

PAPER – 14: Advanced Financial Management

MTP_Final_Syllabus 2012_Jun2016_Set 2

Paper – 14 : Advanced Financial Management

Time Allowed: 3 Hours

Full Marks: 100

Section A

Answer Question No. 1 which is compulsory Carried 20 Marks.

1. (A) Each Question Carried 2 Marks:

[7×2 =14]

- (i) A project has an equity beta of 1.2 and is going to be financed by 30% debt and 70% equity. Assume debt beta = 0, Risk Free Rate= 10% and Market return = 18%. What is the required rate of return?

β_p = Beta of Project.

$$\beta_p = \left[\beta_{\text{equity}} \times \frac{\text{Equity}}{\text{Debt} + \text{Equity}} \right] + \left[\beta_{\text{debt}} \times \frac{\text{Debt}}{\text{Debt} + \text{Equity}} \right]$$

$$= 1.2 \times \frac{0.7}{1} + 0$$

$$= 0.84$$

Computation of return from the project

$$= R_f + \beta_p(R_m - R_f)$$

$$= 0.10 + 0.84 \times (0.18 - 0.10)$$

$$= 0.1672$$

$$= 16.72\%$$

- (ii) Cost of Redeemable debentures

	Particulars	(Amount in ₹)
1	Gross Proceeds (1,00,000 × 100)	1,00,00,000
2	Cost of Issue	10,00,000
3	Net Proceeds	90,00,000
4	Redemption Value	1,10,00,000
5	Average Liability = (4+3) ÷ 2	1,00,00,000
6	Premium on redemption (4 - 3)	20,00,000
7	Average premium on redemption [6 ÷ 5 years]	4,00,000
8	Interest payable at 14% on face value	14,00,000
9	After Tax Interest at 55% [Since Tax = 45%]	7,70,000
10	Average Annual payout [7 + 9]	11,70,000
11	$K_d =$ <u>Interest (after tax) + Average premium on redeemable debentures</u> Average Liability	11.7%

- (iii) According Interest Rate Parity theorem

$$\text{Forward rate} = \text{Spot Rate} \left[\frac{1+r_H}{1+r_f} \right]$$

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$$= 0.012067821 \left[\frac{1 + 0.05 \times \frac{90}{360}}{1 + 0.015 \times \frac{90}{360}} \right]$$
$$= 0.012067821 \left[\frac{1.0125}{1.00375} \right]$$

∴ 90 day forward rate for Japanese Yen = \$ 0.01217302.

(iv) Treynor Ratio =

$$R_p = 18\%.$$

Calculation of R_f

$$R_p = R_f + \beta(R_m - R_f)$$

$$18 = R_f + 2(12 - R_f)$$

$$18 = R_f + 24 - 2R_f$$

$$R_f = 6\%$$

$$\text{Treynor Ratio} = \frac{18\% - 6\%}{2} = 6$$

(v) Present Value = $\frac{5,00,000}{1.07} = ₹ 4,67,289.72.$

∴ ₹ 4,67,289.72 is to invest today at 7% Interest.

(vi) Exercise price = ₹ 200

Share price on expiry date = ₹ 198.

∴ On expiry date = exercise price > share price on expiry date.

∴ The buyer of the call option does not exercise the call option on expiry date.

Gain to call writer on expiry date = 0

Net Gain to call writer = Gain on expiry date + Premium = 0 + 4 = 4.

(vii)

Earnings before Tax	₹ 12,50,000
Less: Tax @ 20%	₹ 2,50,000
Earnings After Tax	₹ 10,00,000
Cost of the project	₹ 50,00,000

$$\text{Rate of return on full cost} = \frac{10,00,000}{50,00,000} \times 100 = 20\%.$$

$$\text{Average Rate of Return} = \frac{20\%}{10 \text{ years}} = 2\%.$$

(B) State if each of the following sentences is T (= true) or F (= false), Each Question carries 1 Mark **[6 × 1=6]**

- (i) False
- (ii) False
- (iii) True
- (iv) False
- (v) False
- (vi) False

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Section B

Answer any 5 Question from the following. Each Question Carried 16 Marks.

2. (a) Calculation of Selling Price
Let X be the selling price

Evaluation under NPV Method

Step 1 : Initial Investment = 25,00,000

Step 2 : Present value of Operating Cash Inflows per annum

A. Sales P.A.	8000x
B. Expenses	
Depreciation [(25,00,000 – 0)/4]	6,25,000
Promotion Expenses	1,50,000
Variable Costs	20,00,000
Fixed Costs	75,000
	₹ 28,50,000

Profit Before Tax (A – B)	8000x – 28,50,000
Less: Tax at 40%	3200x – 11,40,000
Profit After Tax	4800x – 17,10,000
Add: Depreciation	6,25,000
Cash Inflow after Tax	4800x – 10,85,000

At required return at 15%

Present value of total cash inflow = outflow

$$[4800x - 10,85,000] \times 3.0079 = 25,00,000$$

$$14,437.92x = 32,63,572 = 25,00,000$$

$$14,437.92x = 32,63,572 + 25,00,000$$

$$x = \frac{32,63,572 + 25,00,000}{11,437.92}$$

$$= 399.196$$

$$= 400$$

∴ Initial Selling price = ₹ 400.

- (b) Statement Showing the determination of Risk – adjusted Net Present Value:

Projects	Net Cash Outlays	Co-efficient of Variation	Risk adjusted discount rate	Annual Cash Inflow	PV factor 1-5 years at risk adjusted rate of discount	Discounted cash inflow	Net Present Value
				₹	₹	₹	₹
(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)=(v×(vi))	(viii)= (vii)-(ii)
A	1,00,000	0.4	12%	30,000	3.605	1,08,150	8,150
B	1,20,000	0.8	14%	42,000	3.433	1,44,186	24,186
C	2,10,000	1.20	16%	70,000	3.274	2,29,180	19,180

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3. (a) (i) Computation of Expected Return from Portfolio

Security	Beta (β)	Expected Return (r) (as per CAPM)	Amount (₹ Lakhs)	Weights (W)	Wr
Moderate	0.5	8% + 0.5 (10% - 8%) = 9%	60	0.115	1.035
Better	1.00	8% + 1.00 (10% - 8%) = 10%	80	0.154	1.540
Good	0.80	8% + 0.80 (10% - 8%) = 9.60%	100	0.192	1.843
Very Good	1.20	8% + 1.20 (10% - 8%) = 10.4%	120	0.231	2.402
Best	1.5	8% + 1.50 (10% - 8%) = 11%	160	0.308	3.388
Total			520	1	10.208

Thus expected return from portfolio 10.208% say 10.21%.

- (ii) As computed above the expected return from Better is 10% same as from Nifty, hence there will no difference even if the replacement of security is made.

Reason: β of the security "Better" is 1 which clearly indicates that this security shall yield same return as Market Return.

(b) (i) Calculation of Return on Portfolio for 2005-2006 (calculation in ₹/Share)

	Particulars	M	N
1	Market Value by 31.03.2006	220	290
2	Cost of Investment	200	300
3	Gain/Loss	20	(10)
4	Dividend received during the year	10	3
5	Yield [(3) + (4)]	30	(7)
6	% return [(5) ÷ 2] × 100	15%	(2.33%)
7	Weight in the portfolio	0.57	0.43

Weighted Average Return
 = (0.57 × 15%) + (0.43 × -2.33%)
 = 7.55%.

(ii) Calculation of Expected Return for 2006-2007

	Particulars	M	N
1	Expected dividend	20	3.5
2	Capital gain by 31.3.2007		
	[(220 × 0.2) + (250 × 0.5) + (280 × 0.3)] – 220	33	---
	[(290 × 0.2) + (310 × 0.5) + (330 × 0.3)] – 290	--	22
3	Yield [(1) + (2)]	53	25.5
4	Market Value on 1.4.2006	220	240
5	% return [(3) ÷ (4)]	24.09%	8.79%
6	Weight in portfolio (1000 × 220) : (500 × 290)	0.602	0.398

Weighted deviation of M Ltd.

(iii)

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Expected Market Value	Expected gain	Expected Dividend	Expected Yield	D [(4 – 53)]	D ²	Probability	PD ²
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
220	0	20	20	-33	1089	0.2	217.8
250	30	20	50	-3	9	0.5	4.5
280	60	20	80	27	729	0.3	218.7
							441

$$\text{Standard deviation} = \sqrt{PD^2} = \sqrt{441} = 21$$

(iv) Standard Deviation N. Ltd.

Expected Market Value	Expected gain	Expected Dividend	Expected Yield	D [(4 – 25.5)]	D ²	Probability	PD ²
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
290	0	3.5	3.5	-22	484	0.2	96.8
310	20	3.5	23.5	-2	4	0.5	2
330	40	3.5	43.5	18	324	0.3	97.2
							196

$$\text{Standard deviation} = \sqrt{PD^2} = \sqrt{196} = 14.$$

Share of company M Ltd. is more risky as the standard deviation is more than company N Ltd.

4. (a) Quantity to be hedged = $\frac{200 \text{ MT}}{10} = 20 \text{ Futures}$

Hedging Strategy:

Particulars	₹
Sell to Futures in December 15 : (20 × 10 × 45 × 1000)	90,00,000
Buy Futures in February 16 : (20 × 10 × 42 × 1000)	84,00,000
Gain in Future Market (A)	6,00,000
Price in Spot Market : (20 × 10 × 42 × 1000)	84,00,000
Effective price realized (A+B)	90,00,000

SM's position in features market is short and since SM holds the underlying Asset, it is long in the Spot Market.

(b)

Market Price (₹) I	180	260	280	320	400
Strike price of Put Option – II	300	300	300	300	300
Value of Put Option – III	120	40	20	---	---
Probability – IV	0.1	0.2	0.5	0.1	0.1

$$\text{Value of put option} = [0.1 \times 120 + 40 \times 0.2 + 20 \times 0.5] = 30$$

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5. (a) Classify the following items under the appropriate category – Whether Money Market (MM) or Capital Market (CM):

Sl. No.	Item Description	Market
(i)	RBI and Government are participants	Money
(ii)	Regulated by SEBI	Capital
(iii)	Tenor of instruments is usually less than a year	Money
(iv)	Treasury Bills	Money
(v)	Commercial Papers	Money
(vi)	Zero Coupon Bonds	Capital
(vii)	Equity Share	Capital
(viii)	Debentures	Capital

- (b) (i) US Dollars for ₹ 30 lakhs in the forward market

Action: Sell foreign currency in forward market

Relevant Rate: Forward Bid Rate = ₹ 57

$$\text{US\$ required to get ₹ 30,00,000} = \frac{\text{₹}30,00,000}{57} = \text{US\$ } 52,631.58.$$

- (ii) ₹ Required to obtain US dollars 2,40,000 in spot market

Action: Buy foreign currency in spot market

Relevant Rate: Spot Rate = ₹ 56.25

Rupee required to obtain \$ 2,40,000

$$\begin{aligned} &= \text{US } \$ 2,40,000 \times 56.25 \\ &= \text{₹ } 1,35,00,000 \end{aligned}$$

- (iii) Evaluation of Investment in Rupee

Forward Premium (for Bid Rates)

$$\begin{aligned} &= \frac{\text{Forward Rate ₹}57 - \text{Spot Rate ₹}56}{\text{Spot Rate ₹}56} \times \frac{12 \text{ Months}}{2 \text{ Months}} \times 100 \\ &= 10.71\%. \end{aligned}$$

Annualised forward premium for Bid Rates (10.71%) is greater than the Annual Return on Investment in Rupee (10%). Therefore, the firm should not encash its US\$ balance now. It should sell the US\$ in forward market and encash them two months later.

Alternatively:

Particulars	Encash Now	Encash 2 Months later
Relevant Rate	Spot Bid Rate = ₹ 56	Forward Bid Rate = ₹ 57
₹ Available for US\$ 69,000	₹ 38,64,000	39,33,000
Add: Interest for 2 months (If converted now)	₹ 64,400 $(38,64,000 \times 10\% \times \frac{2}{12})$	Not, applicable

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Therefore, encashing two months later yields higher rupee return than encashing now and investing in rupee deposits. Therefore, the firm should wait for 2 months to encash under forward market.

6. (a) Evaluation of Fund Tanni, Manni and Danni

Particulars	Tanni	Manni	Danni
Average Return [R_P]	25%	18%	12%
Standard Deviation [σ_P] [Total Risk]	10%	5%	3%
Correlation with Market [ρ_{PM}]	0.30	0.70	0.50
Portfolio Beta [β_P] = $\rho_{PM} \times \sigma_P \div \sigma_M$	$[0.30 \times 10 \div 4]$	$[0.70 \times 5 \div 4]$	$[0.50 \times 3 \div 4]$
	0.75	0.875	0.375
Actual Risk Premium [$R_P - R_F$] [A]	$[25 - 5] = 20\%$	$[18 - 5] = 13\%$	$[12 - 5] = 7\%$
Computation of Net Gain:			
Desired Risk Premium [$(R_M - R_F) \times \sigma_P \div \sigma_M$] [B]	$[11\% \times 10 \div 4]$	$[11\% \times 5 \div 4]$	$[11\% \times 3 \div 4]$
	27.5%	13.75%	8.25%
Fama's Net Selectivity [Net Gain] [A] - [B]	(7.5%)	(0.75%)	(1.25%)
Computation of Total Gain = Jensen's Alpha			
Desired Risk Premium [$(R_M - R_F) \times \rho_{PM} \times \sigma_P \div \sigma_M$]	$[27.5\% \times 0.30]$	$[13.75\% \times 0.70]$	$[8.25\% \times 0.50]$
Or [Risk Premium in [B] $\times \rho_{PM}$] [C]	8.25%	9.63%	4.13%
Total Gain [A] - [C]	11.75%	3.37%	2.87%
	$[20 - 8.25]$	$[13 - 9.63]$	$[7 - 4.13]$
Systematic Risk and Unsystematic Risk:			
Systematic Risk [$\sigma_P \beta_P$]	7.50%	4.375%	1.125%
	$[10\% \times 0.75]$	$[5 \times 0.875]$	$[3 \times 0.375]$
Unsystematic Risk [Total Risk Less Systematic Risk]	2.50%	0.625%	1.875%
	$[10 - 7.50]$	$[5 - 4.375]$	$[3 - 1.125]$

Notes:

- (1) Risk Free Return [R_F] = 5%;
- (2) Market Return [R_M] = 16%;
- (3) Market Standard Deviation [σ_M] = 4%;
- (4) Market Risk Premium [$R_M - R_F$] = 16% - 5% = 11%.

(b)

Portfolio	Sharpe Method (%) $(R_P - R_f) \div \sigma_P$	Ranking	Standard deviation (%) $(R_P - R_f) \div \beta_P$	Ranking
A	$(16.5 - 7) \div 25.6 = 0.371$	4	$(16.5 - 7) \div 1.25 = 7.6$	4
B	$(15.3 - 7) \div 20.5 = 0.405$	3	$(15.3 - 7) \div 0.95 = 8.74$	3
C	$(9.5 - 7) \div 15.8 = 0.158$	5	$(9.5 - 7) \div 0.85 = 2.941$	5
D	$(22.5 - 7) \div 16.5 = 0.939$	1	$(22.5 - 7) \div 1.15 = 13.478$	1
E	$(18.5 - 7) \div 18.5 = 0.622$	2	$(18.5 - 7) \div 1.05 = 10.952$	2

Jensen Alpha = Fund Return [$R_f + \beta \times (R_m - R_f)$]

Portfolio	Jensen Alpha	Ranking
A	$16.5 - [7 + 1.25 (13.5 - 7)] = 1.375$	4
B	$15.3 - [7 + 0.95 (13.5 - 7)] = 2.125$	3
C	$9.5 - [7 + 0.85 (13.5 - 7)] = (3.025)$	5
D	$22.5 - [7 + 1.15 (13.5 - 7)] = 8.025$	1
E	$18.5 - [7 + 1.05 (13.5 - 7)] = 4.675$	2

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- (a) If the fund is entire risky portfolio, the relevant performance measure is the Sharpe Ratio.
 (b) If the fund is just one part of a broader risky portfolio, either Jensen's Alpha (or) Treynor value could be used.

For the given portfolios, all the three methods provides the same rankings to all the funds. Therefore, evaluation of performance of fund can be done on any one of the three methods.

7. (a) $\beta = (\sum R_M R_P - n \bar{R}_M \bar{R}_P) / \sum (R_M^2 - n \bar{R}_M^2)$

Market Return (R_M)	Return of security MN(R_D)	Produce ($R_M \times R_D$)	R_M^2
9	14	126	81
12	15	180	144
15	18	270	225
36	47	576	450

N = 3; No. of years.

$\sum R_M R_P = 576$ = Aggregate of product.

$\sum R_M^2 = 450$ = Aggregate of return squares

$$\bar{R}_M = \text{Mean of Market Return} = \left[\frac{\text{Aggregate of Market Return}}{\text{No. of years}} \right] = \frac{36}{3} = 12.00$$

$$\bar{R}_P = \text{Mean of Security Return} = \left[\frac{\text{Aggregate of Security MN Returns}}{\text{No. of years}} \right] = \frac{47}{3} = 15.67.$$

$$\begin{aligned} \text{Hence, } \beta &= [576 - (3 \times 12 \times 15.67)] / [450 - (3 \times 12^2)] \\ &= (576 - 564) / (450 - 432) \\ &= \frac{12}{18} \\ &= 0.667. \end{aligned}$$

- (b) Differences between Commodity futures and Financial Futures:

Financial futures and Commodity futures are substantially different from each other in the following respects:

- (i) Valuation

Financial futures are easier to understand as the cost of carry model for its valuation applies. The argument of arbitrage also holds because of the absence of convenience yield in financial futures. Financial futures involve financial instruments which do not have consumption value. The consumption value makes valuation of futures contracts on commodities difficult.

- (ii) Delivery and Settlement

The provisions of delivery are applicable equally to commodities and financial futures. In case of financial futures delivery of underlying assets is prompt and hassle free, and so is its settlement. Further, there are no costs of transportation, storage, or insurance, etc. involved in financial futures. For futures on financial assets the price adjustment on account of discrepancy in quality of what was contracted and what is being delivered, is not required. Quality of underlying asset is immaterial in case of

financial products, whereas there is ample scope of controversy over quality in case of commodity futures. In them are necessarily cash settled.

(iii) Contract Features and Life

Commodity futures are governed by seasons and perishable nature of the underlying asset. The delivery is linked to the availability, and therefore contracts specifications have to consider physical characteristics of the underlying assets. Futures contracts on commodities normally do not exceed 90 days, while there is no such limitation on the financial futures.

Financial futures can have much longer life, though generally maturity of many financial futures is kept at 90 days.

(i) Supply and Consumption Patterns

In case of financial products, such as stocks, indices, and foreign exchange, the supply can be considered as unlimited and independent of weather and seasons. The supply in case of financial products does not suffer from vagaries of nature. The supply of commodities depends upon factors on which we do not have any control. The total supply is dependent upon weather, storage capacity, shelf life, etc. Further, the supply of most commodities (agricultural products) is confined to the harvesting period, while the consumption is uniform throughout the year. Deterioration in value of commodities with time is another phenomenon that does not affect futures on financial products.

(ii) Futures Contract on Commodities

Futures contract on commodities have same features as any other futures contract on financial asset. Significant differences arise in the commodity futures in two areas—extremely elaborate description of the quality attributes of the commodity, and procedure for settlement by delivery, deliverable quality, place of delivery, etc. Such complexities do not arise in case of futures contracts on financial assets.

Futures contracts on commodities have specific quality requirements. The price needs to be adjusted for the difference in the quality specified in the contract and the quality being delivered. For example, there is significant difference in the price of basmati rice and ordinary rice. What is deliverable against a futures contract needs to be specified. Besides, the exchange also has to provide for reasonable time for both the buyer and the seller to arrange for giving/taking delivery of the underlying asset. Usually futures contract on commodities provide for delivery notice period when parties are required to disclose the intentions of settlement by delivery.

8. Write a short note on any four of the following

(a) Book Building Process

Book building is the process by which issue price of securities (shares) are fixed depending upon the market. Worded differently, it is process of marketing a public issue. In this process various investors are asked to offer their bids for purchasing the shares and the issue price is fixed after the closing of bidding.

Previously the public issue contained the issue size as well as price of each share (security). In book building offer, the issue determines only the offer size (number of shares) and then invites bids from prospective investors for the offer. After the closure of

bidding process, the inherent demand of issue is assessed and the price is computed. This price is offered to the investors via the public issue.

Advantages of Book Building:

- (a) The book building process allows for price and demand discovery.
- (b) The cost of public issue is much reduced and the time taken for the completion of the entire process is much less than that in the normal issue.
- (c) The demand for share is known before the issue and if demand is not much, issue may be cancelled or postponed.

(b) Advantages of Depository system

Depository **System:**

Advantages of Depository system can be categorized in three categories: For the Capital Market:

- It eliminates bad delivery and problem of odd lots.
- It eliminates voluminous paper work.
- It enables quick settlements and reduces settlement time.
- It facilitates stock lending.

For the Investors:

- It eliminates risks associated with loss, theft and forgery of physical shares.
- It reduces the transaction costs and time.
- It ensures more liquidity as the settlement time is less.
- It makes investors free from holding the shares.

For the Issuers:

- It provides up-to-date of names and addresses of shareholders.
- It reduces voluminous paper work and secretarial work.
- It gives better image, better facilities to communicate with shareholders.
- It increases the efficiency of registrar and transfer agents.

(c) Money Market Mutual Funds:

MMMFs are the funds that mobilize savings from individuals and small investors and then invest these savings in money Market.

MMMFs thereby increases the participants in Money Market and enable the individual and small investors to indirectly participate and benefit out of Money market MMMFs were operated under the RBI Guidelines from 1992 till March 2000 after that the RBI decided that MMMFs should also be brought within the purview of SEBI to ensure investor's 2000. SEBI (MF) Regulations 1996 are applicable to the MMMFs as well. Under these Regulations **a MMMF means a scheme of mutual fund which has been set up with the objective of investing exclusive in the money market instruments.**

For this purpose, the money market instruments include commercial papers, commercial bills, treasury bills, government securities having unexposed maturity upto one year, call or notice money, certificates of deposit, usance bills, and any other like instruments as specified by the RBI from time to time.

(d) Repo and Reverse Repo

Repos:

1. Repos refers to Repurchase offer. It is a transaction in which a party sells some securities with the agreement to repurchase the same at the specified date and at specified rate.
2. Repo involves a collateralized borrowing and lending with an additional feature of repurchase
3. It amounts to temporary sale of securities, but with full ownership right.
4. The repurchase agreement amounts to ready forward transaction.

A repo transaction involves elements of sale/purchase of security as well as that of borrowing/lending Reserve bank of India uses Repo and Reverse repo rates to control the credit (liquidity adjustment facility) in the economy. Repo rate is the rate at which RBI lends money to commercial bank and reverse repo indicates the rate at which RBI accepts money from commercial banks.

Consists of daily infusion or absorption of liquidity on a repurchase basis, through repo (liquidity injection) and reverse repo (liquidity absorption) auction operations, using government securities as collateral.

(e) Project Financing VS Capital Financing

Two main distinguishing features of Project Finance compared to Corporate Finance are:

1. Enhanced verifiability of cash flows: Due to contractual agreements possible because of a single, discrete project in legal isolation from the sponsor and the resultant absence of future growth opportunities in the Project Financed Company. Since Corporate Finance involves a multitude of future and current projects the same contractual agreements cannot be effected in Corporate Finance Company, and
2. Lack of sponsors' assets and cash flows: In case of Corporate Finance the lender has a potentially larger pool of cash flows from which to get paid as compared to Project Finance where the cash flows from the project only are used to pay the investors.