation in South Africa will enhance the value of the company. Rock should accept the investment opportunity for implementation.

**Workings:**

**1. Computation of tax allowable depreciation**

Capital allowance is granted at 20% per annum on straight line basis at the end of each year of commercial production. Since commercial production begins in the third year, the first capital allowance claim will be at the end of year 3.

A total investment of ZAR35 million will qualify for capital allowance as of the end of the third year and subsequent years.

Thus, each year's capital allowance is ZAR 7 million (20% x ZAR35 million)

## 2. Forecasted exchange rates

On the assumption that purchasing power parity holds, forward exchange rates are forecasted as under:

$$F_t = S_0^{GHS/ZAR} \times \left( \frac{1 + h_{GHS}}{1 + h_{ZAR}} \right)^t$$

The rate of inflation in South Africa,  $h_{ZAR} = 5\%$

The rate of inflation in Ghana,  $h_{GHS} = 11\%$

The current exchange rate,  $S_0 = \text{GH¢}0.3822/\text{ZAR}$

The forward rate at the end of the first year is GH¢0.4040/ZAR:

$$F_1 = \text{GHS}0.3822 \times \left( \frac{1 + 0.11}{1 + 0.05} \right)^1 = \text{GHS}0.4040$$

(12 marks)

b)

### i) Evaluation of impact of restriction on profit repatriation restriction on the NPV

With a restriction on repatriation until exit, all cash returns from the third year to end of year 5 will be available to Rock only at the end of year 5 when it exits. As blocked funds can be invested at 15% in South Africa up to the end of year 5, the amount that will be repatriated at the end of year 5 is the aggregate future value of the cash returns from year 3 to 5.

$$\text{Future Value of Cash Returns} = \sum NCF_t(1 + k)^{n-t}$$

$$FV \text{ of Cash Returns} = NCF_3(1 + k)^{n-3} + NCF_4(1 + k)^{n-4} + NCF_5(1 + k)^{n-5}$$

*FV of Cash Returns*

$$= 30.100(1 + 0.12)^{5-3} + 53.600(1 + 0.12)^{5-4} + 172.100(1 + 0.12)^{5-5}$$

$$\text{FV of Cash Returns} = 269.889$$

EOY	Cash to remit in ZAR'm	FX rate	Cash to remit in GH¢'m	DF @ 25%	PV in GH¢'m
0	(1.200)	0.3822	(0.459)	1.000	(0.459)
1	(20.000)	0.4040	(8.080)	0.800	(6.464)
2	(17.000)	0.4271	(7.261)	0.640	(4.647)
3	-	0.4515	-	0.512	-
4	-	0.4773	-	0.410	-
5	269.889	0.5046	136.186	0.328	44.625
				NPV =	33.056

The NPV will reduce by 3.7%  $((33.056 - 34.325) / 34.325)$

(5 marks)

b) (ii)

#### Ways of dealing with the risk of blocked funds

- Rock can deal with blocked funds by doing any of the following:
- Negotiating with the South African government for a stable profit repatriation policy.
- Selling goods or services to the subsidiary and obtain payment.
- Licensing the subsidiary to use its production processes protected by patent for royalties.
- Offering management services to the subsidiary for a fee.
- Giving more loan (rather than equity) finance to the subsidiary for interest payment.

(Any 3 points for 3 marks)

(Total: 20 marks)

#### EXAMINER'S COMMENTS

- 1) Identification of relevant cash flows and their relevant years of occurrence. Most of the students were able to identify the relevant cash flows but few of them could not identify correctly their year of occurrence for discounting purposes. Students should pay more attention to this since disclosing a cash flow inappropriately will make the whole Net Cash Flow (NCF) to be wrong.
- 2) Computation of capital allowance. Some of the students could not calculate the capital allowance because they were to identify first the items on which capital allowance is to be enjoyed, then compute the capital allowance. Unfortunately, some of the students could not identify the capital items for capital allowance. Some were able to compute the capital allowance but wrongly positioned them in the cash flow statement. Capital allowance can only be enjoyed when actual production starts. Most of the students were able to identify that capital allowance is not a cash flow and treated it accordingly.

- 3) Forecasting of exchange rates for converting or foreign cash flows. To score high marks for international capital budgeting, students should be able to forecast the spot rates in the future using the relevant interest rate parity and purchasing power parity theories. Most students know the formula to use but unfortunately could not identify which currency was the base and which one was counter currency.
- 4) Working capital injection and recouping principles. It is generally assumed that working capital injected in a project would be recouped at the end of the project life. In certain circumstances, the whole project could be sold. This was the case in the question. The logic is that if the whole project is sold, it means that no working capital would be recouped.
- 5) Impact of restriction of profit repatriation on NPV computation. This was the (b) part of the question. Some countries restrict the repatriation of profit from the host country. When this happens, not all the benefits from the project would be realised. With the question in focus, a restriction on repatriation until exit means that all cash returns from the third year to end of year 5 will be available to Rock only at the end of year 5 when it exits. As blocked funds can be invested at 15% in South Africa up to the end of year 5, the amount that will be repatriated at the end of year 5 is the aggregate future value of the cash returns from year 3 to 5. So, we discount the cash flows accordingly to determine the effects of the delays in obtaining the funds
- 6) The ways of dealing with blocked funds. This was the part (b) of the question. It was excellently answered by the students.

### QUESTION THREE

- i) A merger will only be worthwhile for a company that is committed to maximising shareholder wealth, if gains arise that would not otherwise arise if the bidding and target businesses had not been combined. The value of a business may be defined as the present value of its future cash flows. This means that a takeover will make economic sense if the present value of the combined business exceeds the aggregate of the present values of each business when taken separately.

**Thus:  $PV \text{ Combined business} > PV \text{ Bidding business} + PV \text{ Target business}$**

- ii) There are various reasons why a takeover may not yield the expected benefits to the shareholders in the bidding company. These include:

- **Paying too much for the target company**

The management of the bidding company may pay too much for the target company. It is quite common for a premium to be paid to the shareholders of the target company in order to encourage them to sell their shares. Unless there are benefits accruing from the takeover, this premium paid will simply transfer wealth from the shareholders of the bidding company to the shareholders in the target company.

- **Hidden problems**

Problems that were hidden at the time of the takeover may emerge later to eliminate any gains that were anticipated. These problems may have been deeply buried and so may have been difficult to unearth, even where proper due diligence procedures were carried out prior to a takeover agreement.

- **Integration issues**

Integrating the two businesses following takeover may prove a difficult task. There may be differences in culture, management style, and organisational methods and systems that cannot be easily reconciled. Integration problems are most acute where there is an attempt to impose a common style and common systems following takeover. Where the former target company is allowed to maintain its own identity and its own systems, integration problems are likely to be much less of an issue.

- **Management attitudes and motivation**

Once the takeover has been completed, managers may expect the enlarged business to achieve success without the need for much effort. They may feel that the takeover was the most important ingredient for success and expect that future operations will run smoothly. In some cases, an exhausting takeover struggle may leave managers with little energy or enthusiasm for ensuring that things go according to plan.

- **Errors in valuing a target firm**

Managers of the bidding firm may advise their company to bid too much as they do not know how to value an essentially recursive problem. A risk-changing acquisition cannot be valued without revaluing your own company on the presupposition that the acquisition has gone ahead. The value of an acquisition cannot be measured

independently. As a result, the merger fails as the subsequent performance cannot compensate for the high price paid.

- **The target being too large relative to the acquirer**

A literature review suggests that the difficulties associated with a merger or acquisition increase as a function of the relative size of the target. This tends to happen because the target becomes more and more difficult to absorb as it becomes relatively larger. A target equal in size to the acquirer can only be effectively absorbed in a merger of equals.

**(b) (i)**

**The free cash flow to the firm is**

	<b>GH¢m</b>
Net income	250
Add Non-Cash expenses: Depreciation	<u>90</u>
	340
Add Net interest cost 150 (1-0.30)	<u>105</u>
	445
Less: Capital Investment 170	
Increase in working capital <u>40</u>	<u>210</u>
	<u><b>235</b></u>

$$\begin{aligned}
 \text{WACC} &= \frac{(K_d M_{vd}) + (K_e M_{ve})}{M_{vd} + M_{ve}} \\
 &= \frac{(0.063 \times 40) + (0.13 \times 60)}{40 + 60} \times 100 \\
 &= \mathbf{10.32\%}
 \end{aligned}$$

$$K_d = i(1 - t) = 9(1-0.3) = 6.3\%$$

$$\begin{aligned}
 \text{Firm value} &= \frac{\text{FCFF} (1 + g)}{\text{WACC} - g} = \frac{235 (1.06)}{0.1032 - 0.06} \\
 &= \frac{249.1}{0.0432} \\
 &= \text{GH¢}5,766.20
 \end{aligned}$$

Value per share	$\frac{\text{GH¢}3,966.20}{10\text{m share}}$
=	<b>GH¢396.62 per share</b>

## **EXAMINER'S COMMENTS**

The following principles were examined:

- 1) The economic and financial essence of a takeover. Students were supposed to state that the only time takeover makes financial and economic sense is when there is a synergy. Most of the students wrote lengthy pages of sources of synergy. The marks were just two (2) and that should have served as a guide.
- 2) Reasons why a takeover may fail. This was the second part of the question. This is straightforward question and it was answered very well.
- 3) The third part of the question sought to test students on how to value a business for a takeover using free cash flow to equity (FCFE) and free cash flow to the firm (FCFF). This part of the question was poorly answered by the students. Majority of the students had no idea about the question and computation of FCF. This is a fundamental concept in financial management and students should do well to appreciate what is the concept is and its applications.
- 4) Computation of weighted average cost of capital. The question also examined the computation of cost of capital. It is instructive to note that most of the students could not calculate the cost of capital.



## QUESTION FOUR

					Mark
(a)	Definition of EVA				1
	Identification of need for use of EVA				1
					2
(b)	Add research cost expensed (Project Z)				1
	Less amortisation of prior year expenses (Project X)				1
	Add expense relating to increase in allowance for doubtful debts				1
	Add non cash expenses				1
	Less cash taxes (see working below)				1
	Net operating profit after tax (NOPAT)				1
					6
(c)	Capital at 1 January per statement of financial position				
	Add allowance for bad and doubtful debts				1
	Add capitalisation of research and development:				1
	Project Z				
	Project Y				
	Add non cash expenses incurred during 2009				1
	Adjusted capital employed at 1 January				1
					4
(d)	Calculation of WACC				2
	Calculation of EVA				3
					<u>5</u>
					<b>20</b>

- a) A successful performance measure evaluates how well an organisation performs in relation to its objectives. Since the primary objective of commercial organisations is normally assumed to be the maximisation of the wealth of its shareholders, it follows that performance measures should evaluate this. In practice, many organisations use profit-based measures as the primary measure of their financial performance. Two problems relating to profit in this area are, profit ignores the cost of equity capital. Companies only generate wealth when they generate a return in excess of the return required by providers of capital –both equity and debt. In financial statements, the calculation of profit does take into account the cost of debt finance, but ignores the cost of equity finance. Profits calculated in accordance with accounting standards do not truly reflect the wealth that has been created, and are subject to manipulation by accountants. **Economic Value Added (EVA)** is a performance measurement system

that aims to overcome these two weaknesses. EVA was developed by the US consulting firm Stern Stewart & Co, and it has gained widespread use among many well-known companies such as Siemens, Coca Cola and Herman Miller.

EVA is based on the residual income technique that has been used since the early 20th century. Residual income is a performance measure normally used for assessing the performance of divisions, in which a finance charge is deducted from the profits of the division. The finance charge is calculated as the net assets of the division, multiplied by an interest rate – normally the company's weighted average cost of capital. EVA is similar in structure to residual income. It can be stated as **EVA = NOPAT – (k x capital)**

Where: NOPAT = Net operating profits after tax. (k x capital) is the finance charge, where k = the firms weighted average cost of capital and capital = equity plus long-term debt of the company at the start of the period. **EVA therefore is an estimate of amount by which earnings fall short or exceed the required rate of return investors could achieve from alternative investment of similar risk.**

**(2 marks)**

**b) Calculation of Economic Value Added (EVA)**

**Step 1: Calculation of Net operating profit after tax (NOPAT)**

	2017	2016
	GH¢'000	GH¢'000
Operating profit	6,500	5,500
Add research cost expensed (Project Z)	500	500
Less amortisation of prior year expenses (Project X)	(750)	(750)
Add expense relating to increase in allowance for doubtful debts	100	-50
Add non cash expenses	15	15
Less cash taxes (see working below)	<u>-1,625</u>	<u>-1,375</u>
Net operating profit after tax (NOPAT)	4,740	3,840

**(6 marks)**

**Step 2: calculation of adjusted capital employed at 1 January**

	2017 GH¢'000	2016 GH¢'000
Capital at 1 January per statement of financial position	37,000	33,500
Add allowance for bad and doubtful debts	250	300
Add capitalisation of research and development:		
Project Z	500	0
Project Y	750	<u>1,500</u>
Add non cash expenses incurred during 2016	<u>15</u>	
Adjusted capital employed at 1 January	38,515	35,300

**Step 3: compute the weighted average cost of capital**

2017:  $(60\% \times 14\%) + (40\% \times 5\% \times (1 - 0.25\%)) = 9.9\%$

2016 :  $(60\% \times 12\%) + (40\% \times 5\% \times (1 - 0.25\%)) = 8.7\%$

**Step 4: calculate the Economic Value Added (EVA)**

$EVA = NOPAT - (k \times \text{capital})$

2017:  $4,740,000 - (9.9\% \times 38,515,000) = 927,000$

2016:  $3,840,000 - (8.7\% \times 35,300,000) = 769,000$

**(5 marks)**

**(c)**

Working - calculation of net tax	2017 GH¢'000	2016 GH¢'000
Tax charge per income statement	1,375	1,150
Add tax relief on interest (interest expenses x 25%)	<u>250</u>	<u>225</u>
	1,625	1,375

**d) Spin-Off**

A spinoff is the creation of an independent company through the sale or distribution of new shares of an existing business or division of a parent company. A spinoff is a type of divestiture. The spun-off companies are expected to be worth more as independent entities than as parts of a larger business. A spinoff is also known as a spinout or starbust.

When a corporation spins off a business unit that has its own management structure, it sets it up as an independent company under a renamed business entity. The company that initiates the spinoff is referred to as the parent company. A spinoff retains its assets, employees, and intellectual property from the parent company

which gives it support in a number of ways, such as investing equity in the newly formed firm and providing legal, technology, or financial services.

(2 marks)

### **Sell-off**

A sell-off is the rapid selling of securities such as stocks, bonds, ETFs, commodities or currencies. A sell-off may occur for many reasons, such as the sell-off of a company's stock after a disappointing earnings report, the departure of a important executive or the failure of an important product. Markets and stock indexes can also sell-off when interest rates rise or oil prices surge, causing increased fear about the energy costs that companies will face. Sell-offs can also be caused by political events, or terrorist acts.

All financial trading instruments have sell-offs. They are a natural occurrence from profit-taking, short-selling or portfolio turnover. Healthy price uptrends require periodic sell-offs to replenish supply and trigger demand. Minor sell-offs are considered pullbacks. Pullbacks tend to hold support at the 50-period moving average. However, when a sell-off continues on an extensive basis, it can be signs of a potentially dangerous market reversal leading to a correction or a crash.

(2 marks)

### **Reasons for Spin-Offs**

Here are reasons why some companies are better off as separate units than they are as one bigger business:

- **Better management:** While executives of a company may be well-suited to overseeing most of its lines of business, perhaps there's a unit that doesn't quite match their expertise. In another example, a specific unit may require more attention than it's getting from top management and its performance suffers as a result. In either case, spinning off the unit and putting it under new management may result in better performance in the unit-turned-independent company, while the parent company's managers can now redouble their focus on their remaining units.
- **Separating growth trajectories and strategies:** A business unit that's slow to make money might prove a drag on a sister unit that's experiencing robust growth, particularly if the parent company uses profits from the latter to subsidize the former. But when two such units are no longer under the same parent company, they can grow at their own pace and might even see more success in attracting investors who specifically seek out fast-growing or mature companies.
- **Better coverage from securities analysts:** Research has shown that divestitures — including spinoffs and sales to other companies — by parent companies result in higher quality research by the analysts covering those parent companies. One study of 103 spinoffs, for instance, found that analyst forecast accuracy increased between 30 to 50 percent following spinoff transactions. One of the reasons why is that when a business is less complex, it's easier to analyze. In addition, after a corporation narrows its array of businesses, it may attract coverage from analysts with specializations

matching those businesses who may provide more accurate forecasts about the corporation.

- **Unlocking shareholder value:** Perhaps the biggest factor driving spinoffs is the idea that the parent company is undervalued – perhaps because of management or strategy issues described above – and that its remaining business valuation would be higher if it spun off one or more business units.

(Any 3 points well explained for 3 marks)

(Total: 20 marks)

### EXAMINER'S COMMENTS

The following issues and principles:

- 1) The concept of Economic Value Added (EVA). The first part of the question simply asked students to explain the concept of EVA. It was a straightforward but answers provided revealed that majority of the students lacked understanding of what EVA is all about
- 2) The second part of the question examined students on the computation of EVA. This is made up of three principles:
  - i) How to compute Net Operating Profit after Tax (NOPAT)
  - ii) How to compute capital employed at the start of the relevant year.
  - iii) How to compute the Interest cost ( $WACC \times \text{Capital Employed}$ )
- iv) This is a question that combines so many topics in the syllabus. Mergers and acquisitions, capital reorganisation and WACC computation. Most of the students could not apply all the principles involved and therefore performed poorly.
- 3) The difference between spin-off and sell-off. This was fairly answered by the students who had read the topic.

## QUESTION FIVE

- a) We need to calculate the expected changes in the exchange rates.

UK Pounds		
Probability	Spot rates (%)	Expected rates (%)
30%	10%	3%
70%	5%	<u>3.5%</u>
		6.5%

Euro		
Probability	Spot rates (%)	Expected rates (%)
40%	8%	3.2%
60%	6%	<u>3.6%</u>
		6.8%

We can then calculate the portfolio depreciation

		%
Pound	60% X 6.5%	3.9
Euro	40% X 6.8%	<u>2.72</u>
		6.62

Borrowing Portfolio			
	Probability	Interest	Average/Expected
Pounds	60%	10%	3.9%
Euro	40%	8%	<u>3.2%</u>
			9.2%
Add Portfolio			<u>6.62%</u>
			<b><u>15.82%</u></b>

The portfolio borrowing rate is 15.82 % based on the available information. The cedi borrowing rate is 18%. This means the portfolio borrowing rate is better than the cedi borrowing rate, **ALL OTHER THINGS REMAINING CONSTANT**. This is so because it was assumed that whatever currency used, there was no effect of exchange rate differences among the cedi, euro and the pound.

(10 marks)

- b)
- i) **Securitisation** is the process whereby an entity (originator) sells in the market illiquid and non-tradable assets in exchange for cash (the so-called "traditional securitisation")

or "true sale securitisation") or sells only the credit risk associated with the assets (also called "synthetic securitisation"). The term securitisation derives from the core objective of the transaction, which is to obtain securities from the underlying instruments in the pool being securitised. The securitisation process includes further participants and is divided in two basic steps. Firstly, the originator identifies the reference portfolio, a pool of assets it wants to remove from its balance sheet, and sells it to a bankruptcy-remote or insolvency-remote special purpose entity (SPE), also called special purpose vehicle (SPV). The main objective of this transaction is to obtain cash (to achieve a common cash flow pattern, the securitised assets shall have a sufficient degree of homogeneity).

(2.5 marks)

- ii) **A reverse repurchase agreement** is the purchase of securities with the agreement to sell them at a higher price at a specific future date. For the party selling the security (and agreeing to repurchase it in the future) it is a repurchase agreement (RP) or repo; for the party on the other end of the transaction (buying the security and agreeing to sell in the future) it is a reverse repurchase agreement (RRP) or reverse repo. Repos are classified as a money-market instrument, and they are usually used to raise short-term capital.

(2.5 marks)

- iii) **A bankers' acceptance (BA)** is a short-term credit investment created by a non-financial firm and guaranteed by a bank to make payment. Acceptances are traded at discounts from face value in the secondary market. Bankers' acceptances are considered very safe instruments and are used extensively in foreign trade.

Banker's acceptances often arise from a business needing to make a major purchase overseas. BAs are time drafts that a business can order from the bank. The financial institution promises to pay the exporting firm a specific amount on a specific date, at which time it recoups its money by debiting the importer's account. The BA works much like a post-dated check, which is simply an order for a bank to pay a specified party at a later date. The holder may also choose to sell the BA for a discounted price on a secondary market, giving investors a relatively safe, short-term investment.

(2.5 marks)

- iv) **Commercial paper** is an unsecured, short-term loan used by a corporation, typically for financing accounts receivable and inventories. It is usually issued at a discount, reflecting current market interest rates. Maturities on commercial paper are usually no longer than nine months, with maturities of between one and two months being the average. Commercial paper is considered a very safe investment. Typically, only companies with high credit ratings and credit-worthiness issue commercial paper. Over the past 40 years, there have only been a handful of cases where corporations have defaulted on their commercial paper repayment.

(2.5 marks)

(Total: 20 marks)

### **EXAMINER'S COMMENTS**

The following issues, principles were examined:

- 1) Determination of interest rate for borrowing where there are two currencies involved.  
The question was difficult for the students.
- 2) The second part of the question was on business finance. Basic concept such as commercial paper, banker's acceptance, securitisation and reverse purchase agreements were examined. It was worrying that most students cannot explain these principles.