PAPER 3.1 - SECURITY ANALYSIS AND PORTFOLIO MANAGEMENT

1(a) (i) Advantages of a convertible bond to the issuer

- Low interest cost (low yield)
- Less restrictive covenants

(ii) Disadvantages of a convertible bond to the issuer

- Capital structure uncertainty
- Faces the worst of 2 worlds (if business goes sour, bonds—instead of equity—increase the chance of bankruptcy; if business booms, convertible bonds will be converted and existing shareholders' share of growth is diluted).

(b) Disadvantages of a sinking fund provision to the investor.

- Forced to relinquish the bond even if receiving high coupons
- Time wasting in trying to reinvest the proceeds of the payment when the bond is redeemed by the issuer.

(c) What is the efficient frontier and how is it identified?

- The efficient frontier is the graphical representation of a set of portfolios that maximize expected return for each level of risk.
- The efficient frontier is identified by first establishing estimates for the asset expected returns and the covariance matrix; this is input for an optimization program, which produces investment proportions, expected returns, and standard deviations of the portfolios on the efficient frontier.

(d) What is Bull campaign of Bear Raid?

Bulls begin to spread rumors in the market about rise in prices when there is an over–bought condition in the market. Purchases made the speculators exceed sales made by them.

(e) Roll

Roll refers to the repricing of a bond because of higher or lower yields to maturity on the yield curve as the bond ages.

(f) Characteristic line

It is a regression line that indicates the systematic risk of a risky asset. A regression line with a negative slope indicates as inverse relationship between the variables. The financial significance of this would be that the security in question tends to move inverse to the market. In reality very few securities exhibit this characteristic.

(g) Collateral trust bond
It is a bond secured by financial assets like stocks and bonds instead of fixed assets or property. The pledged assets are held by a trustee for the benefit of the bondholder.

(h) Asset plays
Assets plays are companies that have valuable assets, which have been somewhat, overlooked by the stock market. The best asset plays are those that hold large chunks of cash, liquid investments and property -- items that are readily re-usable or re-saleable.

(i) Pay-in-kind feature

A pay-in-kind feature refers to the option of the issuer to pay with additional securities instead of paying interest in cash.

(j) Repo

In a repo transaction a holder of securities sells them with an agreement to repurchase the same after a certain period at a predetermined price, which is higher than the sale price.

2. Any employer wishing to continue with its existing scheme shall apply to the Commission and must comply with the provisions of Section 39 of the Pension Reform Act.

Any employer that elects to continue with its existing scheme and desires to manage its pension fund shall also apply to the National Pension Commission to be licensed as a Closed Pension Fund Administrator.

The company must ensure that the scheme complies with the following provisions:

(i) (a) the pension scheme shall be fully funded and in case of any defined contribution scheme, contributions in favour of each employee together with the attributable income shall be computed and credited to a retirement savings account opened for the employee;

(b) the pension funds and assets shall be fully segregated from the funds and assets of the company;

(c) the pension funds and assets shall be held by a custodian;

(d) every employee in the existing scheme shall be free to exercise the option of coming under the Contributory Pension Scheme established under section 1 of the Pension Reform Act and the employer shall compute and credit to his account his contributions and distributable income earned as at

the date the employee exercises such an option subject to the regulations, rules and standards established by the National Pension Commission;

(e) any amount computed under (d) above shall be transferred to the retirement savings account of the employee maintained with a pension fund administrator of his choice ;

(j) all investments in assets other than specified as permissible investment for pension funds and assets under section 73 of Pension Reform Act may be maintained and from the commencement of the Act all investments shall be subject to the regulation, rules and standards established by the Commission;

(g) the employer shall undertake to the Commission that the pension fund shall be fully funded at all times and any shortfall to be made up within 90 days; and

(h) the employer demonstrates that it possesses managerial capacity for the management of pension funds and assets for a period not less than 5 years before the commencement of this Act.

(ii) All pension schemes existing before the commencement of this Act shall submit to the Commission a statement of affairs which shall include assets, liabilities, list of members, current statements.

(iii) To qualify as a closed pension fund administrator to manage such pension fund either directly or through a wholly owned subsidiary of such employer dedicated exclusively for the management of such pension fund, an applicant must hold a minimum pension funds and assets of N500,000,000 and above.

(iv) Any employer with pension funds and assets of less than N500,000.00 that expresses a desire to maintain its existing scheme shall have such pension scheme administered by a licensed pension fund administrator.

In view of the fact that the size of the pension fund of Holloway is less than N500,000,000, the pension scheme must be administered by a pension fund administrator.

3

(a) (i)

		Rate of return	*Probability*	*EV*
(i)	Security X	30	0.3	9
		25	0.4	10
		20	0.3	6
	Expected Return, security X			25
(ii)	Security Y	50	0.2	10
		30	0.6	18
		10	0.2	2
	Expected Return, security Y			30

(iii) Portfolio of 60% X and 40% Y

The expected return is (60% of 25%)+(40% of 30%)

= 15%+12% = 27%

(ii) (a) Security X: The average return, $\bar{x}$, is 25%.

Rate of return x	$(x - \bar{x})$	*Probability p*	$p(x-\bar{x})^2$
30	5	0.3	7.5
25	0	0.4	0
20	(5)	0.3	7.5
		Variance	15.0

Risk = standard deviation = $\sqrt{15}$ = 3.87%

(b) Security Y: The average return, $\bar{x}$, is 30%

Rate of return x	$(x - \bar{x})$	*Probability p*	$p(x-\bar{x})^2$
50	20	0.2	80
30	0	0.6	0
10	(20)	0.2	80
		Variance	160

Risk = standard deviation = $\sqrt{160}$ = 12.65%

(c) Combined portfolio: the average return, $\bar{x}$, is 27%, although confirmation is shown below for the benefit of candidates in doubt.

Return Sec. X	*Probability P(X)*	*Return Sec.Y*	*Probability P(Y)*	*Joint return (60% X, 40% Y)*	*Joint probability* $P(X) \times P(Y)$	*EV of return from portfolio*
30	0.3	50	0.2	18 + 20 = 38	0.06	2.28
30	0.3	30	0.6	18 + 12 = 30	0.18	5.40
30	0.3	10	0.2	18 + 4 = 22	0.06	1.32
25	0.4	50	0.2	15 + 20 = 35	0.08	2.80
25	0.4	30	0.6	15 + 12 = 27	0.24	6.48
25	0.4	10	0.2	15 + 4 = 19	0.08	1.52
20	0.3	50	0.2	12 + 20 = 32	0.06	1.92
20	0.3	30	0.6	12 + 12 = 24	0.18	4.32
20	0.3	10	0.2	12 + 4 = 16	0.06	0.96
		Expected return from portfolio				27.00

Portfolio return x	$x - \bar{x}$	*Probability p*	$p(x-\bar{x})^2$
38	11	0.06	7.26
30	3	0.18	1.62
22	(5)	0.06	1.50
35	8	0.08	5.12
27	0	0.24	0.00
19	(8)	0.08	5.12
32	5	0.06	1.50
24	(3)	0.18	1.62
16	(11)	0.06	7.26
		Variance	31.00

Risk = standard deviation = $\sqrt{31} = 5.6\%$

An alternative and quicker calculation would be:

$$\sigma_p = \sqrt{(W_x)^2(\sigma_x)^2 + (Wy)^2(\sigma_y)^2 + 2(W_x)(W_y)(r)(\sigma_x)(\sigma_y)}$$

When the correlation coefficient r is 0

$$\sigma_p = \sqrt{(0.6)^2(15) + (0.4)^2(160)}$$

$$= \sqrt{5.4 + 25.6} = \sqrt{31} = 5.6\%$$

Note: if the correlation coefficient r had been 1,

$\sigma_p = \sqrt{5.4 + 25.6 + 2\,(0.6)(0.4)(1)(3.87)(12.65)} = 7.38\%$

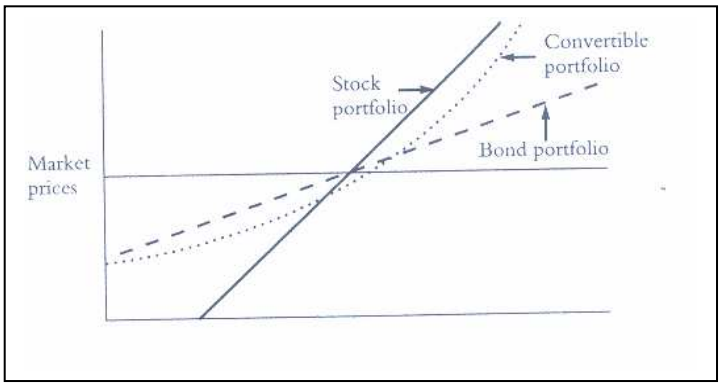
(c) The objectives of portfolio diversification are to achieve a satisfactory rate of return at a minimum risk for that return. This return will be equal to a risk-free rate of return, when the portfolio consists entirely of risk-free securities. Since most portfolios consist of some 'risky' securities, the expected return should exceed the risk-free rate as a reward for the risk in the investment. According to the theorists such as Markowitz, there is an 'efficient frontier' of portfolios which have either:

i. a higher expected return; or
ii. a lower risk

than other portfolio. An investor should select a portfolio on this frontier, although the actual portfolio he prefers will depend on his 'utility' values.

A portfolio preferable to holding individual securities because it reduces risk whilst still offering a satisfactory rate of return- i.e it avoids the dangers of 'putting all your eggs in one basket'. As the figures in (a(ii)) show, if returns are positively correlated, the risk of investment will be higher, and diversification will be less effective or even ineffective in reducing risk.

(3b) The reason for the lower coupon and yield is that convertible bonds and preferred stock have the ability to act like common stock on the upside and be valued as a straight bond on the downside. This is demonstrated by the graph in figure below:



Return
Distributions-Stocks, Bonds,
Convertible Securities

As shown, it has the upside potential of common stock and the downside protection of a bond. Thus, it could have a rate of return approaching common stock with substantially lower risk because it is protected on the downside. Also, the convertible bond has an income advantage relative to common stock until the point at which parity value drives the current yield below the dividend yield.

4(a) (i) Classical immunization

Classical immunization is any investment strategy designed to minimise the risk of reinvestment over a specific time horizon. It aims at achieving the maximum return possible with minimum reinvestment risk. Classical immunization matches the duration of the portfolio with the horizon of the particular liability. Management of such portfolio is limited to periodic rebalancing necessitated by yield curve shifts, yield changes and time effects on duration.

(ii) Contingent immunization

Contingent immunization allows a portfolio manager some opportunity to actively manage the portfolio with a structure that constrains the portfolio manager if he is unsuccessful. It requires a minimum return. If the portfolio deteriorates to the point where the return is threatened, there would be a switch to full immunisation of the portfolio.

(iii) Cash-matched dedication

Cash-matched dedication is a portfolio management technique in which a portfolio will generate cash flows that specifically match the required stream of cash outflows over a period of time. This is achieved by planning maturities and interim cash flows from the portfolio.

(iv) Duration-matched dedication

This is a portfolio management strategy employed to reduce the interest rate risk of a portfolio by matching the weighted average duration of the obligations with the duration of the investment portfolio. For example, if the investment horizon is 8 years, the portfolio manager would construct a portfolio that has a modified duration of 8 years.

(b) When managing an immunised portfolio, there is a need for frequent rebalancing to maintain the duration of the portfolio with the investment horizon. One cannot initially set them equal and then ignore them after that. Duration changes at a slower pace than term to maturity. Also, duration is affected by changes in interest rates i.e. market yields. So, it takes constant rebalancing to keep track of duration matching immunization strategy.

(c) With cash-matched dedicated portfolio, some major considerations are required:

(i) Timing of initiation. While a client wants an immediate initiation, a portfolio manager may decide otherwise if a delay is advisable.

(ii) Time interval of payments. When will the required payments be made? Monthly, quarterly, semi-annually or yearly.

(iii) How to avoid call risk. This can be achieved by having deep-discount bonds or non-callable securities.
(iv) Assumption of a reinvestment rate for the interim cash flows. This must be very conservative to avoid negative impact.

(d) The parameters that should be specified when using contingent immunization include:

(i) The immunized base return (the return which could be earned if the portfolio is immunised at today's rates)
(ii) The minimum acceptable return called the **safety-net,** or **floor** return which is consistent with the needs of the client
(iii) Investment objective
(iv) The agreement on the flexibility to be allowed the portfolio manager in an active strategy as agreed between the client and the manager. The agreement should specify the time horizon and duration variance.

(e) Cash-matched dedicated portfolio

Once cash-matched dedicated portfolio is established, it requires the least supervision over time. No rebalancing of the portfolio is needed as in immunised portfolio nor adjustment of the duration required as in the duration matched dedicated portfolio.

5(a)(i) Technical analysis in the form of charting involves the search for recurrent and predictable patterns in stock prices to enhance returns. The EMH implies that this type of technical analysis is without value. If past prices contain no useful information for predicting future prices, there is no point in following any technical trading rule for timing the purchases and sales of securities. According to weak-form efficiency, no investor can earn excess returns by developing trading rules based on historical price and return information. A simple policy of buying and holding will be at least as good as any technical procedure. Tests generally show that technical trading rules do not produce superior returns after making adjustments for transactions costs and taxes.

5(a)(ii) Fundamental analysis uses earnings and dividend prospects of the firm, expectations of future interest rates, and risk evaluation of the firm to determine proper stock prices. The EMH predicts that most fundamental analysis is doomed to failure. According to semi-strong form efficiency, no investor can earn excess returns from trading rules based on any publicly available information. Only analysts with unique insight receive superior returns. Fundamental analysis is no better than technical analysis in enabling investors to capture above-average returns. However, the presence of many analysts contributes to market efficiency.

In summary, the EMH holds that the market appears to adjust so quickly to information about individual stocks and the economy as a whole that no technique of selecting a portfolio - using either technical or fundamental analysis - can consistently outperform a strategy of simply buying and

holding a diversified group of securities, such as those making up the popular market averages.

5(b). Portfolio managers have several roles or responsibilities even in perfectly efficient markets. These are:

1. Identify the risk/return objectives for the portfolio given the investor's constraints. In an efficient market, portfolio managers are responsible for tailoring the portfolio to meet the investor's needs rather than requirements and risk tolerance. Rational portfolio management also requires examining the investor's constraints, such as liquidity, time horizon, laws and regulations, taxes, and such unique preferences and circumstances as age and employment.

2. Developing a well-diversified portfolio with the selected risk level. Although an efficient market prices securities fairly, each security still has firm-specific risk that portfolio managers can eliminate through diversification. Therefore, rational security selection requires selecting a well-diversified portfolio that provides the level of systematic risk that matches the investor's risk tolerance.

3. Reducing transaction costs with a buy-and-hold strategy. Proponents of the EMH advocate a passive investment strategy that does not try to find under-or-overvalued stocks. A buy-and-hold strategy is consistent with passive management. Because the efficient market theory suggests that securities are fairly priced, frequently buying and selling securities, which generate large brokerage fees without increasing expected performance, makes little sense. One common strategy for passive management is to create an index fund that is designed to replicate the performance of a broad-based index of stocks.

4. Developing capital market expectations. As part of the asset-allocation decision, portfolio managers need to consider their expectations for the relative returns of the various capital markets to choose an appropriate asset allocation.

5. Implement the chosen investment strategy and review it regularly for any needed adjustments. Under the EMH, portfolio managers have the responsibility of implementing and updating the previously determined investment strategy of each client.

5(c). Whether active asset allocation among countries could consistently outperform a world market index depends on the degree of international market efficiency and the skill of the portfolio manager. Investment professionals often view the basic issue of international market efficiency in terms of cross-border financial market integration or segmentation. An integrated world financial market would achieve international efficiency in the sense that arbitrage across markets would take advantage of any new information throughout the world. In an efficient integrated international market, prices of all assets would be in line with their relative investment values.

Some claim that international markets are not integrated, but segmented. Each national market might be efficient, but actors might prevent international capital flows from taking advantage of relative mispricing among countries. These factors include psychological barriers, legal restrictions, transaction costs, discriminatory taxation, political risks, and exchange risks.

Markets do not appear fully integrated or fully segmented. Markets mayor may not become more correlated as they become more integrated since other factors help to determine correlation. Therefore, the degree of international market efficiency is an empirical question that has not yet been answered.

6(a)(i) Project discount rates

Musa Ltd 7% + 1.2(12 -7)% = 13%

Usman Ltd (i) 7% + 1.25(12 -7)% = 13.25%

(ii) 7% + 0.8(12 -7)% = 11%

(iii) 7% + 1.35(12 -7)% = 13.75%

Project net present values, assuming the cash flows all occur at the end of year 1, are:

Musa Ltd $\frac{500}{1.13}$ = (in ₦000) 442.48

₦000

Usman Ltd (i) $\frac{200}{1.1325}$ = 176.60

(ii) $\frac{100}{1.11}$ = 90.09

(iii) $\frac{200}{1.1375}$ = 175.82

442.51

Allowing for rounding errors, the PV of the three projects of Usman add up to the same amount as the PV of the project of Musa.

(ii) Usman's overall beta factor is a weighted average of the beta factor of the three projects.

Project	*Value*	*ß*	*Weighting*
(i)	200	1.25	250
(ii)	100	0.80	80
(iii)	200	1.35	270
	500		600

Overall beta factor = $\frac{600}{500}$ = 1.2

(iii) This is the same as Musa Ltd's project beta factor. This information shows that for the projects under review both companies have the same PV and the same systematic risk (ie. the same beta factor). It therefore follows that on the basis of these projects alone, both companies should be valued equally by investors.

It might be tempting to assume that since Usman Ltd is diversifying into three separate projects, whereas Musa is 'putting all its eggs in one basket' and investing in one project, that investors should show a preference for the lower-risk Usman Ltd because Musa's unsystematic risk will be higher. But with CAPM theory, it is assumed that investors can eliminate unsystematic risk by diversifying their own investment portfolio, and do not have to rely on companies to do the diversifying on their behalf.

Portfolio diversification reduces risk because the returns from projects will not be perfectly positively correlated, and diversification reduces risk more when project returns show little or no positive correlation (or preferably negative correlation, whenever this is achievable). However, diversification by a company reduces the risk of bankruptcy for the company itself. As stated earlier, investors can diversify themselves, without having to rely on a company to do it for them, and provided that bankruptcy brings no added costs to the investor, CAPM theory states that diversification by a company should have no effect on the risks experienced by a well-diversified investor.

6(b)(i)Many professional investors shy away from the dividend discount framework analysis due to its many inherent complexities.

1. The model cannot be used where companies pay very small or no dividends and speculation on the level of future dividends could be futile. (Dividend policy may be arbitrary)

2. The model presumes one can accurately forecasts long-term growth of earnings (dividends) of a company. Such forecasts become quite tenuous beyond two years out. (A short-term valuation may be more pertinent)

3. For the variable growth models, small differences in ***g*** for the first several years produce large differences in valuations.

4. The correct k or the discount rate is difficult to estimate for a specific company as an infinite number of factors affect it that are themselves difficult to forecast, e.g. inflation, riskless rate of return, riskless rate of return, risk premium on stocks and other uncertainties.

5. The model is not definable when ***g>k*** as with growth companies, so it is not applicable to a large number of companies.

6. Where a company has low or negative earnings per share or has a poor balance sheet, the ability to continue the dividend is questionable.

7. The components of income can differ substantially, reducing comparability.

6(b)(ii)Three alternative methods of valuation would include:

1. price-earnings ratios:
2. price-asset value ratios (including market and book asset values)
3. price-sales ratios
4. liquidation or breakup value
5. price-cash flow ratios

7 (a) Disintermediation essentially means dispensing with financial intermediaries, 'cutting out the middle man', and having a direct relationship between borrower and lender. If a company decides to raise funds from investors directly, rather than involve a financial institution such as a bank, then this is a form of disintermediation. When companies borrow and lend funds between themselves, without involving an intermediary, then this is another example of disintermediation. The advantages of disintermediation, to the borrower, are usually cited as: lower cost, more quickly arranged and more flexible finance as the bank is virtually eliminated from the process. The investor, on the other hand, may receive a higher rate of return than from simply investing in a bank or building society deposit account. The investor will also, in most cases, hold a marketable security which can easily be liquidated if required.

(b) Securitisation is closely related to disintermediation. Instead of raising loans direct from a financial institution a company creates and issues its own securities through intermediaries to investors. This usually takes the form of marketable debt, for example commercial paper (which may be secured against the company's assets -asset securitisation- or against future earnings). This technique is really only available to large corporations with excellent credit ratings.

(c) Financial conglomerate

In the context of financial institutions, a financial conglomerate is a really large and powerful financial institution or securities house, domestic or foreign, which provides a diverse range of financial activities.

These activities range from retail banking, merchant and investment banking, investment management, corporate finance, market making, insurance and so on. For example, Citigroup provides commercial banking, investment banking, insurance services, fund management, and securities trading on a global basis.

PAPER 3.2 – FINACIAL FUTURES AND OPTIONS

1

(a) For a long call profit, (pie) is given by;

Pie = Max (0, S -E) -C
3 = Max (0, S -42) -2.45
S = N47.45

(b) (i) Long: margin call will be received when prices drop to;
Original price - (Initial margin - Maintenance margin)
240 - (15 -10) = ₦235

(ii) Short: Margin call will be received when prices rise to;
240 + (15 -10) = ₦245

(c) One Yen = $ $\frac{1}{146}$ = $ 0.00685

(d)

	₦
Option price 10	10
Less intrinsic value;	
Max (0, 54 -50)	(4)
Speculative value	6

Normal backwardation is the view that futures prices normally rise over their life. Thus, prices are expected to rise as expiration approaches.

(f) Number of options = $\frac{\text{Number of shares hedged (N)}}{\text{Delta of options}}$

$10{,}000 = \frac{N}{0.7}$

N = 7,000 shares

Now that the delta of the calls has changed, the new hedge required is:
Number of options = 7,000/0.5 = 14,000.

Since we were short the calls, because we are hedging a long position in the stock, we need to sell an additional 4,000 options.

(g) Implied repo = In $\frac{(351) \times 100}{332}$ = 5.57%

(h) A swaption is the option to exchange a fixed-rate bond for a floating-rate bond. The floating-rate bond will be worth its face value at the beginning of the life of the swap. The swaption is therefore an option on a fixed-rate bond with the strike price equal to the face value of the bond.

(i) The call price varies inversely with the exercise price. The exercise price is a potential liability that the call owner faces, because the call owner must pay the exercise price in order to exercise. The smaller this potential liability, other factors held constant, the greater will be the value of a call option.

When an investor buys an option, the investor must pay cash up front. There is no possibility of future liabilities and, therefore, no need for a margins

account. When an investor sells an option, there are potential future liabilities. To protect against the risk of a default, margins are required.

(k) The price is reduced to ₦30 and the option gives the holder the right to purchase three times as many shares.

(l) Delta of call $= \frac{CI - C2}{S1 - S2} = \frac{12 - 8}{50 - 40} = 0.40$

(m) From put-call parity theory;
$Ee^{-rt} = P + S - C$
= ₦5 + ₦20 - ₦8 = ₦ 17

(n) The payoff to the NIBOR call would be equal to:
₦100, 000,000 x (0.035 -0.0325) x $\frac{90}{360}$
= ₦62, 500.00

(o) In a normal market, prices for more distant expirations are higher than prices for earlier expirations. In an inverted market, prices for more distant expirations are lower than prices for earlier expirations.

Solution 2

2 (a) This is an application of the Black-Scholes model for model European options with continuous dividend yield. Delay in taking a project, once the NPV turns positive, involves some cost, because the project rights expire after a fixed period. If the cash flows are evenly distributed over time and the projected life of the project is *n* years, the cost of delay can be written as I/n .The treatment of this in the B-S model is similar to the treatment of continuous dividend yield.

$C = S_0N(d_1) - ke^{-rt}Nd_2$

$d1 = \frac{\ln \frac{(S_0)}{E} + (r - y + \frac{\sigma^2}{2})(t)}{\sigma t^{0.5}}$

$d_2 = d_1 - \sigma t^{0.5}$

$S_0 = 350$

$E = 500$

$\sigma^2 = 529\%^{0.5} = 23\% = 0.23$

$T = 20$ years

y = dividend yield
= cost of delay
=1/20= 0.05

$r = 0.07$

$d1 = \frac{\ln (\frac{350}{500}) + \{0.07 - 0.05 + \frac{(0.23^2)}{2}(20)\}}{(0.23)\ (20^{0.5})} = 0.5564$

d2 = 0.5564 - (0.23) ($20^{0.5}$) = -0.4722
N(d1) = 0.7110
N(d2) = 0.3184
C = 350e $(_{-0.05})(_{20})$(0.7110) -500e$_{(-0.07)}(_{20})$(0.3184) =N52.29 million

(b)

	NM
Initial Investment	(500)
PV of cash flows	350
Value of call option	52.29
Overall net present value	(97.71)

If the data are correct then option pricing model would suggest that the company should **NOT** develop the patent. However, valuing a long-term option such as this is subject to restrictive assumptions and will be subject to a considerable margin of error. Possible problems include:

i) The accuracy of the present value forecasts, and the use of the correct discount rate to assess their risk.
ii) The accuracy of the estimated development cost of the drug for commercial use. This estimate could be subject to substantial error as it relates to a new product and probably to new technology.
iii) Accuracy of the estimated variance. As this is a new drug the variance of returns from other pharmaceutical companies might not be relevant, and the black-Scholes model is quite sensitive to this variable. The model also, assumes that this volatility will be constant for the 20 year period which is very unlikely.
iv) The black-Scholes model was developed for European options. As development of the drug could take place at any time during the 20 year period the option is an American option rather than a European option.
v) What will happen after 20 years? Although competition will probably eliminate most abnormal returns the company is likely to have built up a strong brand image and could still generate positive NPV's after this time which have not been included in the above calculations.

Solution 3

a. **Contract For The Difference**
Option contracts are often referred to as contract for the difference because the underlying assets are not usually deliver at expiration. Partly, because of inability to get the instrument in the proportion specify by the contract and or convenience. The parties therefore settles for the balance which is calculated based on price of the stock and the strike price in consideration with other variables.

b. **Volatility**
This is the movement in price of the underlying assets.

Wasting Asset
All option contracts are wasting assets because the value decreases as time to expiration collapses.

c. Decay in time reduces the price of the option contract.

d. Bed and Breakfast is the regular buying and selling of stock with the hope of limiting the capital gain tax.

One sells old stock today and immediately or next day acquires the stock again, this will allow the cost price to rise and therefore limit the capital gain tax.

e. (i) Significant leverage

(ii) Small investment

(iii) Unlimited profit potentials

(iv) Loss is limited to initial investment

f. Breaking Forward
It is term in the contract that allows the badly affected partly to unwind the contract and rethink his/her position in order to limit his / her losses.

Participating Forward
This term allows the badly affected parties to share out of the profit beyond a particular limit.

Solution 4

a) To create a synthetic share of security A, we must construct a portfolio with the following characteristics.

	Synthetic Security (Portfolio of B and C)	Security A
Payoff when the market: -moves down -Moves up	 30B + 38C 120B + 112C	 50 100

Thus, we have the following equations:

30B + 38C		=	50…….(1)
120B + 112C		=	100…..(2)
B + C		=	1……..(3)
(1)X4	120B + 152	=	200…..(4)
(4)-(2)	0 + 40C	=	100
	C	=	2.5

Substitute for C in (3)

B + 2.5	=	1
B	=	-1.50

That is, to construct synthetic security A, we must short sell security B and invest the proceeds from the short sale of security B in security C.

b) Construction of the synthetic security required the short sale of security B to finance the purchase of additional units of security C. Thus, the investor commits more than 100% of his wealth to security C. Specifically 250% of

the investor's wealth is committed to security C financed by short sales of security B in amount equal to 150% of the investors wealth, B =-1.5 and C=2.5.

c) The cost of constructing the synthetic security is ₦11 0 = (-1.5 x ₦60) + (2.5 x ₦80). Security A is trading at a price of ₦70. Security A is cheaper than the synthetic security.

d) These prices present an opportunity for the investor to engage in riskless arbitrage. The synthetic security constructed to produce the same payoffs as security A in all states of nature is more expensive than security A itself. Therefore, we must sell the overpriced synthetic security and buy security A itself.

Risk less arbitrage transactions:

	Transaction	Cash flows N
Sell synthetic	i) Buy 15 unit of B at ₦60	-900
Security	ii) sell 25 units of C at ₦80	+2,000
Buy security A	Buy 10 units of A at ₦70	-700
Profit		+400

Short selling the synthetic security requires the investor to purchase security B, and sell security C. the profit on the transaction is ₦400 on 10 units of security , or ₦10 profit per unit.

Solution 5

(a) - The intrinsic value of May

(1) 50 call = 58.75 – 50 = 8.75

(2) The strike price of May

60 call	=	60.00
Call premium	=	2.86
Break even point	=	62.86
Less: Current Prince	=	58.75
	=	4.11

The price must increase by N4.11

(3) Π = Intrinsic Value - Price of Put
$\Rightarrow$ (K – Ps) - Pp
$\Rightarrow$ (70 - 68.50) - 425
$\Rightarrow$ (1.25 - 4.25)
$\Rightarrow$ -2.75

(4) Π = (k – Ps) – Pp
1.55 = (50 – ps) – 1.05
$\Rightarrow$ 1.55 = 50 - Ps - 1.05

Ps = 50 - 1.55 - 1.05
$\Rightarrow$ N47.40

5 (b) II = (Ps – K) – Pc
3.75 = (Ps – 80) – 6.25
-Ps = - 80 – 6.25 – 3.75
Ps = 90

Solution 6

The present value of Dividend Payments
I = Ae-r (T – t)
$\Rightarrow$ = 0.6e .10 (3/12) + 0.8e –0.1 (6/12)
= 0.6e –0.1 (0.25) + 0.8e –0.1(0.5)
0.6e –0.025 + 0.8e-0.05
0.6 (0.97531) + 0.8(0.951129)
0.5852 + 0.761
1.346

The forward price of the contract
$F = (S – I) e^{-r(T - t)}$
$(80 – 1.346)e^{0.1 (9/12)}$
$80 – 1.346) e^{0.1 (.75)}$
78.654 x 1.077884
N84.78

The value of the forward contract
$F = S - 1 - Ked^{-r(T - t)}$
$80 - 1.346 - 84.78^{-0.1 (0.75)}$
80 - 1.346 - (84.78 x 0.9277434)
80 - 1.36 - 78.65
0

Solution 7

(i) Primitive instruments are instruments issued by the company on which the value of that instrument depends. The return on such instruments is based purely on the status of the company that issued it.

The under-listed instruments are classified as primitive instruments.
(a) Shares
(b) Bonds

Shares pays dividend depending on the capacity of the issuing company while bonds pays interest depending on the liquidity and rating of the company.

(ii) Forward and future contracts: Forward contract is an agreement between a seller and a buyer on the future sales contract between them. The quantities, price, delivery date and place are stipulated today to be executed in future. Basically, forward contract are over the counter market (OTC),

structured to meet the terms of the buyer and seller as negotiated. However, while all the terms are settled, the risk of the counter party exists. Counter party risk is the risk that either of the parties may default.
As a result of the inherent risk in forward contract advancement on this market was made with the advent of future contract. The key differences being that; futures are standardised in terms of quantities and delivery methods. Additionally, a mediating institution is involved that takes over the counter party risk.

Futures are marked to market to ensure performance. The buyers need not know the sellers. There are standard trading cycles with maturity period.
Except for the fact that futures are well organised and standardised both futures and forward markets serve the same objectives i.e. future guaranteed market and price.

(iii) (a) The identity of the underlying commodity or financial instruments
(b) The future contract size.
(c) The future maturity date or expiration date.
(d) Future delivery or settlement procedure.
(e) Future price.

PAPER 3.3 – MARKETING OF FINANCIAL SERVICES

Answers to question 1

i.	A	xvi.	B
ii.	B	xvii.	C
iii.	C	xviii.	D
iv.	D	xix.	D
v.	E	xx.	B
vi.	A	xxi.	A
vii.	B	xxii.	B
viii.	C	xxiii.	C
ix.	D	xxiv.	A
x.	D	xxv.	B
xi.	A	xxvi.	C
xii.	C	xxvii.	D
xiii.	D	xxviii.	E
xiv.	E	xxix.	E
xv.	A	xxx.	E

2(a) (i) There was need to cut job and staff. The bank was overstaffed, as old workers did not want to leave. Some of them had over grown their effectiveness and efficiency.
(ii) Staff salaries and overheads were eating too deep into the banks' profit.
(iii) Costs must be cut to allow profit to grow.
(iv) Efficiency and effectiveness must be improved upon by hiring young competent personnel to shorten cues and customer delays.

(b) (i) The history, culture and past practices of the bank should be kept, nurtured and sustained to keep coherence in workers' feeling of belonginess, loyalty and unalloyed dedication to duty.
(ii) Inject job security into the minds of the workers.
(iii) Re introduce share purchases and ownership by the workers.
(iv) Practice and communicate these to all interest groups and the public at large

(c) The bank should revisit and audit its marketing activities with a view to:

i. Rebuild its marketing department
ii. Boost expenditure on advertising and sales promotion and practice them aggressively.
iii. Invest seriously in customer care and service.
iv. Relationship officers under the marketing director must be employed to liase between the bank and its large accounts, advice them, help to solve problems and project the good image of the bank.
v. Embark on coverage extension and opening of more branches

3 Challenger's specific attack strategies

(a) Price discount
Offering comparable product at a lower price to succeed
(i) He must convince buyers that its product/service are comparable to leader's product.
(ii) Buyers must be price sensitive
(iii) Leader must refuse to cut price.

(b) Lower price goods:-
Offering lower-quantity product at higher price than the leader

(c) Prestige goods
Launching high-quantity product at higher price than the leader

(d) Product Proliferations:-
Launching a larger product variety, thus giving buyers more choice.

(e) Product innovation:-
Introducing a new product improvement/ breakthrough

(f) Improved Service offering new/better services to customers.

(g) Distribution Innovation developing a new channel of distribution e.g. Door-to-door instead of conventional stores.

(h) Manufacturing-Cost Reduction:- Adopting more efficient purchasing lower labour cost and modern production equipment to achieve lower manufacturing costs.

(i) Intensive Advertising Promotion –increasing expenditure on advertising and sales promotion.

(j) Process. What methods are being used in the company?

(k) People. Training and competent staff.

(l) Physical environment. The environment must be decent.

4(a) Market segmentation is the process of subdividing a large undefined market into smaller groups (segments) of consumers with similar needs, characteristics or behaviour.

The Marketing Manager may attempt to segment the market in order to maximize profits-through identifying segments with different needs and targeting products to meet these needs, he could use any of the following or combination of them:

i. Geographic segmentation: division of market into different geographic units such as: districts, zones, regions, nation, provinces etc.
ii. Demographic segmentation: uses variables of the population – age, gender, family size, income level, occupation etc.
iii. Psychographic segmentation divides consumers according to their lifestyles, personality and social status.
iv. Behavioural segmentation groups consumers on their knowledge of, attitude towards use of, or response to a product e.g. occasional buyers, regular buyers loyalty, etc.

(b) Market segmentation strategies are mere likely to be used when:

(i) there are substantial differences in needs between segments.
(ii) these differences can be translated into differences in product characteristics and advertising strategies.
(iii) different segments can be reached by different advertising media and distribution channels
(iv) different advertising and product strategies to different segments can be justified on a cost basis and are unlikely to cause confusion between segments.

5(a) Candidates are expected to discuss various method such as: tele-banking, internet banking, ATM-Automatic Teller machines, credit cards, smart cards, cash cards, electronic money transfer, etc.

(b) Candidates should demonstrate appreciation of the implications of e-banking from the following perspectives:

i. increase in business patronage without corresponding increase in branches.

ii. Improvement in services delivery resulting from interactive facilities of e-banking system.
iii. e-banking phenomenon will not decrease total workforce in the industry, however, more computer literate and educated staff will take preference over the existing labour mix.

iv. it could be argued that with growth in banking culture, more people will be recruited by the various financial institutions without necessarily increasing branch network.

(c) Candidates will also be required to discuss the limiting factors to the growth of e-banking as follows:

- poor telecommunication system
- unstable and expensive power supply
- dearth of skilled personnel
- high maintenance cost of technological equipment
- security implications
- application limited to institutional clients as the private clients lack access to equipment for interface with e-Banking system.
- Lack of confidence among private clients.

6(a) The purpose of marketing organization include:

1. ***Specialisation:*** Marketing tasks growing in number and complexity, they are broken down into manageable units and assigned to specialized personnel.
2. ***Assignment of all activities:*** Possibility of marketing tasks not being assigned to specific department/personnel may arise due to omission as marketing tasks grow and become more complex.
3. ***Coordination and balance:*** Good marketing organization achieves coordination and balance by pulling people together as a team rather than as a assortment of individuals.
4. ***Defined authority:*** Marketing executives will know who holds authority to carry the power to require execution of orders by those lower in the organizational hierarchy and those to suggest and give advice to line managers.
5. ***Economizes Executive Time:*** It allows for more executive use of specialization while top marketing executives devote less time to operations and concentrate more on planning.

(b) Steps for setting up a marketing organization

1. Defining marketing objectives – long-run objectives for survival of the firm which include sales, profit and growth.
2. Determination of marking activities and their volume of performance required for a sound organization design.
3. Grouping the activities so that related tasks are assigned to same position.
4. Assignment of marketing personnel positions.
5. Provision for marketing coordination and control

7

Aim of the questions: To assess candidates' understanding of the implication of engaging in International business relations. The second part of the question is aimed at determining candidates' general knowledge of hidden barriers to International business.

(a) Candidates will be expected to enumerate the criteria for international businesses which may include:
- (i) Size and scope of the operation of perspective partner
- (ii) Types and range of product
- (iii) Assets base
- (iv) Internal competence
- (v) Performance of existing domestic firm operations in foreign countries
- (vi) Political, social and economic stability and trend
- (vii) Compliance with financial regulations
- (viii) Available marketing infrastructure and compatibility with domestic operations
- (ix) Cost of investment vis-à-vis expected return and duration

(b) Candidates will be expected to discuss the hidden barriers
Clear definition of hidden barriers "formal and informal discreet procedures adopted by countries to discourage business transactions in specific sector of the economy"
Some of the examples are:
- (i) Inspection procedure made cumbersome
- (ii) Quarantine procedures
- (iii) Compliance with local standards/bye laws.
- (iv) Subsidizing local operators e.g. tax low concession, cheap loans and grants, etc.
- (v) Specifying areas and scope for business relations.
- (vi) Minimum investment quantum e.g. N25 billion for investment in Banks. Whilst this does not forbid investment, it restricts.
- (vii) Stipulations on organizations structure e.g. the role of overseas and local staff in day to day management.
- (viii) Immigration control
- (ix) Repatriation of profit and staff emoluments.

PAPER 3.4 – REGULATIONS AND PRACTICE OF STOCKBROKING

1(a) Dual trading

The practice by a broker of acting as an agent (buying and selling for customer accounts) and simultaneously acting as a dealer (buying and selling for one's own account)

(b) Liquidity risk
Liquidity has two connotations – it could mean the liquidity of the firm to meet its obligations or the liquidity of the asset to the investor which implies that he should receive periodically a definite stream of cash flows to meet his requirements and should be capable of transferring the asset if necessary.

(c) Glamour stock
Stock with a wide public and institutional following which is achieved by producing steadily rising earnings over a long period of time. In bull markets, glamour stocks tend to rise faster than market averages.

(d) Capitalisation issue
This is the issue of shares which does not raise any new funds. It is otherwise known as bonus issue. It is made to 'capitalise' reserves of the company; ie in effect, to change some reserves into share capital. Shareholders receive new shares pro rata to their existing shareholding.

(e) Vendor consideration issue
This is an issue of shares whereby one company acquires the shares of another in a takeover or merger. For example, if Company A Ltd wishes to take over Company B Ltd, A Ltd might make a 'paper' offer to B's shareholders, try to buy the shares of B by offering B's shareholders newly issued shares of A.

(f) Registered bond
A bond issued with the name of the owner printed on the face of the certificate and can be transferred to another person only with the owner's endorsement. The ownership is registered with the issuer and the holder receives interest payments by cheque directly from the issuing company.

(g) Sector rotation strategy
This is an active strategy that involves purchasing stocks in specific industries or stocks with specific characteristics (low P/E ratio, growth, value) that are anticipated to rise in value more than the overall market.

(h) Defensive Stock
These are shares of companies that are relatively unaffected by the ups and downs in general business conditions. The return and value are not expected to decline as much as that of the overall market during a bear market.

(i) Stock splits
Stock splits arise from the division of a company's shares into more shares with a corresponding decrease in nominal value.

(j) Yield gap
Yield gap is the difference between average ordinary share yields and bond yields. A rise in the prices of bonds is normally followed by a rise in share prices and vice versa. The gap reflects the balance of the growth potential of dividends and the safety of a bond.

2(i) **Net Asset value**

	N'000	N'000
Net Asset Value		215,700
Less: Liabilities		
Mortgage	1,800	
Dividend payable	6,000	
Clients' deposits	133,900	
Others creditors	21,000	
		162,700
		53,000

Net asset value as represented by share capital and reserves is N53m.

The Net asset value of N53m is far lower than the expected value of over N200m but the value of the total assets is above N200m. The company will need to quadruple its projections to achieve its set target. This may appear as stretching the company too far except there is a massive injection of new funds, technology, human capital and other resources if it intends to achieve the N200m level.

(ii) **Average daily mandate of purchases of N200m.**

SEC rule 181: Mandate to Purchase Shares

"Every broker/dealer shall ensure that the aggregate worth of all mandates to purchase securities for clients does not exceed 200% of paid up share capital and reserves of the stock broking company."

Maximum purchases mandate = 200% of N53m = N106m.

The company will be exceeding the aggregate purchases mandate of N106m by N94m if it decides to actualise the projections. It can either reduce the level of daily mandate to N106m or take necessary steps to increase shareholders' funds to at least N100m to accommodate all purchases orders.

Since the share capital and reserves is N53m as computed above, additional equity funds must be raised.

(iii) **Margins account facilities**

SEC Rule 178 (b)(ii):

"No broker/dealer shall extend credit to its clients in excess of 200% of its net capital in the aggregate per annum"

The desire to extend credit of N150m to margins customer runs foul of SEC rule 178 (b)(ii) because the total net capital is N53m.

Maximum credit allowable = 200% of N53m = N106m.

The company will be exceeding the aggregate credit limit of N106m by N44m if it decides to actualise the projections. It can either reduce the level of credit to N106m or take necessary steps to increase shareholders' funds to N75m to accommodate all credit requests.

(iv) Average daily sale mandate of N250m.

Currently there is no restriction on the amount of sales mandate that any stockbroking company can take. The company can accept any amount of sales' orders without infringing on any rule of SEC.

Overall, the company would need to increase shareholders funds to at least N100m if intends to realize all the projections stated in the 2007 projected balance sheet except for the net assets. Otherwise, all purchases' mandates and credit facilities must be restricted to 200% of N53m.

Since figures used in the projections are the year end balances, it will advisable to raise the shareholders funds to the minimum value of N100m at the beginning of the year to avoid infringing on any of the rules during the year.

3(a) Underwriting is the process whereby in exchange for a fixed fee, an institution or group of institutions will undertake to purchase at the issue price any securities not subscribed for by the public.

(b) The following may act as underwriters:
i. Banks
ii. Issuing Houses
iii. Insurance Companies
iv. Any other person as may be determined by the Securities and Exchange Commission from time to time.

(c) Content of Underwriting Agreement

An underwriting agreement shall contain, among others, the following:

i. names of the parties to the agreement
ii. type of underwriting commitment
iii. authourisation clause
iv. the underwriting commission
v. responsibility in case of default by an underwriter where there is more than one underwriter
vi. time of closing of the deal
vii. covenants and obligations of the parties
viii. indemnity clause
ix. conditions for subscription by underwriters
x. arbitration and governing laws

4(a) Charges in Primary market include

i. SEC regulatory fees,
ii. NSE Application fees
iii. NSE Listing fees,
iv. Stamp duties,
v. CAC filing fees
vi. Issuing houses' fees,
vii. Stockbrokers' fees,
viii. Underwriting fees,
ix. Registrar fees,
x. Financial advisers' fees,
xi. Trustee fees,
xii. Receiving banks and
xiii. Receiving agents' fees
xiv. Solicitors to the company,
xv. Solicitors to the issue,
xvi. Solicitors to the trustee,
xvii. Auditors to the company,
xviii. Reporting accountants
xix. Advertising charges
xx. Publication cost,
xxi. Printing and distribution

Charges in the secondary market include:

(i) Broker's Commission
(ii) SEC Fee
(iii) NSE Fee
(iv) CSCS Fee
(v) Stamp Duty
(vi) VAT

(b) Transactions costs in primary market issuance and secondary market transactions can have repercussions on a macroeconomic level.

High costs of transactions discourage prospective issuers from coming to the capital from raising new funds.

It discourages international investors from operating in our market. One of the effects of globalization is that capital is rarely "patient". In their constant

search for cheaper sources of funding, issuers will not hesitate to raise money in any international market where the transaction costs are lower.

The economic development of the country may slow down due to paucity of new funds to finance viable economic projects.

The depth, breadth and liquidity of the market is hampered due to the small number of quoted securities.

The smaller investors/issuers suffer heavily due to higher rates of charges on smaller volume of business compared to large/institutional investors/issuers who have the capacity to negotiate the commission/charges because of larger volume of business. At present, the percent of people that own shares directly or indirectly is very low in Nigeria.

(c) There are potentially large indirect benefits to having lower transactions costs associated with issuing securities, because these lower costs in the primary market are likely to have positive spillover effects in secondary markets.

Low costs of issuing debt and equity are likely to facilitate the overall level of securities market development (as measured by market liquidity, breadth and depth) with positive implications on firm growth and overall economic growth.

A well-functioning equity market enhances corporate governance, firm valuation, the efficiency of resource allocation, and economic growth. Specifically, efficient equity markets improve corporate governance by revealing information to the public.

A reduction in fees will attract many people to patronise the stock market by making more funds available for them through decreased charges. Volume of business will increase which will compensate for the reduced charges.

The market will be more attractive to the international investors on account of charges specifically for those that want to take advantage of capital gains since the costs of entry and exit will have been greatly reduced.

Without doubt, many market operators operating on the marginal level may be unduly impacted as revenues may shrink significantly with consequent effect on the ability of the market to reach out to many smaller investors nationwide. Expected fallouts will cause many changes and realignments among the market operators such as mergers and increases in share capital of doing business. Only technology

driven operators will be able to operate more efficiently and profitably because of the reduced revenue.

Revenues of regulatory authorities will shrink and may require them to look up to government for appropriate funding.

5**(a)** **Fundamental Analysis**

This is one of the techniques used to determine the price of shares. This technique takes cognizance of the fundamentals of the entity/organization that issued the security. These fundamentals include the history or past performances of the company being analyzed. Trend is made from this past information and attempt is made to predict the future performances of the company, hence the price per share is determined. The basic information about the past is on earning, dividend, capital appreciation etc. with their predictions they will be able to get

- The likely future trend in the share price, which is believed would be significantly influenced the earnings and dividends
- The true value of the share

(b) **Technical Analysis**

This technique of investment analysis uses the stock market statistics namely prices and volumes to predict changes in the market prices of shares. The basis for this is that share prices have short term trends that are revealed by studying the behavior and volume of trading.

This concept predicts the future movements of shares prices based on past trends without taking cognizance of the factors that have led to the movement. The interaction of the demand and supply plays significant roles in the price determination.

This concept makes use of relative strength, filter rules and chartism to buttress its argument.

(c) **Random Walk Hypothesis** (RWH)

This school of thought disagrees with the technical Analysis belief of using past share price movement to predict the future prices. RWH conceives the notion that changes in the share price occurs at random, so there is no relationship between prices of share in the past and future. Past share price contains no information about the direction of future share price and the information on new share price appears in random fashion.

RWH adopts this saying 'price has no memory, yesterday has nothing to do with tomorrow, every day starts out fifty-fifty. Yesterday price discounted every thing yesterday.

6. The major factors to be considered in constructing stock market index are (1) the sample, (2) weighting scheme and (3) computational procedure.

(i) The **size of the sample**, **the breadth of the sample, and the source of the sample** used to construct a series are all important.

A small percentage of the total population will provide valid indications of the behaviour of the total population if the sample is properly selected. In fact, at some point the costs of taking a larger sample will almost certainly outweigh any benefits of increased size. The sample should be representative of the total population; otherwise, its size will be meaningless. A large biased sample is no better than a small biased sample. The sample can be generated by completely random selection or by a nonrandom selection technique that is designed to incorporate the characteristics of the desired population. Finally, the source of the sample is important if there are any differences between segments of the population, in which case samples from each segment are required.

(ii) Another factor is the **weight given to each member in the sample**. Three principal weighting schemes are used:
(1) a price-weighted series,
(2) a value-weighted series, and
(3) an unweighted series, or what would be described as an equally weighted series.

(iii) The **computational procedure** is another major factor. One alternative is to take a simple arithmetic average of the various members in the series. Another is to compute an index and have all changes, whether in price or value, reported in terms of the basic index. Finally, some prefer using a geometric average of the components rather than arithmetic average.