THE INSTITUTE OF CHARTERED ACCOUNTANTS, GHANA

NOVEMBER 2015 PROFESSIONAL EXAMINATIONS

ADVANCED FINANCIAL MANAGEMENT

EXAMINERS GENERAL COMMENTS

GENERAL PERFORMANCE

Being a new syllabus the students are now familiarizing themselves with the distinction between the financial management in part 2 and Advanced Financial Management in part 3. In all, the performance is not encouraging and is far below our expectations.

THE INSTITUTE OF CHARTERED ACCOUNTANTS, GHANA

NOVEMBER 2015 PROFESSIONAL EXAMINATION QUESTIONS

ADVANCED FINANCIAL MANAGEMENT (3.3)

QUESTION ONE

Ahomka Fruity Ltd (Ahomka), a listed company based in Ghana, produces fresh pineapple juice packaged in bottles and cans. The company has been exporting to Nigeria for many years, earning an annual after-tax contribution of NGN5 million. The company wants to establish a wholly-owned subsidiary in Nigeria to produce and sell its pineapple juice products over there. If a subsidiary is established and operated in Nigeria, Ahomka will cease exporting pineapple juice products to Nigeria. However, Ahomka plans to sell some raw materials and services to the subsidiary for cash.

Acquiring a suitable premises, required plant and equipment, and installing the machinery will take the next two years to complete. Production and sales will commence in the third year and indefinitely.

Capital expenditure is estimated to be NGN10 million at the start of the first year and NGN5 million at the start of the second year. Ahomka will have to make working capital of NGN2 million available at the start of the third year, and this is expected to be increased to NGN2.5 million at the start of the fifth year.

The proposed Nigerian subsidiary will produce the following pre-tax operating cash flows at the end of each of the first three years of production and sales:

Production/sales year	1	2	3
Pre-tax operating cash flows (NGN' 000)	2,800	4,500	5,200

The tax rate in Nigeria is 30% and tax is paid in the same year the profit is earned. Capital allowance is granted on capital expenditure at the end of each year of production/sale at the rate of 30% on reducing balance basis.

After the first three years of production and sales, post-tax incremental net operating cash flows will grow at the rate of 4% every year to perpetuity.

Ahomka plans to finance the project entirely with loans raised from Ghana at an after-tax cost of 18%. The maximum post-tax operating cash flows possible will be remitted to the parent company at the end of each year to help pay off the loans. Nigeria does not restrict fund remittance to a parent company outside of Nigeria and there are no taxes on funds remittance.

The Naira- Ghana Cedi exchange rate is currently NGN55.40/GHS. Annual inflation is expected to be 18% in Ghana and 20% in Nigeria.

Required:

(a) Perform a financial appraisal of the project using the net present value and the modified internal rate of return (MIRR) methods, and recommend whether Ahomka should proceed with the project. **(10 marks)**

(b) Present a paper to the Board of Directors of Ahomka, which advises on potential risks the company might be exposed to if it proceeds with the Nigerian subsidiary project, and strategies the company could employ to avoid or manage the risks**.**
(Note: Professional marks will be awarded for presentation)

(10 marks)
(Total = 20 marks)

QUESTION TWO

ABC Manufacturing Ltd (ABC) is an indigenous Ghanaian company that manufactures components used in air conditioners. The company now wants to manufacture air conditioners for sale in Ghana. Though the manufacture of air conditioners will be a completely new business, directors of ABC plan to integrate it into the company's core business.

ABC has premises it considers suitable for the project. This premises was acquired two years ago at the cost of GHS50,000. ABC will acquire and install the needed machinery immediately, so production and sales can commence during the first year. The directors of ABC intends to develop

the project for five years and then sell it to a suitable investor for an after-tax consideration of GHS20 million.

The following data are available for the project:

1. The cost of acquiring and installing plant and machinery needed for the project will be GHS5 million at the start of the first year. Tax-allowable depreciation is available on the plant and machinery at the rate of 30% on reducing balance basis.
2. Working capital requirement for each year is equal to 10% of the year's anticipated sales. ABC has to make working capital available at the beginning of the respective year. It is expected that 40% of working capital will be redeployed to other projects at the end of the fifth year when the project is sold.
3. It is expected that 2,000 units will be manufactured and sold in the first year. Unit sales will grow by 5% each year thereafter.
4. Unit sales price is estimated at GHS2,200 in the first year. Thereafter, the unit sales price is expected to be increased by 10% each year.
5. Unit variable cost will be GHS1,100 per unit in the first year. Unit variable cost is expected to increase by 8% each year after the first year.
6. Fixed overhead costs are estimated at GHS1·5 million in total in each year of production/sale. One-half of the total fixed overhead costs are head office allocated overheads. After the first year of production/sales, fixed overhead costs are expected to increase by 5% per year.

ABC Ltd's pays tax at 25% on taxable profits. Tax is payable in the same year the profit is earned. ABC Ltd uses 25% as its discount rate for new projects but the directors feels that this rate may not be appropriate for this new venture.

Currently, ABC can borrow at 500 basis points above the five-year Treasury note yield rate. Ghana's government is enthused by the venture and has offered ABC a subsidised loan of up to 60% of the investment funds required at an interest rate of 200 basis points above the five-year Treasury note yield rate. ABC plans to use debt capital to finance the project by taking advantage of the government's subsidised loan and raising the balance through a fresh issue of 5-year debentures. Issues costs, which can be assumed to be tax-deductible expenses, will be 5% of the

gross proceeds from the debenture offer. The financing strategy for the project is not expected to affect the company's borrowing capacity in any way.

ABC Ltd will be the first indigenous Ghanaian company to manufacture air conditioners in Ghana. However, it will be competing with XYZ Ltd, a listed company with majority shares held by foreign investors. The cost of equity of XYZ Ltd is estimated to be 20% and it pays tax at 22%. XYZ has 10 million shares in issue that are trading at GHS5.5 each, and bonds with total market value of GHS40 million.

The five-year Treasury note yield rate is currently 10% and the return on the market portfolio is 18%.

Required:

Evaluate, on financial grounds, whether ABC should implement the project or not.

(Total = 20 marks)

QUESTION THREE

Lolonyo Foam Ltd (Lolonyo), an Accra-based unlisted company, has been manufacturing mattresses and other form products since 1990. The company is considering a new project which requires a GHS75 million investment in capital expenditure and net working capital. The directors of Lolonyo have decided to raise the needed funds through a new issue of 10-year subordinated bonds to investors in Ghana. Lolonyo uses a discount rate of 20% to appraise new projects. However, the directors feel that this rate will not be appropriate for this project as its financing method is different from what has been used in the past.

The following information is available for the company:

Total assets	GHS150m
Long-term debt	GHS80m
Net income	GHS10.2m
Net income before interest and taxes	GHS14.8m
Interest payments	GHS1.2m
Tax rate	25%

Earnings of the company for the past five years are as follows:

Year	**Earnings (GHS'm)**
2014	9.8
2013	9.2
2012	8.5
2011	8.1
2010	8.4

Directors intend to use the Kaplan Urwitz model for unlisted companies to assess the cost of debt. The Kaplan Urwitz model for unlisted companies is given by:

$$Y = 4.41 + 0.001Size + 6.40Profitability - 2.56Debt - 2.72Leverage + 0.006Interest - 0.53COV$$

where :

Y is the credit score

Size is measured by total assets

Profitability is measured by the ratio of net income to total assets

Debt refers to the status of the debt stock; subordinated debt is assigned score 1, and unsubordinated debt is assigned score 0

Leverage is measured by the ratio of long-term debt to total assets

Interest refers to interest cover, which is measured by net operating income (i.e. net income before interest and tax)

COV is the coefficient of variation in earnings, which measures volatility in earnings

The table below presents credit score ranges and corresponding rating category and yield to maturity for 10-year corporate bonds:

Score (Y)	**Rating category**	**Yield to maturity**
Y > 6.76	AAA	22.0%
Y > 5.19	AA	22.5%
Y > 3.28	A	23.2%
Y > 1.57	BBB	24.2%
Y > 0	BB	25.5%

Required:

(a) Estimate the cost of debt. **(8 marks)**

(b) Suppose Lolonyo applies to a credit rating agency for rating of its debt. Explain any **THREE (3)** of the criteria the credit rating agency would use in establishing the company's credit rating. For each criterion, suggest one factor that can be used to assess it.

(6 marks)

(c) Suppose the fair market value of assets is GHS200 million and the face value of the 10-year bonds is GHS80 million. The risk-free rate is 18% and the volatility of asset value is 50%.

i) Find the value of the default probability using the Black-Scholes option pricing model. **(3 marks)**

ii) Estimate the expected loss on the bonds if the recovery rate is 60%. **(3 marks)**

(Total = 20 marks)

QUESTION FOUR

a) JB Investments Holding Ltd (JB) is a multinational company that is committed to a policy of expansion into African countries. JB finances foreign projects with loans obtained in the currency in which project cash flows are received. JB financed an operation in Liberia with a syndicated loan of $20 million. Currently, the loan has three years to maturity. The loan requires semiannual interest payments at a fixed rate of 6.5% per annum, but JB prefers a floating interest rate as the pattern of cash flows from the Liberian project has changed.

The Finance Director talked to the creditors about JB's preference for a floating interest rate. The creditors have agreed to accept a floating rate of LIBOR plus 200 basis points over the remaining three years of the loan term. However, the Finance Director feels that this rate is rather too high considering JB's credit rating. She is therefore considering two alternatives for managing the interest rate risk exposure.

Alternative 1: Coupon swap with a bank

Engage in a coupon swap with UT Bank through which JB trades-in its fixed rate interest payments obligation for floating rate interest payments. The table below presents UT Bank's bid and ask quotes for fixed dollar coupon rates:

Loan term to maturity	Bid	Ask	Treasury note (TN) rate
2 years	2-year TN rate + 30 basis points	2-year TN rate + 40 basis points	5.3%
3 years	3-year TN rate + 35 basis points	3-year TN rate + 50 basis points	5.9%
4 years	4-year TN rate + 40 basis points	4-year TN rate + 60 basis points	6.7%
5 years	5-year TN rate + 45 basis points	5-year TN rate + 70 basis points	7.8%

Floating rate quotation:

- Floating rates are pegged at 6-month dollar LIBOR plus 100 basis points.

Alternative 2: Coupon swap with another multinational company

Engage in a coupon swap with McEwen Ltd, a multinational company that has a floating rate dollar debt but prefers fixed coupon payments. The interest rate on McEwen's dollar debt is LIBOR plus 150 basis points but it can borrow fixed rate dollars at 8%. Assume JB can borrow floating rate dollars at LIBOR plus 200 basis points.

Required:

i) Discuss **TWO (2)** advantages and **TWO (2)** disadvantages of hedging interest rate risk with interest rate swap.

(4 marks)

ii) Based on the restructuring deal with the creditors and the two interest rate swap alternatives, recommend a hedging strategy for interest payments on the $20 million dollar debt. Support your recommendation with relevant computations.

(10 marks)

b) The Board of Directors of JB Investments Holdings Ltd are considering a transfer pricing policy for transfer of goods and services amongst the company and its foreign subsidiaries.

Required:

Explain **THREE (3)** internal factors (motivations) for transfer pricing, which the board should consider in formulating a transfer pricing policy for the company. **(6 marks)**

(Total = 20 marks)

QUESTION FIVE

You are the Finance Manager of a growing clothing company, Two-Pack Fashion Ltd (Two-Pack). Two-Pack has enjoyed significant growth in recent years using an internal growth strategy. Two-Pack is now seeking to acquire other companies to speed up its growth drive. It has identified Anas-Expo Clothing Ltd (Anas-Expo) as a suitable candidate for takeover. Both companies have the same level of risk.

Anas-Expo produces high quality handmade clothes, with which it has earned several awards. The company has recorded considerable profits in the past, but its output has dwindled over the past two years due to increasing labour costs. Labour unions have pressured policy makers into amending labour regulations, particularly those relating to pension and minimum wage, to provide more benefits and protection for workers. Directors of Two-Pack believe that production and profitability of Anas-Expo will be enhanced if its production process is mechanised.

Below are summarised financial data for the two companies immediately before acquisition:

	Two-Pack GHS'm	Anas-Expo GHS'm
Sales revenue	285.8	126.5
Net operating income	85.8	50.6
Interest charges	14.2	7.4
Net income before taxation	71.6	43.2
Corporate tax	15.8	9.5
Net income after tax	55.8	33.7
Dividends	22.3	6.8
Addition to retained earnings	33.5	26.9

Two-Pack has 40 million shares and a P/E ratio of 18 while Anas-Expo has 25 million shares and P/E ratio of 12. Directors of Two-Pack have decided that Two-Pack takes up all the equity shares in Anas-Expo by offering to its shareholders one new share for every one share they hold. They have also decided that Two-Pack mechanises Anas-Expo's production process immediately at the cost of GHS18 million, and thus replace work currently done by hand. It is estimated that

operational efficiency that would arise from the acquisition and integration of the two companies would rake in after-tax benefits of GHS25 million every year to perpetuity.
The cost of capital of Two-Pack is 25%.

Required:

(a) Evaluate the acquisition proposal, and recommend whether the acquisition should go ahead. **(7 marks)**

(b) Analyse the effect of the acquisition on the earnings per share of Two-Pack following the successful acquisition of Anas-Expo. **(2.5 marks)**

(c) Analyse the effect of the acquisition on the wealth of the shareholders of each company.

(4.5 marks)

(d) Advise the directors of Two-Pack on three likely sources of conflict in relation to the acquisition of Anas-Expo and mechanization of its production process, and suggest ways through which the conflict could be avoided or resolved.

(**6 marks)**

(Total = 20 marks)

Formulae

Modified Internal Rate of Return

$$MIRR = \left(\frac{PV_R}{PV_I}\right)^{1/n} \times (1 + r_e) - 1$$

Value at Risk

$$VAR = k\,\sigma\,\sqrt{N}$$

The Fisher Equation:

$$1 + i = (1 + r)(1 + h)$$

Capital Asset Pricing Model

$$E(r_i) = r_f + \beta_i(E(r_m) - r_f)$$

Ungeared (Asset) Beta

$$\beta_a = \left[\frac{V_e}{V_e + V_d(1-t)} \times \beta_e\right] + \left[\frac{V_d\,(1-t)}{V_e + V_d(1-t)} \times \beta_d\right]$$

Gordon's Growth Model

$$V_0 = \frac{CF_0(1+g)}{k-g}$$

Miller and Modigliani (MM) Proposition 2 with tax

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

Weighted Average Cost of Capital

$$WACC = \left[\frac{V_e}{V_e + V_d} \times k_e\right] + \left[\frac{V_d}{V_e + V_d} \times k_d\,(1-t)\right]$$

Purchasing Power Parity

$$F_1 = {S_0}^{d/f} \times \left(\frac{1 + h_d}{1 + h_f}\right)$$

Interest Rate Parity

$$F_1 = {S_0}^{d/f} \times \left(\frac{1+i_d}{1+i_f}\right)$$

International Fisher Effect

$$\frac{1+i_d}{1+i_f} = \frac{1+h_d}{1+h_f}$$

Black-Scholes Option Pricing Model

$$c = P_a N(d_1) - P_e N(d_2) e^{-rt}$$

$$d_1 = \frac{\ln\left(\frac{P_a}{P_e}\right) + (r + 0.5s^2)t}{s\sqrt{t}}$$

$$d_2 = d_1 - s\sqrt{t}$$

Put-Call Parity Relationship

$$p = c - P_a + P_e e^{-rt}$$

Present value of 1, i.e. $(1 + r)^{-n}$

Where r = discount rate

n = number of periods until payment

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

Periods (n)	Discount rate (r)									
	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%
1	0.901	0.893	0.885	0.877	0.870	0.862	0.855	0.847	0.840	0.833
2	0.812	0.797	0.783	0.769	0.756	0.743	0.731	0.718	0.706	0.694
3	0.731	0.712	0.693	0.675	0.658	0.641	0.624	0.609	0.593	0.579
4	0.659	0.636	0.613	0.592	0.572	0.552	0.534	0.516	0.499	0.482
5	0.593	0.567	0.543	0.519	0.497	0.476	0.456	0.437	0.419	0.402
6	0.535	0.507	0.480	0.456	0.432	0.410	0.390	0.370	0.352	0.335
7	0.482	0.452	0.425	0.400	0.376	0.354	0.333	0.314	0.296	0.279
8	0.434	0.404	0.376	0.351	0.327	0.305	0.285	0.266	0.249	0.233
9	0.391	0.361	0.333	0.308	0.284	0.263	0.243	0.225	0.209	0.194
10	0.352	0.322	0.295	0.270	0.247	0.227	0.208	0.191	0.176	0.162
11	0.317	0.287	0.261	0.237	0.215	0.195	0.178	0.162	0.148	0.135
12	0.286	0.257	0.231	0.208	0.187	0.168	0.152	0.137	0.124	0.112
13	0.258	0.229	0.204	0.182	0.163	0.145	0.130	0.116	0.104	0.093
14	0.232	0.205	0.181	0.160	0.141	0.125	0.111	0.099	0.088	0.078
15	0.209	0.183	0.160	0.140	0.123	0.108	0.095	0.084	0.074	0.065

Annuity table

Present value of an annuity of 1, i.e. $\frac{1-(1+r)^{-n}}{r}$

Where r = discount rate

n = number of periods

Periods (n)	Discount rate (r)									
	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%
1	0.990	0.980	0.971	0.962	0.952	0.943	0.935	0.926	0.917	0.909
2	1.970	1.942	1.913	1.886	1.859	1.833	1.808	1.783	1.759	1.736
3	2.941	2.884	2.829	2.775	2.723	2.673	2.624	2.577	2.531	2.487
4	3.902	3.808	3.717	3.630	3.546	3.465	3.387	3.312	3.240	3.170
5	4.853	4.713	4.580	4.452	4.329	4.212	4.100	3.993	3.890	3.791
6	5.795	5.601	5.417	5.242	5.076	4.917	4.767	4.623	4.486	4.355
7	6.728	6.472	6.230	6.002	5.786	5.582	5.389	5.206	5.033	4.868
8	7.652	7.325	7.020	6.733	6.463	6.210	5.971	5.747	5.535	5.335
9	8.566	8.162	7.786	7.435	7.108	6.802	6.515	6.247	5.995	5.759
10	9.471	8.983	8.530	8.111	7.722	7.360	7.024	6.710	6.418	6.145
11	10.368	9.787	9.253	8.760	8.306	7.887	7.499	7.139	6.805	8.495
12	11.255	10.575	9.954	9.385	8.863	8.384	7.943	7.536	7.161	6.814
13	12.134	11.348	10.635	9.986	9.394	8.853	8.358	7.904	7.487	7.103
14	13.004	12.106	11.296	10.563	9.899	9.295	8.745	8.244	7.786	7.367
15	13.865	12.849	11.938	11.118	10.380	9.712	9.108	8.559	8.061	7.606

Periods (n)	Discount rate (r)									
	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%
1	0.901	0.893	0.885	0.877	0.870	0.862	0.855	0.847	0.840	0.833
2	1.713	1.690	1.668	1.647	1.626	1.605	1.585	1.566	1.547	1.528
3	2.444	2.402	2.361	2.322	2.283	2.246	2.210	2.174	2.140	2.106
4	3.102	3.037	2.974	2.914	2.855	2.798	2.743	2.690	2.639	2.589
5	3.696	3.605	3.517	3.433	3.352	3.274	3.199	3.127	3.058	2.991
6	4.231	4.111	3.998	3.889	3.784	3.685	3.589	3.498	3.410	3.326
7	4.712	4.564	4.423	4.288	4.160	4.039	3.922	3.812	3.706	3.605
8	5.146	4.968	4.799	4.639	4.487	4.344	4.207	4.078	3.954	3.837
9	5.537	5.328	5.132	4.946	4.772	4.607	4.451	4.303	4.163	4.031
10	5.889	5.650	5.426	5.216	5.019	4.833	4.659	4.494	4.339	4.192
11	6.207	5.938	5.687	5.453	5.234	5.029	4.836	4.656	4.486	4.327
12	6.492	6.194	5.918	5.660	5.421	5.197	4.968	4.793	4.611	4.439
13	6.750	6.424	6.122	5.842	5.583	5.342	5.118	4.910	4.715	4.533
14	6.982	6.628	6.302	6.002	5.724	5.468	5.229	5.008	4.802	4.611
15	7.191	6.811	6.462	6.142	5.847	5.575	5.324	5.092	4.876	4.675

Standard normal distribution table

	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.0	.0000	.0040	.0080	.0120	.0160	.0199	.0239	.0279	.0319	.0359
0.1	.0398	.0438	.0478	.0517	.0557	.0596	.0636	.0675	.0714	.0753
0.2	.0793	.0832	.0871	.0910	.0948	.0987	.1026	.1064	.1103	.1141
0.3	.1179	.1217	.1255	.1293	.1331	.1368	.1406	.1443	.1480	.1517
0.4	.1554	.1591	.1628	.1664	.1700	.1736	.1772	.1808	.1844	.1879
0.5	.1915	.1950	.1985	.2019	.2054	.2088	.2123	.2157	.2190	.2224
0.6	.2257	.2291	.2324	.2357	.2389	.2422	.2454	.2486	.2517	.2549
0.7	.2580	.2611	.2642	.2673	.2703	.2734	.2764	.2794	.2823	.2852
0.8	.2881	.2910	.2939	.2967	.2995	.3023	.3051	.3078	.3106	.3133
0.9	.3159	.3186	.3212	.3238	.3264	.3289	.3315	.3340	.3365	.3389
1.0	.3413	.3438	.3461	.3485	.3508	.3531	.3554	.3577	.3599	.3621
1.1	.3643	.3665	.3686	.3708	.3729	.3749	.3770	.3790	.3810	.3830
1.2	.3849	.3869	.3888	.3907	.3925	.3944	.3962	.3980	.3997	.4015
1.3	.4032	.4049	.4066	.4082	4099	.4115	.4131	.4147	.4162	.4177
1.4	.4192	.4207	.4222	.4236	.4251	.4265	.4279	.4292	.4306	.4319
1.5	.4332	.4345	.4357	.4370	.4382	.4394	.4406	.4418	.4430	.4441
1.6	.4452	.4463	.4474	.4484	.4495	.4505	.4515	.4525	.4535	.4545
1.7	.4554	.4564	.4573	.4582	.4591	.4599	.4608	.4616	.4625	.4633
1.8	.4641	.4649	.4656	.4664	.4671	.4678	.4686	.4693	.4699	.4706
1.9	.4713	.4719	.4726	.4732	.4738	.4744	.4750	.4756	.4761	.4767
2.0	.4772	.4778	.4783	.4788	.4793	.4798	.4803	.4808	.4812	.4817
2.1	.4821	.4826	.4830	.4834	.4838	.4842	.4846	.4850	.4854	.4857
2.2	.4861	.4864	.4868	.4871	.4875	.4878	.4881	.4884	.4887	.4890
2.3	.4893	.4896	.4898	.4901	.4904	.4906	.4909	.4911	.4913	.4916
2.4	.4918	.4920	.4922	.4925	.4927	.4929	.4931	.4932	.4934	.4936
2.5	.4938	.4940	.4941	.4943	.4945	.4946	.4948	.4949	.4951	.4952
2.6	.4953	.4955	.4956	.4957	.4959	.4960	.4961	.4962	4963	.4964
2.7	.4965	.4966	.4967	.4968	.4969	.4970	.4971	.4972	.4973	.4974
2.8	.4974	.4975	.4976	.4977	.4977	.4978	.4979	.4980	.4980	.4981
2.9	.4981	.4982	.4982	.4983	.4984	.4984	.4985	.4985	.4986	.4986
3.0	.4987	.4987	.4987	.4988	.4988	.4989	.4989	.4989	.4990	.4990

This table can be used to calculate $N(d_i)$, the cumulative normal distribution functions needed for the Black-Scholes model of option pricing. If $d_i > 0$, add 0.5 to the relevant number above. If $d_i < 0$, subtract the relevant number above from 0.5.

SUGGESTED SOLUTIONS

QUESTION ONE

		Marks	
(a)	Financial appraisal of the Nigerian subsidiary		
	Naira cash flows, including terminal value		3.0
	Capital allowance on capital expenditure	0.5	
	Forecast forward exchange rate	1.0	
	Cedi cash flows	1.0	
	Discount factors, PV of cash flows, and NPV		2.0
	MIRR	2.0	
	Recommendation	0.5	10
(b)	Paper on risk exposures relating to the Nigerian operation		
	Presentation including an introduction, subheadings, and a conclusion	2.0	
	Discussion of potential political risks and financial risks		
	(5 potential risks, including at least one of each type, for 1 mark each)		5.0
	Comment on likely agency problems	1.0	
	Strategies for preventing or managing the risks (2 strategies for 1 mark each)	2.0	10
	Total		**20**

QUESTION ONE

(a) **Financial appraisal of proposed subsidiary in Nigeria**

As funds will be remitted to the parent company at end of each year, an appropriate approach to appraising the project is to –

- Forecast foreign currency cash flows.
- Forecast exchange rates.
- Convert foreign currency cash flows to home currency cash flows using spot or forecast exchange rates as appropriate at the end of the year.
- Discount home currency cash flows at the parent company's domestic cost of capital to obtain project NPV in home currency.

(b) **Paper on risk exposures**

Introduction

Foreign operations present additional risks in excess of business risks which are inherent in any business venture whether domestic or foreign. Risks that are associated with foreign operations are collectively referred to as country risk, which is the risk that unexpected changes in the business environment of the host country will affect the value and position of a company. If Ahomka establishes and operates the proposed subsidiary in Nigeria, the company would be exposed to risks that are due to political actions/events (i.e. political risks) and/or risks that are due to economic conditions (i.e. financial risk). A good understanding of the possible political and financial risks is crucial to designing appropriate strategies for avoiding or managing the risks. This paper discusses possible political risks, financial risks, and other risks that could affect the value and position of Ahomka if it proceeds with the establishment and operation of a subsidiary in Nigeria. Ways of dealing with the potential risks are also covered in this paper.

Political risks

The Government of Nigeria may take actions that affect Nigeria's business environment. Business environmental factors that may be manipulated by the Government of Nigeria to the disadvantage of Ahomka includes:

1. ***Taxes and tariffs***: Tax rules in Nigeria might change to the disadvantage of Ahomka. The current corporate tax rate of 30% could be increased or new taxes, such as profit repatriation tax, might be introduced after Ahomka has established the subsidiary. If these happen, cash flows from the subsidiary will reduce, and the value of Ahomka will fall.

2. ***Local content and labor regulation*:** Rules relating to local content might change after Ahomka has established the subsidiary. New rules may demand more local content and/or impose restrictions on the use of expatriate managers. Ahomka's plan to operate a wholly-

owned subsidiary may be threatened by changes in local ownership requirement. If minimum local shareholding is raised, Ahomka will be forced to cede ownership to undesirable local partners or sell significant proportion of its stake in the subsidiary for a lower consideration.

3. ***Protection of intellectual property*:** Laws on protection of intellectual property may be nonexistent or weak. Besides, enforcement of such laws may be inefficient. Ahomka might lose profits due to infringements on its intellectual property rights.

4. ***Protectionism*:** Protectionist measures such as import quotas, imposition of stringent safety and quality standards, and devaluation of local currency might be employed after the subsidiary has been established. If this happens Ahomka's plans to sell goods and services to the subsidiary for payments will not yield the expected cash flows.

5. ***Foreign exchange control*:** The Nigerian government might interrupt the current floating rate exchange rate regime and directly devalue or revalue the Nigeria naira against the Ghanaian cedi. If the naira is devalued relative to the cedi, import of materials and services from Ghana including those from the parent company will be more expensive to the subsidiary which will restrict intra-group transfers and reduce Ahomka's value. Moreover, there might be exchange controls with the effect of blocking the flow of foreign exchange into and out of Nigeria. If Ahomka faces a situation of blocked funds after establishing the subsidiary it will not be able to remit the maximum funds possible to pay off loans raised from Ghana to finance the Nigerian operation.

6. ***Nationalization*:** Foreign operations face the threat of nationalization particularly when a democratic system of governance is not in place. Nigeria has recorded a sustained democratic system of governance in recent years. However, it history of coup d'états cannot be overlooked. If government falls into the hands of militants, radical changes to the investment and finance environment, including nationalization of foreign interests, may be executed.

7. ***Tradition of law and order*:** The tradition of disregard for and poor enforcement of law and order in Nigeria will adversely affect the value and position of Ahomka. Disregard for law and order as well as poor enforcement of laws would mean that employees, suppliers, and credit customers may not perform their contractual obligations. What is more, the subsidiary might suffer vandalism, sabotage, and looting with little or no help from law enforcement agencies.

In addition to the aforementioned business environment factors that could be manipulated by the government to the disadvantage of Ahomka and its subsidiary, there are political environment factors that might present additional risks Ahomka and its Nigerian subsidiary.

8. ***Civil war*:** If a civil war explodes in Nigeria, the subsidiary will lose sales as it may not be able to operate and/or customers/distributors will not be able to buy goods. Besides, there may be breakdown of law and order with attendant vices such as vandalism and looting.

9. ***Corruption*:** High level of corruption amongst public officials, including regulators, will make it difficult for Ahomka to get services it deserves and on time. If Ahomka decides to pay its way out, that will increase its costs of operation.

10. **Racial or ethnic tensions**: Racial or ethnic tensions has serious ramifications for human resource, marketing, and plant location decisions. If racial or ethnic tension is rife amongst employees, the company will not be able to operate efficiently.

11. **Terrorism:** Terrorist activities creates fear and panic amongst the population, including employees and customers. If the issue of Boko Haram is not solved and their activities spreads, operations of the subsidiary could be under threat.

Financial Risks

Ahomka may face financial risks such as currency risk, inflation risk, interest rate risk, and payment delays.

1. ***Currency risk*:** The exchange rate between the naira and the cedi is subject to change. If the cedi continues to strengthen against the naira as relative expected inflation rate in Ghana and Nigeria suggests presently, Ahomka will lose as naira cash flows from the subsidiary will convert into lower cedi cash flows. If this happens, it will be difficult for Ahomka to pay off the cedi loans it plans raising to finance the project. Besides, translation losses will reduce the book value of the Ahomka group.

2. ***Inflation risk*:** Unexpected changes in Nigeria's inflation rate could present risks to Ahomka. If inflation in Nigeria increases above the projected 20% and Ahomka is not able to raise output prices high enough to absorb the rise in operating costs, cash flows from the subsidiary will reduce and the NPV from the project will be lower than projected.

3. ***Interest rate risk*:** Ahomka will face interest rate risk as it plans to finance the Nigerian operation with loans from Ghana. In the domestic economy, interest rates may fall in the future and that will make the fixed rate cedi loan relatively expensive. The rate of interest in Ghana relative to interest rates in Nigeria may change. Given the exchange rate,

reduction in interest rates in Nigeria would make the domestic loan more expensive. What is more, if the pattern of cash flows from the Nigerian subsidiary changes, the fixed rate cedi loan may not be appropriate.

4. ***Payment delays*:** Delay in payments from distributors due to default or inefficiency in the funds transfer system will adversely affect the value of Ahomka. If payment culture in Nigeria is not that of prompt payment to suppliers and there are no mandatory interest charges on delayed payments, Ahomka may not receive cash flows timely as projected and this will reduce the NPV of the project.

Agency problems

As a company, there is likely to be agency problems, particularly those between shareholders and managers. However, when a company becomes a multinational, other dimensions of the agency problem arise. As Ahomka operates a subsidiary in Nigeria conflicts might arise between the objectives of head office managers and managers at the subsidiary.

Strategies for avoiding or managing the risks

There are a lot of risk avoidance or management strategies Ahomka could adopt. For the political risks, Ahomka could adopt the following strategies:

- **Negotiate for a favourable business environment**: Ahomka could negotiate with the Nigerian government and regulators for a favorable business environment before making the investment. Ahomka could negotiate for favourable tax rates and tax holiday, local content rules, cash flow remittances, subsidized financing, and corporate governance environment.

- **Structure operations to limit exposure to political risks while optimizing returns**: Ahomka could limit the extent of technology transfer to only non-essential parts of the manufacturing process, limit dependence on any single supplier or distributor, establish the Nigerian operation as a joint venture with local investors, or cede shareholding to local investors.

  Ahomka could sell goods and services to the subsidiary for payments in case Nigeria imposes restrictions on profit repatriation. Ahomka could also patent its production process and brand names; and then license the subsidiary to use them for royalty payments. This may be an effective way of dealing with blocked funds.

- **Take political risk insurance**: Ahomka can take insurance cover against insurable political risks such as political violence due to revolution, insurrection, civil unrest,

terrorism, or war; expropriation or confiscation of assets; and restriction on funds remittance.

For the financial risks, Ahomka could do the following:

- Hedge against currency risk using financial derivatives such as futures and options to make expected cedi cash flows more certain.
- Hedge against interest rate risk using interest rate swap.

On the potential agency problem between managers at the head office and the manager of the subsidiary, Ahomka should align interests using an effective group bonus scheme. Again, the performance evaluation criteria for the subsidiary manager should exclude factors that are rather influenced by head office.

Conclusion

Like any other investment opportunity, an investment opportunity in the multinational business environment would come with its own risks. An attitude of avoiding risks altogether implies missing opportunities to enhance the value of shareholders. Insofar as the risks are managed effectively and efficiently to keep the NPV positive, the Nigerian subsidiary will be an excellent opportunity to increase the value of Ahomka's shareholders.

EXAMINER'S COMMENT

The **first part** of the question requires candidates to use the normal capital appraisal method and make a recommendation whether a new project should be embarked.

The understanding of the question is that the new project would commence both production and sales in the third year (year 3). Most candidates however, misunderstood the question and used year 1 as the starting period.

Again the capital outlay made up of the cost of the project and the injection of working capital was misunderstood. The capital cost commences at the beginning of year 1 (end of year 0) and working capital at the start of year 2 (end of year 1) but most candidates did not put them at the right years.

The **second part** of the question was well answered as candidates were able to bring out all the potential risks exposed to a new company to be established in another country.

In **conclusion**, the candidates did not take their time to understand the question requirements to know when capital outlays were injected.

QUESTION TWO

		Marks
Projection of sales revenue, variable costs, relevant fixed costs		7.0
Incremental working capital	1.0	

Tax-allowable depreciation	1.0	
Taxation	1.0	
Estimation of ungeared ke	2.0	
NCF, PVs, and base case NPV		3.0
Issue cost effects	2.0	
Interest payment effect		1.0
Loan subsidy effect	1.0	
APV	0.5	
Conclusion	0.5	
Total	**20**	

QUESTION TWO

Financial appraisal of ABC Ltd's proposed air conditioner manufacturing project

The project presents different business risk (as it involves a new business venture) and increases financial risk (as its financing method will increase the company's gearing). In addition, there are

associated financing side effects that need to be factored into the financial appraisal. Adjusted present value (APV) will be a more efficient appraisal method than the traditional NPV approach.

Step 1: Compute the base case NPV

		End of year					
	Growth	0	1	2	3	4	5
Annual output	5%		2000	2100	2205	2315	2431
Unit sale price (GHS)	10%		2200	2420	2662	2928	3221
Unit variable cost (GHS)	8%		1,100	1188	1283	1386	1497
		GHS'000					
Sales revenue			4,400.00	5,082.00	5,869.71	6,778.32	7,830.25
Variable costs			(2,200.00)	(2,494.80)	(2,829.02)	(3,208.59)	(3,639.21)
Relevant fixed costs	5%		(750.00)	(787.50)	(826.88)	(868.22)	(911.63)
Tax-allowable depreciation			(1,500.00)	(1,050.00)	(735.00)	(514.50)	(360.15)
Taxable net operating income			(50.00)	749.70	1,478.82	2,187.01	2,919.26
Taxation			12.50	(187.43)	(369.71)	(546.75)	(729.82)
Net operating income after tax			(37.50)	562.28	1,109.12	1,640.26	2,189.45
Add back depreciation			1,500.00	1,050.00	735.00	514.50	360.15
Net operating cash flows			1,462.50	1,612.28	1,844.12	2,154.76	2,549.60
Capital investment/sale		(5,000.00)					20,000.00
Working capital		(440.00)	(68.20)	(78.77)	(90.86)	(105.19)	313.21
Net cash flows		(5,440.00)	1,394.30	1,533.50	1,753.25	2,049.57	22,862.81
Discount factor @ 16.4%		1	0.859	0.738	0.634	0.545	0.468
PV of NCF		(5,440.00)	1,197.70	1,131.73	1,111.56	1,117.01	10,699.79
Base case NPV		9,817.80					

Workings:

1. Tax-allowable depreciation

End of year	Tax-allowable depreciation (30%)	Reduced balance GHS'000

	GHS'000	
0		5,000.00
1	1,500.00	3,500.00
2	1,050.00	2,450.00
3	735.00	1,715.00
4	514.50	1,200.50
5	360.15	840.35

2. Cost of equity as if company is ungeared

As the new project is a completely new business, an appropriate cost of equity is one that reflects the level of business risk associated with the new business. This can be derived from that of the competitor, XYZ as under:

Using MM Proposition II with tax:

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

XYZ's cost of equity, ke(g) = 20%

Market value of XYZ's equity = 10m x GHS5.5 = GHS55m

Market value of XYZ's debt = GHS40m

XYZ's tax rate, t = 22%

Cost of debt, kd = 10% (taken to be the treasury note rate)

$$0.2 = ke(u) + (ke(u) - 0.1)\left(\frac{GHS40m\ (1-0.22)}{GHS55m}\right)$$

$$0.2 = ke(u) + 0.5673ke(u) - 0.0567$$

$$0.2 = 1.5673ke(u) - 0.05673$$

$$ke(u) = \frac{0.2 + 0.05673}{1.5673} = 0.164$$

Alternatively, obtain asset beta of XYZ and put that into the capital asset pricing model to obtain ungeared cost of equity as under:

Equity beta of XYZ is 1.25:

$$0.2 = 0.1 + \beta_e(0.18 - 0.1)$$

$$\beta_e = \frac{0.2 - 0.1}{0.08} = 1.25$$

Asset beta of XYZ is 0.7976:

$$\beta_a = \frac{GHS55m}{GHS55 + GHS40(1-.22)} \times 1.25 = 0.7976$$

According to CAPM, the ungeared cost of equity is 16.38%:

$$ke(u) = 0.1 + 0.7976(0.18 - 0.1) = 0.164$$

Note: The ungeared cost of equity may be assumed 16% so as to read present value interest factors from the interest factor tables.

Step 2: Calculate 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.

		GHS'000
Issue costs	5/95 x 0.4 x GHS5,440	(114.53)
Tax shield from issue cost discounted @ risk-free rate	GHS114.53 x 0.25 x 0.909	26.03
Tax shield from interest payments discounted @ risk-free rate	[(GHS5,440 x 0.6 x 0.12 x 0.25) + (GHS5,440 x 0.4 x 0.15 x 0.25)] x 3.791 = GHS179.52 x 3.791	680.56
After-tax benefit from loan subsidy discounted @ risk-free rate	(GHS5,440 x 0.6 x 0.03 x (1 – 0.25) x 3.791 = GHS73.44 x 3.791	278.41
Total benefit from financing side effects		870.47

Notes:

- **The issue costs may be included in funds borrowed instead.**
- **The calculation above assumes that the entire issue costs will be expensed in the first year. One may choose to amortize it over the 5-year forecast period and discount the annual tax shields accordingly.**
- **PV of tax shield and subsidy benefit are based on the 5-year government debt yield rate. It may be discounted at the company's cost of debt, 15% (5-year yield rate plus 500 basis points) on the grounds that the benefits will accrue to the company only when it is able to discharge its financial obligation and 15% reflects the credit risk of the company.**

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

	GHS'000
Base case NPV	9,817.80
PV of benefits from financing side effects	870.47
Adjusted present value	**10,688.27**

Conclusion:

As the APV is positive, the value of ABC will increase if the proposed project is implemented.

EXAMINER'S COMMENT

This is one area the candidates should have done better but poorly handled all the requirements. The question requires financial appraisal of a proposed air conditioner manufacturing project.

Most candidates did not know how to calculate cost of equity if a company is ungeared.

Candidates were expected to calculate ungeared company's cost of capital by:

1. Using MM proposition theory with tax.
2. Using alternative method by calculating
   i. Equity beta of the same firm in the industry (XYZ Ltd)
   ii. Asset beta of the same firm in the industry (XYZ Ltd)
   iii. Using CAPM method to get the cost of debts.

Apart from the calculation of the cost of debts, most candidates also got confused on how to obtain net cash flows. This is done by preparing an income statement for each year by taking into account taxation and depreciation. The net present value (NPV) method of appraising a project is then used to take a final decision.

Again, candidates appeared to have rushed to answer the questions without going through the right procedures to arrive at the correct answers. The qualitative side of the question was completely ignored.

QUESTION THREE

Marks

(a) Cost of debt

	Credit score from Kaplan Urwitz model	6.0	
	Selection of credit rating and corresponding yield	1.0	
	Cost of debt	1.0	8
(b)	Criteria for establishing credit rating		
	Explanation of three criteria (1.5 each)	4.5	
	One factor for assessing each criterion (0.5 each)	1.5	6
(c)	Default probability and expected loss		
	Computation of d_1 and d_2 values, and selection of N(d2) from probability table	2.0	
	Computation of default probability	1.0	3
	Loss given default	2.0	
	Expected loss	1.0	3
	Total		**20**

QUESTION THREE

(a) Cost of debt

Calculate credit score (Y) using Kaplan Urwitz model for unlisted companies:

$$Y = 4.41 + 0.001Size + 6.40Profitability - 2.56Debt - 2.72Leverage + 0.006Interest - 0.53COV$$

Where
Size is measured by total assets
Profitability is measured by the ratio of net income to total assets
Debt refers to the status of the debt stock; subordinated debt is assigned score 1, and unsubordinated debt is assigned score 0
Leverage is measured by the ratio of long-term debt to total assets
Interest refers to interest cover, which is measured by net operating income (i.e. net income before interest and tax)
COV is the coefficient of variation in earnings, which measures volatility in earnings

$$Size = Total\ assets = 200$$

$$Profitability = \frac{Net\ income}{Total\ assets} = \frac{10.2}{150} = 0.068$$

Debt = Subordinated = 1

$$Leverage = \frac{Long - term\ debt}{Total\ assets} = \frac{80}{150} = 0.533$$

$$Interest = \frac{NI\ before\ interest\ and\ tax}{Interest\ payments} = \frac{14.8}{1.2} = 12.333$$

$$COV = \frac{Stdev}{Average\ earnings} = \frac{0.689}{8.8} = 0.078$$

$$Average\ earnings = \frac{9.8 + 9.2 + 8.5 + 8.1 + 8.4}{5} = 8.8$$

$$Variance = \frac{(9.8 - 8.8)^2 + (9.2 - 8.8)^2 + (8.5 - 8.8)^2 + (8.1 - 8.8)^2 + (8.4 - 8.8)^2}{5 - 1}$$

$$Variance = 0.475$$

$$Stdev = \sqrt{0.475} = 0.689$$

Note: Since company has been operating since 1990, earnings record for the past five years is a sample of earnings. The standard deviation is therefore estimated as a sample standard deviation.

$$Y = 4.41 + 0.001(150) + 6.40(0.068) - 2.56(1) - 2.72(0.533) + 0.006(12.333) - 0.53(0.078)$$

$$Y = 1.018$$

With a credit score of 1.018, Lolonyo falls into the BB credit rating.
The yield on 10-year corporate bonds with BB rating is 25.5%.

$$Cost\ of\ debt\ = YTM \times (1 - tax\ rate)$$

$$Cost\ of\ debt = 25.5\% \times (1 - 0.25) = 19.125\%$$

(b) Criteria used for credit rating

Criteria normally used by credit rating agencies in establishing credit rating of companies include the following:

Criterion	Explanation	Measures
Country risk	Risk associated with the country in which the company is domiciled. Based on the "sovereign ceiling" concept, no issuer's debt is rated higher than the rating of the country of origin	Country risk score of the country of origin. Credit rating of the country of origin
Universal/country importance	The standing of the issuer relative to others in the country or globally. If universal/country importance is low, a lower rating is assigned.	Relative sales, profit, industry contribution to GDP
Industry risk	Strength of the industry within the country. If the issuer operates in a resilient industry, a higher rating may be assigned.	Cyclical nature of the industry, sensitivity of industry sales/returns to changes in the economy
Industry position	Position of the issuer in its industry. If the issuer is a major industry player, a higher rating may be assigned.	Relative operational efficiency

Management evaluation	Assessment of quality of management. If overall quality of management is high, chances are that the company will do well financially and be able to discharge debt obligations. In this case, a higher rating may be assigned.	Company's planning, controls, financing policies, and strategies; management succession plan; financial achievements; qualification and experience of managers
Accounting quality	Assessment of the quality of financial reporting. High quality of financial reporting suggests that reported earnings can be relied upon, and this would enhance the issuer's credit rating.	Record of auditor's qualifications of financial statements; appropriateness of accounting policies for inventory, goodwill, depreciation; and extent of disclosure
Earnings protection	The ability of the company to maintain earnings in changing situations. High earnings power would enhance the issuer's credit rating.	Return on capital employed, pre-tax and net profit margin, diversity in sources of earnings and growth
Financial gearing	The extent of debt use in financing structure. High debt relative to assets suggests high default risks. If financial leverage is high, credit rating will be low.	Long-term debt to capital, total debt ratio; nature of assets; off-balance sheet commitments; working capital financing strategies
Cash flow adequacy	Ability to generate adequate cash flows to cover financial obligations, and business cash needs. If the firm generates adequate cash flows, there would be coverage for debt payments. This enhances credit rating.	Ratio of cash generated from operations to financial obligations
Financial flexibility	Ability of the company to raise needed funds from varied sources even under stress. High financial flexibility enhances credit rating.	Range of alternative financing sources, reserve borrowing capacity, banking relationships, debt covenants

(c) Default probability and expected loss

i) Probability of default

Default probability is estimated using the Black-Scholes OPM as under.

Default probability = 1 – $N(d_2)$

$$d_2 = d_1 - s\sqrt{t}$$

$$d_1 = \frac{\ln\left(\frac{P_a}{P_e}\right) + \left(r + \frac{s^2}{2}\right)t}{s\sqrt{t}}$$

P_a = value of assets = GHS200m

P_e = face value of bonds = GHS80m

r = risk-free rate = 18%

s = volatility in asset value = 50%

t = time to maturity = 10 years

$$d_1 = \frac{\ln\left(\frac{200}{80}\right) + \left(0.15 + \frac{0.5^2}{2}\right)10}{0.5\sqrt{10}} = 2.3188$$

$$d_2 = 2.3188 - 0.5\sqrt{10} = 0.7377$$

From the standard normal probability table, $N(d_2 = 0.74) = 0.7704$.

Default probability = 1 – 0.7704 = 0.2296

The chance that Lolonyo will default on bond payments is 22.96%.

ii) Expected loss

Expected loss = Loss given default x default probability

Loss given default = Face value x (1 – recovery rate)

Loss given default = GHS80m x (1 – 0.6) = GHS32m

Therefore,

Expected loss = GHS32m x 0.2296 = GHS7.3472m

EXAMINER'S COMMENT

The first **part (a)** of the question requires the calculation of cost of debts using a specific method provided in the question (Kaplan Urwitz model). This formula was provided in the question.

The problem was that even though the formula was provided, most candidates were not even aware that such model exists. They could not apply the formula.

The second **part (b)** was well answered. Candidates were able to bring out almost all the criteria for a good credit rating of a company. Answers to this part were commendable.

The third **part (c)** was another problem area for the candidates. Almost all candidates were ignorant of calculating **Profitability of default** when using Black-Scholes Model.

Candidates again narrowed themselves to small area of the syllabus. They need to read to cover the entire syllabus to be able to attempt all questions.

QUESTION FOUR

			Marks
(a)	Hedging interest rate risk		
	Advantages of hedging with interest rate swap (2 advantages for 1 each)	2.0	
	Disadvantages of hedging with interest rate swap (2 disadvantages for 1 each)	2.0	4
	Hedging with interest rate swap with swap bank:		
	Set up	2.0	
	Determination of net outcome	2.0	
	Hedging with interest rate swap with another company		
	Set up	3.0	
	Determination of net outcome	2.0	
	Recommendation	1.0	10
(b)	Explanation of internal motivations for transfer pricing (3 motivations for 2 each)		6
	Total		**20**

QUESTION FOUR

(a) Interest risk management

i) Advantages and disadvantages of interest rate swap

Advantages of hedging interest rate risk with interest rate swap include the following:

- **Leveraging on relative borrowing advantage**: Swaps allow companies to mutually benefit from their relative borrowing advantage by each borrowing in markets they can get the best deal and then swapping for the loan type they actually prefer.
- **Flexibility and convenience**: Swaps are more flexible than other derivatives, particularly futures and options, as they can be arranged in any size, and can be reversed if necessary.
- **Lower transaction cost**: Cost of arranging a swap is relatively lower, particularly when no intermediary is involved. Besides, it is cheaper to arrange a swap to manage interest rate swap than having to cancel existing loan contract and arranging a new one.
- **Suitability for long-term exposures**: Unlike other derivatives such as futures and options, swaps a typically designed for managing long-term exposures. Most of the interest rate risks that firms face are long-term in nature and swaps are well-suited for managing exposures of such maturity.

Disadvantages of using swap to hedge interest rate risks include the following:

- **Counterparty risk**: Effectiveness of hedging interest rate risk with interest rate swap is limited by the risk that one party will default leaving the other to bear its obligations. This problem can be solved by using an intermediary to enforce compliance with the swap terms. However, this will imply higher transaction cost.
- **Inability to take advantage of upside risk**: Under interest rate swaps, parties have the obligation and not the right to swap. This means that a party that takes up a fixed rate commitment, will not be able to take advantage of favourable movement in interest rates. This problem can be solved using a swaption instead.
- **Lack of liquidity**: Swaps are typically not traded in open secondary markets, and that reduces ability and convenience of liquidating a swap contract when the need arises.

ii) Recommended interest rate risk hedging strategy

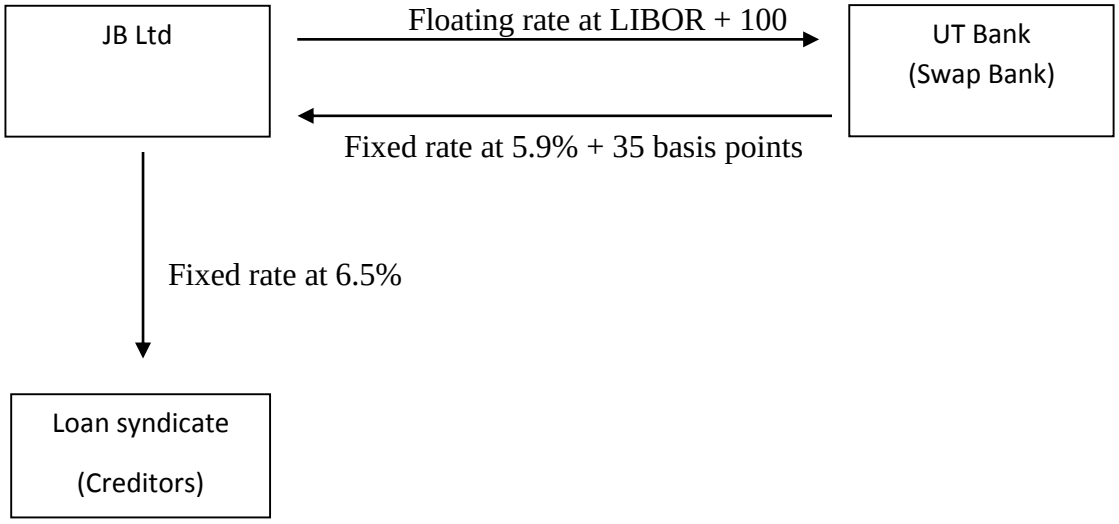
The recommended hedging strategy is the one that presents the lowest net borrowing cost.

Restructure the existing loan

Under this option, the existing fixed rate dollar loan is structured into a floating rate dollar loan at LIBOR + 200 basis point

Borrowing cost = LIBOR + 2%

Hedging alternative 1: Engage in interest rate swap with a swap bank
Under this arrangement, JB will get the opportunity to pay floating rate (what it prefers) at LIBOR + 100 basis points to UT bank (the swap bank) in exchange for a fixed rate payment (what it does not prefer) at the bid fixed rate, 3-year TN rate + 35 basis points. The fixed rate payments from the swap bank will be at the bid rate as in this case the swap bank will be buying a fixed rate from JB.
JB will still honour its fixed rate obligations to the loan syndicate. With the fixed rate payments received from the swap bank however, much of this fixed rate obligation is effectively shifted to the swap bank.



Note: Though the diagram above aids analysis of interest payments amongst the parties involved, it is not a requirement to answering the question. Full credit should be given to a narrative that explains interest flows even without a diagram.

Net borrowing cost:

Interest payments to UT bank	=	LIBOR + 1%
Interest payments to creditors	=	6.5%
Less interest payments from UT bank	=	(6.25%)
Net borrowing cost	=	LIBOR + 1.25%

That is if JB hedges the interest rate risk with an interest rate swap with UT bank, its net borrowing cost would be LIBOR + 125 basis points.

Hedging alternative 2: Engage in interest rate swap with another company
Under this arrangement, the entities will swap currency coupons for the type they prefer. That is, JB would pay to McEwen the floating rate coupons it prefers and then receive fixed rate coupons from McEwen. Thus, either entity ends up paying the interest rate type they prefer.

	JB Ltd	**McEwen Ltd**	**Sum Total**
Company's preference	Floating	Fixed	
Would pay (under no swap)	(LIBOR + 2%)	(8%)	(LIBOR + 10%)
Could pay (under swap)	(6.5%)	(LIBOR + 1.5%)	(LIBOR + 8%)
Potential gain			2%
Gain shared equally	1%	1%	
Expected outcome	(LIBOR + 1%)	(7%)	(LIBOR + 8%)
Swap terms:			
Pay interest that could be paid	(6.5%)	(LIBOR + 1.5%)	(LIBOR + 8%)
Swap floating rate	(LIBOR + 1.5%)	LIBOR + 1.5%	
Swap fixed rate	7%	(7%)	
Net borrowing cost	(LIBOR + 1%)	(7%)	(LIBOR + 8%)

Comment on swap arrangement:

JB would maintain its fixed rate debt, which is at 6.5%; and McEwen keeps its floating rate debt, which is at LIBOR + 1.5%. And under the swap arrangement, JB pays floating rate (LIBOR + 1.5%) to McEwen in exchange for a fixed rate (7%). JB then pays 6.5% out of the fixed interest payment from McEwen to its creditors, and saves 0.5% on the fixed rate side. On the floating rate side, JB pays LIBOR + 1.5% to McEwen instead of LIBOR + 2% to creditors if the loan is restructured, and thus saves another 0.5%.
JB effectively ends up paying a floating rate; gains 1%, which reduces its borrowing cost to LIBOR + 1%

Working:
Take the floating rate that is swapped to be what McEwen could pay under swap (i.e. LIBOR + 1.5%).
Given that the swap gains are shared equally, the fixed rate that would be swapped is calculated as under:

$$Fixed\ rate\ swapped = 8\% - \frac{2\%}{2} = 7\%$$

Summary:

Option	*Net borrowing cost*
Restructure existing loan	LIBOR + 2%
Interest rate swap with a bank	LIBOR + 1.25%
Interest rate swap with another multinational company	LIBOR + 1%

Recommended hedging strategy

Hedging with interest rate swap with McEwen Ltd is recommended as it present the lowest net borrowing cost.

JB maintains its fixed rate debt contract with loan syndicate, and engages in a fixed-for-floating interest rate swap with McEwen. Under the swap arrangement, JB pays floating rate coupons at LIBOR + 1.5% to McEwen in exchange for fixed rate coupons at 7%.

JB then pays 6.5% out of the fixed rate coupons it receives from McEwen to the loan syndicate. Thus, JB effectively shifts the risk associated with the fixed interest rate obligation to the counterparty, McEwen.

(b) Internal motivations for transfer pricing

Internal motivations for transfer pricing include the following:

- **Performance evaluation**: In the case where units within the multinational are treated as autonomous profit centres, transfer pricing is needed to evaluate the performance of each unit effectively. Without transfer pricing, performance of selling departments may be underrated and that of buying departments may be overrated, or otherwise.

- **Management incentives**: An effective transfer pricing system that rewards managerial efficiency and exposes efficiencies will serve as incentive for good performance.

- **Cost allocation**: If there are units within the JB group that are treated as cost centres, an effective transfer pricing system will allow them to charge for their services to the group and thus permit them to recover their costs and perhaps record a mark-up. This will boost morale of managers at cost centres, and encourage economy and efficiency with the use of their services amongst units in the group.

- **Financing consideration**: Transfer pricing can be used to provide financing to a subsidiary by the parent company undercharging the subsidiary for goods and services transferred.

EXAMINER'S COMMENT

Average performance was produced. Part one of Section A was well answered.

The problem was in part B where candidates were asked to produce their own hedging strategy to calculate interest of payment.

Candidates were given room to answer by identifying their own strategy but it appeared the foreign exchange section of the syllabus was not fully covered by most candidates.

The second section on the internal factors for transfer pricing was well answered.

QUESTION FIVE

		Marks	
(a)	Evaluation of acquisition		
	PV of synergy	1.0	
	Current EPS and value of Two-Pack	1.0	
	EPS and value of Anas-Expo	1.0	
	Post-acquisition value	1.0	
	Purchase consideration (i.e. value of share offer)	0.5	
	Cost of acquisition	0.5	
	NPV of acquisition	1.0	
	Recommendation	1.0	7.0
(b)	Effect of acquisition on EPS		
	Post-acquisition EPS	1.0	
	Change in EPS and comments	1.5	2.5
(c)	Effect of acquisition on shareholders' wealth		
	Change in value of Shareholders of Two-Pack	2.0	
	Change in value of the Shareholders of Anas-Expo	2.0	
	Comments	0.5	4.5
(d)	Likely sources of conflicts		
	Advise on sources of conflict (3 conflicts for 1 mark each)		3.0
	Solution to conflict (1 solution each for 1 mark each)	3.0	6.0
	Total		**20**

QUESTION FIVE

(a) Evaluation of acquisition

The value of an acquisition can be assessed using the net present value of the acquisition and integration.

$NPV\ of\ acquisition = PV\ of\ synergy - Cost\ of acquisition - Cost\ of\ mechanisation$

$$NPV\ of\ acquisition = GHS100m - GHS169.1m - GHS18m = GHS - 87.1m$$

The NPV of the acquisition is negative. Two-Pack should not go ahead with the acquisition.

Workings:

1. PV of synergy

Synergy = GHS25m per year

Discount rate = 25%

$$PV\ of\ synergy\ = \frac{GHS25m}{0.25} = GHS100m$$

2. Cost of acquisition

The cost of acquisition is the purchase consideration less the value of the target.

Purchase consideration = Value of share offer = Post-acquisition share price x Shares

$$Post - acquisition\ share\ price = \frac{Post - acquistion\ value}{Post\ acquistion\ shares\ outstanding}$$

EPS, Two-Pack = GHS55.8/40m = GHS1.395

Current share price, Two-Pack = P/E ratio x EPS = 18 x GHS1.395 = GHS25.11

Current value of equity, Two-Pack = GHS25.11 x 40m = GHS1, 004.4m

EPS, Anas-Expo = GHS33.7/25m = GHS1.348

Current share price, Anas-Expo = P/E ratio x EPS = 12 x GHS1.348 = GHS16.176

Current value of equity, Anas-Expo = GHS16.176 x 25m = GHS404.4m

$$Post - acquisition\ value = \frac{GHS1004.4m + GHS404.4m + GHS100m - GHS18m}{40m + 25m}$$

$$Post - acquistion\ value = \frac{GHS1{,}490.8m}{65m} = GHS22.94$$

Purchase consideration = GHS22.94/share x 25m shares= GHS573.5m

Cost of acquisition = GHS573.5m – GHS404.4m = GHS169.1m

Note: Post-acquisition value may be estimated as the product of the post-acquisition EPS and P/E ratio.

(b) Analysis of effect of acquisition on EPS of Acquirer

Earnings after acquisition = GHS55.8m + GHS33.7m + GHS25m = GHS114.5m
EPS = GHS114.5m / 65 = GHS1.762
The EPS of Two-Pack will increase by GHS0.367 (GHS1.762 – GHS1.395) if the expected benefit of additional GHS25m in annual after-tax net income is achieved.
Assuming the synergy is not achieved, the EPS of Two-pack will drop by GHS0.018:

$$EPS, without\ synergy\ = \frac{GHS55.8m + GHS33.7m}{65m} = 1.377$$

(c) Analysis of effect of acquisition on shareholders wealth

Shareholders of Two-Pack:
Current value of shares = 40m x GHS25.11 = GHS1,004.4m
Value after acquisition = 40m x GHS22.94 = GHS917.6m
Potential loss in value = GHS86.8m

Shareholders of Anas-Expo:
Value of current shareholding in Anas-Expo = GHS16.176 x 25m = GHS404.4m
Value of shareholding in Two-Pack = 25m x GHS22.94 = GHS573.5m
Potential gain in value = GHS169.1m

If the acquisition takes place, existing shareholders of Two-Pack would lose value while shareholders of Anas-Expo would gain value.

(d) **Likely sources of conflicts**

(1) Impact of acquisition on shareholder's wealth

Potential conflict: As rational investors, shareholders of Two-Pack will prefer investments that enhance their value to those that reduce their value. Any acquisition that presents a negative NPV and reduction in value of existing shareholders would be resisted. The NPV of the acquisition is negative and the post-acquisition value of existing shareholders' shares will be lower than their value now. What is more, the acquisition appears to serve directors' interest because as the larger profits of a larger post-acquisition company implies bigger compensation packages for them.

Solution: The conflict may be avoided if the acquisition proposal is discarded. The value of existing shareholders may be enhanced if Anas-Expo is acquired at a lower P/E ratio (may be offer 1 share for every two shares in Anas-Expo). In this case, EPS of post-acquisition company will be higher than Two-Pack's current EPS and given the P/E ratio, the value of shares post-acquisition will be higher than now.

(2) Impact of mechanization on employees

Potential conflict: The mechanization of the production process will enhance production efficiency and, at least in the short-term, yield additional profits. This will serve the interest of directors if their compensation is based on earnings. However, employees at Anas-Expo may resist the planned mechanization because of the associated job losses. Shareholders, on the other hand, may resist high redundancy packages demanded by employees.

Solution: Employees should be consulted and educated on the mechanization programme. Those who would lose their job should be given adequate compensation and retraining to pursue opportunities elsewhere. The implementation of the mechanization programme could be delayed or done in phases to reduce tension, spread the cost of the programme over a period, and to give employees enough time to adjust.

(3) Mechanization and product quality

Potential conflict: The mechanization of the production process implies that clothes will now be mass-produced with machines. The quality of the mass-produced clothes may fall below that of the handmade clothes. Besides, the product of Anas-Expo may have won those awards because of its quality as a handmade product. Customers may be unhappy if their cherished handmade clothes are replaced with lower-quality mass-produced versions.

Solution: Instead of a full-scale mass production with machines, directors may consider producing a proportion of total output using machines and a proportion using hand. This middle-ground approach will enhance operational efficiency for lower cost while maintaining some level of production for the celebrated handmade products. Also, the company should make additional investment in R&D to obtain a production technology that would maintain the quality of the clothes when produced with machines.

(4) Impact of mechanization on larger society

Potential conflict: Mechanization of the production process may enhance efficiency and reduce production costs. But since the purpose of the mechanization is to replace work done by hand, the larger society, including the community in which the factory

is located and the government, may resist the programme as it will result in job losses and increase unemployment rate. Besides, if the additional net income that would result from the mechanization does not compensate for the reduction in employment income due to job losses, government will lose tax revenue.

Solution: JB should manage the impact of the mechanization well by providing adequate redundancy package, education and training for employees who would be affected to help them adjust; phase in the implementation of the programme; and secure production technology that would enhance quality of the products to achieve higher demand, lower operating costs, and superior profits.

EXAMINER'S COMMENT

This question was answered very well by few candidates. It was centered on merger and acquisition.

Candidates had the general idea on the topic but could not evaluate and analyze the question to obtain the effect of the acquisition. The understanding appeared to be there but how to analyze it to know the loss or gain of the acquisition was a problem.

Candidates need to take their time and read to cover all areas of each topic to fully understand them extensively.