MOCK TEST PAPER 1

FINAL (OLD) COURSE: GROUP – I

PAPER – 2: STRATEGIC FINANCIAL MANAGEMENT

SUGGESTED ANSWERS/HINTS

1. (a) Here the given cash flows have to be adjusted for inflation. Alternatively, the discount rate can be converted into nominal rate, as follows:-

Year 1 = $\frac{0.909}{1.05} = 0.866$; Year 2 = $\frac{0.826}{(1.05)^2}$ or $\frac{0.826}{1.1025} = 0.749$

Year 3 = $\frac{0.751}{(1.05)^3} = \frac{0.751}{1.1576} = 0.649$

Year	Nominal Cash Flows (Rs. in lakhs)	Adjusted PVF as above	PV of Cash Flows (Rs. in lakhs)
1	30	0.866	25.98
2	40	0.749	29.96
3	30	0.649	19.47
	Cash Inflow		75.41
	Less: Cash Outflow		72.00
	Net Present Value		3.41

With positive NPV, the project is financially viable.

Alternative Solution

Assumption: The cost of capital given in the question is "Real'.

Nominal cost of capital = (1.10) (1.05) -1 = 0.155 =15.50%

DCF Analysis of the project

				(Rs. Lakhs)
	Period	PVF @15.50%	CF	PV
Investment	0	1	-72	-72.00
Operation	1	0.866	30	+25.98
---do---	2	0.750	40	+30.00
---do---	3	0.649	30	+19.47
NPV				+3.45

The proposal may be accepted as the NPV is positive.

(b) Calculation of depreciation tax shield

(Rs. Lakhs)

Year	Cost / WDV	Dep. @ 25 %	Tax shield @ 0.35	PVF	PV of dep. tax shield
1	600.00	150.00	52.50	0.909	47.72
2	450.00	112.50	39.38	0.826	32.53
3	337.50	84.38	29.53	0.751	22.18
					102.43

Capital sum to be placed on lease	(Rs. Lakhs)
Cash down price	600.00
Less: PV of depreciation tax shield	102.43
To be placed on lease	**497.57**

Let the normal annual lease rent were to be "*x*" then

Year	Post tax	PVF	PV of cash flow
1	3 x (1-0.35) or 1.95 *x*	0.909	1.773 *x*
2	2x (1-0.35) or 1.30*x*	0.826	1.074*x*
3	1x (1-0.35) or 0.65*x*	0.751	0.488*x*
			3.335 x

Value of *x* = Rs. 497.57 lakhs / 3.335 i.e. Rs. 149.196 lakhs

Year wise lease rental will be

		Rs.lakhs
Year 1	3 × 149.196	447.59
Year 2	2 × 149.196	298.39
Year 3	1 × 149.196	149.20

(c)

	Rs.
Issue Price	50,00,000
Less: Interest @ 12.5% for 4 months	2,08,333
Issue Expenses	2,500
Minimum Balance	1,50,000
	46,39,167

$$\text{Cost of Funds} = \frac{2,10,833(1-0.30)}{46,39,167} \times \frac{12}{4} \times 100 = 9.54\%$$

Alternatively

	Rs.
Issue Price	50,00,000
Less: Interest @ 12.5% for 4 months	2,08,333
Issue Expenses	2,500
Minimum Balance	1,50,000
	46,39,167
Opportunity Cost @ 12.5% of Rs. 1,50,000 for 4 months	6,250

$$\text{Cost of Funds} = \frac{2,10,833(1-0.30)+6,250}{46,39,167} \times \frac{12}{4} \times 100 = 9.95\%$$

Alternatively

Since Commercial Paper is a discount instrument it can also be presumed same shall be issued at discounted price. Accordingly, answer shall be as follows:

$$\text{Issue Price} = \frac{50,00,000}{1+12.5 \times \frac{4}{12}} = \text{Rs. } 48,00,000$$

	Rs.
Issue Price	50,00,000
Less: Interest @ 12.5% for 4 months	2,00,000
Issue Expenses	2,500
Minimum Balance	1,50,000
	46,47,500
Opportunity Cost @ 12.5% of Rs. 1,50,000 for 4 months	6,250

$$\text{Cost of Funds} = \frac{2,02,500(1-0.30)}{46,47,500} \times \frac{12}{4} \times 100 = 9.15\%$$

or

$$\text{Cost of Funds} = \frac{2,02,500(1-0.30)+6,250}{46,47,500} \times \frac{12}{4} \times 100 = 9.55\%$$

(d) The Expected Return of the equity share may be found as follows:

Market Condition	Probability	Total Return	Cost (*)	Net Return
Good	0.25	Rs. 124	Rs. 100	Rs. 24
Normal	0.50	Rs. 112	Rs. 100	Rs. 12
Bad	0.25	Rs. 100	Rs. 100	Rs. 0

Expected Return = $(24 \times 0.25) + (12 \times 0.50) + (0 \times 0.25)$

$$= \left(\frac{12}{100}\right) \times 100 = 12\%$$

The variability of return can be calculated in terms of standard deviation.

VSD $= 0.25\ (24 - 12)^2 + 0.50\ (12 - 12)^2 + 0.25\ (0 - 12)^2$

$= 0.25\ (12)^2 + 0.50\ (0)^2 + 0.25\ (-12)^2$

$= 36 + 0 + 36$

SD $= \sqrt{72}$

SD $= 8.485$ or say 8.49

(*) The present market price of the share is Rs. 106 cum bonus 10% debenture of Rs. 6 each; hence the net cost is Rs. 100 (There is no cash loss or any waiting for refund of debenture amount).

M/s X Finance company has offered the buyback of debenture at face value. There is reasonable 10% rate of interest compared to expected return 12% from the market. Considering the dividend rate and market price the creditworthiness of the company seems to be very good. The decision regarding buy-back should be taken considering the maturity period and opportunity in the market. Normally, if the maturity period is low say up to 1 year better to wait otherwise to opt buy back option.

2. (a) (1) Expected Share Price

= Rs.120X 0.05 + Rs.140X 0.20 + Rs.160X 0.50 + Rs.180X 0.10 + Rs.190X 0.15

= Rs.6 + Rs.28 + Rs.80 + Rs.18 + Rs.28.50 = Rs.160.50

(2) Value of Call Option

= Rs.150 - Rs.150 = Nil

(3) If the option is held till maturity the expected Value of Call Option

Expected price (X)	Value of call (C)	Probability (P)	CP
Rs. 120	0	0.05	0
Rs. 140	0	0.20	0
Rs. 160	Rs. 10	0.50	Rs. 5
Rs. 180	Rs. 30	0.10	Rs. 3
Rs. 190	Rs. 40	0.15	Rs. 6
Total			Rs. 14

Alternatively, it can also be calculated as follows:

Expected Value of Option

(120 – 150) X 0.1	Not Exercised*
(140 – 150) X 0.2	Not Exercised*
(160 – 150) X 0.5	5
(180 – 150) X 0.1	3
(190 – 150) X 0.15	6
	14

* If the strike price goes below Rs. 150, option is not exercised at all.

(b) (i) Pre Merger Market Value of Per Share

P/E Ratio X EPS

Longitude Ltd. Rs. 8 X 15 = Rs. 120.00

Latitude Ltd. Rs. 5 X 10 = Rs. 50.00

(ii) (1) Maximum exchange ratio without dilution of EPS

Pre Merger PAT of Longitude Ltd.	Rs. 120 Lakhs
Pre Merger PAT of Latitude Ltd.	Rs. 80 Lakhs
Combined PAT	Rs. 200 Lakhs
Longitude Ltd. 's EPS	Rs. 8
Maximum number of shares of Longitude after merger (Rs. 200 lakhs / Rs. 8)	25 Lakhs
Existing number of shares	15 Lakhs
Maximum number of shares to be exchanged	10 Lakhs

Maximum share exchange ratio 10:16 or 5:8

(2) Maximum exchange ratio without dilution of Market Price Per Share

Pre Merger Market Capitalization of Longitude Ltd. (Rs. 120 × 15 Lakhs)	Rs. 1800 Lakhs
Pre Merger Market Capitalization of Latitude Ltd. (Rs. 50 × 16 Lakhs)	Rs. 800 Lakhs
Combined Market Capitalization	Rs. 2600 Lakhs
Current Market Price of share of Longitude Ltd.	Rs. 120
Maximum number of shares to be exchanged of Longitude (surviving company) (Rs. 2600 Lakhs/Rs. 120)	21.67 Lakhs
Current Number of Shares of Longitude Ltd.	15.00 Lakhs
Maximum number of shares to be exchanged (Lakhs)	6.67 Lakhs

Maximum share exchange ratio 6.67:16 or 0.4169:1

3. (a) (i) The formula for the Dividend valuation Model is

$$P_0 = \frac{D_1}{K_e - g}$$

K_e = Cost of Capital

g = Growth rate

D_1= Dividend at the end of year 1

On the basis of the information given, the following projection can be made:

Year	*EPS (Rs.)*	*DPS (Rs.)*	*PVF @15%*	*PV of DPS (Rs.)*
2015	12.00 (9.60 x 125%)	4.80 (3.84 x 125%)	0.870	4.176
2016	15.00	6.00	0.756	4.536

2017	(12.00 x 125%) 16.50 (15.00 x 110%)	(4.80 x 125%) 8.25* (50% of Rs. 16.50)	0.658	5.429
				14.141

*Payout Ratio changed to 50%.

After 2017, the perpetuity value assuming 10% constant annual growth is:

D_1= Rs. 8.25 × 110% = Rs. 9.075

Therefore P_o from the end of 2017

$$\frac{₹\ 9.075}{0.15-0.10} = ₹\ 181.50$$

This must be discounted back to the present value, using the 3 year discount factor after 15%.

	Rs.
Present Value of P_0 (Rs. 181.50 × 0.658)	119.43
Add: PV of Dividends 2015 to 2017	14.14
Expected Market Price of Share	133.57

(ii) P/E Ratio

$$\text{P/E Ratio} = \frac{\text{Expected Market Price of Share } (P_1)}{\text{EPS}}$$

$$= \frac{₹\ 133.57}{₹\ 9.60} = \text{Rs. } 13.91$$

(b) (a) Duration of Bond X

Year	*Cash flow*	*P.V. @ 10%*		*Proportion of bond value*	*Proportion of bond value x time (years)*
1	1070	.909	972.63	1.000	1.000

Duration of the Bond is 1 year

Duration of Bond Y

Year	*Cash flow*	*P.V. @ 10%*		*Proportion of bond value*	*Proportion of bond value x time (years)*
1	80	.909	72.72	0.077	0.077
2	80	.826	66.08	0.071	0.142
3	80	.751	60.08	0.064	0.192
4	1080	.683	737.64	0.788	3.152
			936.52	1.000	3.563

Duration of the Bond is 3.563 years

Let x_1 be the investment in Bond X and therefore investment in Bond Y shall be $(1 - x_1)$. Since the required duration is 2 year the proportion of investment in each of these two securities shall be computed as follows:

$2 = x_1 + (1 - x_1)\ 3.563$

$x_1 = 0.61$

Accordingly, the proportion of investment shall be 61% in Bond X and 39% in Bond Y respectively.

Amount of investment

Bond X	*Bond Y*
PV of Rs. 1,00,000 for 2 years @ 10% x 61% = Rs. 1,00,000 (0.826) x 61% = Rs. 50,386 No. of Bonds to be purchased = Rs. 50,386/Rs. 972.73 = 51.79 i.e. approx. 52 bonds	PV of Rs. 1,00,000 for 2 years @ 10% x 39% = Rs. 1,00,000 (0.826) x 39% = Rs. 32,214 No. of Bonds to be purchased = Rs. 32,214/Rs. 936.52 = 34.40 i.e. approx. 34 bonds

Note: The investor has to keep the money invested for two years. Therefore, the investor can invest in both the bonds with the assumption that Bond X will be reinvested for another one year on same returns.

Further, in the above computation, Modified Duration can also be used instead of Duration.

4. (i) For 3 months, r_{CAD} = 2.25% and r_{DEM} = 1.75%. Since the exchange rate is in CAD/ DEM term the appropriate equation for Interest Rate Parity is as follows:

$$\frac{F}{S} = \frac{(1 + r_{CAD})}{(1 + r_{DEM})}$$

$$\frac{0.780}{0.775} = \frac{(1 + 0.0225)}{(1 + 0.0175)}$$

$1.00645 \neq 1.00491$

Since both sides are not equal, Interest Rate Parity does not hold.

(ii) Since IRP does not hold there is an arbitrage opportunity.

Interest Differential = 2.25% - 1.75% = 0.50%

$$\text{Premium} = \frac{0.780 - 0.775}{0.775} \times 100 = 0.645\%$$

Since the interest rate differential is smaller than the premium, it will be profitable to place money in Deutschmarks the currency whose 3-months interest is lower.

The following operations are carried out:

(i) Borrow CAD 1 Million at 9 per cent for 3- months;

(ii) Change this sum into DEM at the spot rate

= (1,000,000/0.775) = 1,290,323

(iii) Place DM 1,290,323 in the money market for 3 months to obtain a sum of DM

Principal:	1,290,323
Add: Interest @ 7% for 3 months =	22,581
Total	1,312,904

(iv) Sell DEM at 3-months forward to obtain CAD = (1,312,904 x 0.780) = CAD 1,024,065

(v) Refund the debt taken in CAD with the interest due on it, i.e.,

	CAD
Principal	1,000,000
Add: Interest @9% for 3 months	22,500
Total	1,022,500

Net arbitrage gain = CAD 1,024,065 – CAD 1,022,500 = CAD 1,565

(b) Expected Turnover = Rs. 1600 lakhs + Rs. 286.40 = Rs. 1886.40 lakhs

	Rs. in Lacs	Rs. in Lacs
Advance to be given:		
Debtors Rs.1886.40 lakhs x 100/360	524.00	
Less: 10% withholding	52.40	
		471.60
Less: Commission 1.75%		9.17
Net payment		462.43
Less: Interest @14% for 100 days on Rs. 462.43 lacs		17.98
		444.45

Calculation of Average Cost:		
Total Commission Rs.1886.40 lakhs x 1.75%		33.01
Total Interest Rs. 17.98 lacs x 360/100		64.73
		97.74
Less: Admin. Cost	8.00	
Saving in Bad Debts (Rs.1886.40 lacs x 1.50% x 85%)	24.05	32.05
		65.69
Effective Cost of Factoring = 65.69/444.45 x 100		14.78%

5. (a) Let portfolio standard deviation be σ_p

Market Standard Deviation = σ_m

Coefficient of correlation = r

Portfolio beta (β_p) $= \dfrac{\sigma_p r}{\sigma_m}$

Required portfolio return (R_p) = $R_f + \beta_p (R_m - R_f)$

Portfolio	Beta	Return from the portfolio (R_p) (%)
A	1.75	17.75
B	0.90	13.50
C	0.65	12.25
D	1.25	15.25
E	0.90	13.50

Portfolio	Sharpe Method		Treynor Method		Jensen's Alpha	
	Ratio	Rank	Ratio	Rank	Ratio	Rank
A	4.00	IV	5.71	V	1.25	V
B	3.00	V	6.67	IV	1.50	IV
C	7.50	I	9.23	I	2.75	II
D	4.25	III	6.80	III	2.25	III
E	4.50	II	9.00	II	3.60	I

(b) (i) Forward Cover

3-month Forward Rate = $\frac{1}{1.9726}$ = Rs. 0.5070/JY

Accordingly, INR required for JY 5,00,000 (5,00,000 X Rs. 0.5070) Rs. 2,53,500

(ii) Option Cover

To purchase JY 5,00,000, XYZ shall enter into a Put Option @ JY 2.125/INR

Accordingly, outflow in INR $\left(\frac{\text{JY } 5,00,000}{2.125}\right)$	Rs. 2,35,294
Premium $\left(\frac{\text{INR } 2,35,294 \times 0.098}{1.9516}\right)$	Rs. 11,815
	Rs. 2,47,109

Since outflow of cash is least in case of Option same should be opted for. Further if price of INR goes above JY 2.125/INR the outflow shall further be reduced.

6. (a) (i) Calculation of Portfolio Beta

Security	Price of the Stock	No. of shares	Value	Weightage w_i	Beta B_i	Weighted Beta
A	349.30	5,000	17,46,500	0.093	1.15	0.107
B	480.50	7,000	33,63,500	0.178	0.40	0.071
C	593.52	8,000	47,48,160	0.252	0.90	0.227
D	734.70	10,000	73,47,000	0.390	0.95	0.370
E	824.85	2,000	16,49,700	0.087	0.85	0.074
			1,88,54,860			0.849

Portfolio Beta = 0.849

(ii) Calculation of Theoretical Value of Future Contract

Cost of Capital = 10.5% p.a. Accordingly, the Continuously Compounded Rate of Interest ln (1.105) = 0.0998

For February 2013 contract, t= 58/365= 0.1589

Further $F = Se^{rt}$

$F = Rs.\ 5{,}900e^{(0.0998)(0.1589)}$

$F = Rs.\ 5{,}900e^{0.015858}$

F= Rs. 5,900X1.01598 = Rs. 5,994.28

Alternatively, it can also be taken as follows:

$= Rs.\ 5900\ e^{0.105\times 58/365}$

$= Rs.\ 5900\ e^{0.01668}$

= Rs. 5900 x 1.01682 = Rs. 5,999.24

(iii) When total portfolio is to be hedged:

$$= \frac{\text{Value of Spot Position requiring hedging}}{\text{Value of Future Contract}} \times \text{Portfolio Beta}$$

$$= \frac{1{,}88{,}54{,}860}{5994.28\times 200} \times 0.849 = 13.35 \text{ contracts say 13 or 14 contracts}$$

(iv) When total portfolio beta is to be reduced to 0.6:

$$\text{Number of Contracts to be sold} = \frac{P(\beta_P - \beta_P^{'})}{F}$$

$$= \frac{1{,}88{,}54{,}860(0.849-0.600)}{5994.28\times 200} = 3.92 \text{ contracts say 4 contracts}$$

(b) Cost of capital by applying Free Cash Flow to Firm (FCFF) Model is as follows:-

$$\text{Value of Firm} = V_0 = \frac{FCFF_1}{K_c - g_n}$$

Where –

$FCFF_1$ = Expected FCFF in the year 1

K_c = Cost of capital

g_n = Growth rate forever

Thus, Rs. 500 lakhs = Rs. 20 lakhs /(K_c-g)

Since g = 5%, then K_c = 9%

Now, let X be the weight of debt and given cost of equity = 12% and cost of debt = 6%, then 12% (1 – X) + 6% X = 9%

Hence, X = 0.50, so book value weight for debt was 50%

∴ Correct weight should be 150% of equity and 50% of debt.

∴ Cost of capital = K_c = 12% (0.75) + 6% (0.25) = 10.50%

and correct firm's value = Rs. 20 lakhs/(0.105 – 0.05) = Rs. 363.64 lakhs.

7. (a) Some of the techniques used for economic analysis are:

(i) Anticipatory Surveys: They help investors to form an opinion about the future state of the economy. It incorporates expert opinion on construction activities, expenditure on plant and machinery, levels of inventory – all having a definite bearing on economic activities. Also future spending habits of consumers are taken into account.

(ii) Barometer/Indicator Approach: Various indicators are used to find out how the economy shall perform in the future. The indicators have been classified as under:

(1) Leading Indicators: They lead the economic activity in terms of their outcome. They relate to the time series data of the variables that reach high/low points in advance of economic activity.

(2) Roughly Coincidental Indicators: They reach their peaks and troughs at approximately the same in the economy.

(3) Lagging Indicators: They are time series data of variables that lag behind in their consequences vis-a-vis the economy. They reach their turning points after the economy has reached its own already.

All these approaches suggest direction of change in the aggregate economic activity but nothing about its magnitude.

(iii) Economic Model Building Approach: In this approach, a precise and clear relationship between dependent and independent variables is determined. GNP model building or sectoral analysis is used in practice through the use of national accounting framework.

(b) Debt Securitization is a method of recycling of funds. This method is mostly used by finance companies to raise funds against financial assets such as loan receivables, mortgage backed receivables, credit card balances, hire purchase debtors, lease receivables, trade debtors, etc. and thus beneficial to such financial intermediaries to support their lending volumes. Thus, assets generating steady cash flows are packaged together and against this assets pool market securities can be issued. Investors are usually cash-rich institutional investors like mutual funds and insurance companies.

The process can be classified in the following three functions:

1. **The origination function –** A borrower seeks a loan from finance company, bank, housing company or a financial institution. On the basis of credit worthiness repayment schedule is structured over the life of the loan.
2. **The pooling function –** Many similar loans or receivables are clubbed together to create an underlying pool of assets. This pool is transferred in favour of a SPV (Special Purpose Vehicle), which acts as a trustee for the investor. Once the assets are transferred they are held in the organizers portfolios.
3. **The securitization function –** It is the SPV's job to structure and issue the securities on the basis of asset pool. The securities carry coupon and an expected maturity, which can be asset base or mortgage based. These are generally sold to investors through merchant bankers. The investors interested in this type of securities are generally institutional investors like mutual fund, insurance companies etc. The originator usually keeps the spread available (i.e. difference) between yield from secured asset and interest paid to investors.

Generally, the process of securitization is without recourse i.e. the investor bears the credit risk of default and the issuer is under an obligation to pay to investors only if the cash flows are received by issuer from the collateral.

(c) Capital investment is the springboard for wealth creation. In a world of economic uncertainty, the investors want to maximize their wealth by selecting optimum investment and financial opportunities that will give them maximum expected returns at minimum risk. Since management is ultimately responsible to the investors, the objective of corporate financial management should implement investment and financing decisions which should satisfy the shareholders by placing them all in an equal, optimum financial position. The satisfaction of the interests of the shareholders should be perceived as a means to an end, namely maximization of shareholders' wealth. Since capital is the limiting factor, the problem that the management will face is the strategic allocation of limited funds between alternative uses in such a manner, that the companies have the ability to sustain or increase investor returns through a continual search for investment opportunities that generate funds for their business and are more favourable for the investors. Therefore, all businesses need to have the following three fundamental essential elements:

- A clear and realistic strategy,
- The financial resources, controls and systems to see it through and

The right management team and processes to make it happen.

(d) In case of cross-border or international lease, the lessor and the lessee are situated in two different countries. Because the lease transaction takes place between parties of two or more countries, it is called cross-border lease. It involves relationships and tax implications more complex than the domestic lease. When the lease transactions take place between three parties manufacturer/vendor, lessor and lessee in three different countries, this type of cross border leasing is called foreign to foreign lease. The lease may be routed through a third nation known as "convenient country" for tax or equipment registration purposes. Fourth nation may be involved for debt in a particular currency required to give effect to the equipment purchase and lease transaction. Thus more nations involved in cross border lease would mean more complications in terms of different legal, fiscal, credit and currency requirements and risk involved.

Cross border lease benefits are more or less the same as are available in domestic lease viz. 100% funding off-balance sheets. Financing, matching of expenditure with earnings from the assets, the usual tax benefits on leasing, etc. In addition to these benefits, the following are the more crucial aspects which are required to be looked into: (i) appropriate currency requirements can be met easily to match the specific cash flow needs of the lessee;(ii) funding for long period and at fixed rate which may not be available in the lessee home market may be obtained internationally;(iii) maximum tax benefits in one or more regions could be gained by structuring the lease in a convenient fashion;(iv) tax benefits can be shared by the lessee or lessor accordingly by pricing the lease in the most beneficial way to the parties;(v) choice of assets for cross border lease is different than domestic lease because those assets may find here attractive bargain which are internationally mobile , have adequate residual value and enjoy undisputed title.

(e) Synergy may be defined as follows:

$V(AB) > V(A) + V(B)$

In other words the combined value of two firms or companies shall be more than their individual value. Synergy is the increase in performance of the combined firm over what the two firms are already expected or required to accomplish as independent firms. This may be result of complimentary services economics of scale or both.

A good example of complimentary activities can be that one company may have a good networking of branches and the other company may have efficient production system. Thus, the merged companies will be more efficient than individual companies.

On similar lines, economics of large scale is also one of the reasons for synergy benefits. The main reason is that, the large scale production results in lower average cost of production e.g. reduction in overhead costs on account of sharing of central services such as accounting and finances, office executives, top level management, legal, sales promotion and advertisement etc.

These economies can be "real" arising out of reduction in factor input per unit of output, or pecuniary economics are realized from paying lower prices for factor inputs for bulk transactions.

Generally positive value of synergy forms the basis of rationale for the merger and acquisition decision. However, before such decision, cost attached with such merger and acquisition should be evaluated in this light. Accordingly, the net gain from merger and acquisition is as follows:

Net Gain = Value of Synergy – Costs associated with Merger and Acquisition.