Paper 14: Advance Financial Management

Answer Question No.1 which is compulsory

Total Allowed: 3hours **Full Marks: 100**

1.

a) Explain the term 'inter corporate Deposits' & 'Public Deposits'.

b) In the inter-bank market, the DM is quoting ₹21.50. If the bank changes 0.125s% commission for TT selling and 0.15% for TT buying, what rate should it quote?

c) The exchange rate for Mexican peso was 0.1086 in December 2012 and 0.0913 in November 2012, against dollar. Which currency has depreciated and by how much?

d) A stock costing ₹120pays no dividends. The possible prices that the Stock might sell for at the end of the year with the respective probabilities are given below. Compute the Expected Return and its standard Deviation.

Price	115	120	125	130	135	140
Probability	0.1	0.1	0.2	0.3	0.2	0.1

e) Company Bedi is forced to choose between two machines A and B. The machines are designed differently, but have identical capacity and do exactly the same job. Machine A costs ₹1, 50,000 and will last for 3 years. It costs ₹40,000 per year to run. Machine B is an 'economy' model costing only ₹1, 00,000, but will last only for 2 years, and costs ₹60,000 per year to run. These are real cash flows. The costs are forecasted in rupees of constant purchasing power. Ignore tax. Opportunity cost of capital is 10 per cent. Which machine Company X should buy?

[(3+3) +2+3+4+5]

Solution:

a) Inter Corporate Deposits: (ICD's)

i) Companies can borrow funds for a short period, for example 6 months or less, from other companies which have surplus liquidity.

ii) Such deposits made by one Company in another are called Inter-Corporate Deposits (ICD's) and are subject to the provisions of the Companies Act, 1956.

iii) The rate of interest on ICD's varies depending upon the amount involved and time period.

iv) RBI permits Primary Dealers to accept Inter Corporate Deposits up to fifty per cent of their Net Worth and that also for a period of not less than 7 days. Primary Dealers cannot lend in the Inter Corporate Deposits market.

v) The risk on ICDs is very high.

Public Deposits:

i) Public Deposits are a very important source for short-term and medium term finance.

ii) A Company can accept public deposits from members of the public and shareholders, subject to the stipulations laid down by RBI from time to time.

iii) The maximum amounts that can be raised by way of Public Deposits, maturity period, procedural compliance, etc. are laid down by RBI, from time to time.

iv) These deposits are unsecured loans and are used for working capital requirements. They should not be used for acquiring fixed assets since they are to be repaid within a period of 3 years.

b)

TT selling rate = 21.50 (1 – 0.00125) = As. 21.47/DM
TT buying rate = 21.50 (1 – 0.00150) = As. 21.53/DM

c)

Nov 2004 rate: Peso1 = $ 0.1086
Dec 2004 rate: Peso1 = $ 0.0913
This means Mexican peso has depreciated against the US dollar.
The rate of depreciation of Peso can be calculated as:
(0.0913 – 0.1086) / 0.1086 = - 0.0173 / 0.1086 = - 0.159.
In other words, from November 2004 to December 2004, the Mexican Peso depreciated 15.9% against the US dollar.

d)

Price	Return (R)= ₹ 120 - P	Probability (P)	Expected Return (P x R)	$D = R - \bar{R}$	D^2	$P \times D^2$
115	(5)	0.1	(0.5)	(13.5)	182.25	18.225
120	0	0.1	0.0	(8.5)	72.25	7.225
125	5	0.2	1.0	(3.5)	12.25	2.450
130	10	0.3	3.0	1.5	2.25	0.675
135	15	0.2	3.0	6.5	42.25	8.450
140	20	0.1	2.0	11.5	132.25	13.225
Total			$\bar{R}$ **= 8.5**			**50.250**

Expected Return on Security = ₹ 8.5
Risk of Security = $\sigma = \sqrt{\text{Variance}} = \sqrt{50.25}$ = ₹ 7.09

e) Working Notes:
Compound present value of 3 years @ 10% = 2.486
P.V. of Running cost of Machine A for 3 years = ₹40,000 x 2.486 = ₹99,440
Compound present value of 2 years @ 10% = 1.735
P.V. of Running cost of Machine B for 2 years = ₹ 60,000 x 1.735 = ₹1, 04,100

Statement showing evaluation of Machine A and B (₹)

Particulars	Machine A	Machine B
Cost of purchase	1,50,000	1,00,000
Add: P.V. of running cost for 3 years	99,440	1,04,100
	2,49,440	2,04,100
P.V. of Cash outflow	2, 49,440	2, 04,100
	2.486	1.735
Equivalent Present value of annual Cash outflow	= 1, 00,338	= 1, 17,637

Analysis: Since the annual Cash outflow of Machine B is highest, Machine A can be purchased.

Section A

(Answer any two of the following)

2.

a) Briefly explain the salient feature of non-recourse project financing.

b) An investor purchased 300 units of a Mutual Fund at ₹12.25 per unit on 31st December, 2010. As on 31st December, 2011 he has received ₹1.25 as dividend and ₹1.00 as capital gains distribution per unit. Required:

i) The return on the investment if the NAV as on 31st December, 2011 is ₹13.00.

ii) The return on the investment as on 31st December,2011 if all dividends and capital gains distributions are reinvested into additional units of the fund at ₹12.50 per unit.

[6+6=12]

Solution:

a) Project financing should be distinguished from conventional direct financing, or what may be termed financing on a firm's general credit. In connection with a conventional direct financing, lenders to the firm look to the firm's asset portfolio to generate the cash flow to service their loans. The assets and their financing are integrated into the firm's asset and liability portfolios. Often, such loans are not secured by any pledge or collateral. The critical distinguishing feature of a project financing is that the project is a distinct legal entity; project assets, project related contracts, and project cash flows are segregated to a substantial degree from the sponsoring entity. The financing structure is designed to allocate financial returns and risks more efficiently than a conventional financing structure.

In a project financing, the sponsors provide, at most, limited recourse to cash flows from their other assets that are not part of the project. Also, they typically pledge the project assets, but none of their other assets, to secure the project loans.

Project financing arrangements invariably involve strong contractual relationships among multiple parties Project financing can only work for those projects that can establish such relationships and maintain them at a tolerable cost. Project financing will not necessarily lead to a lower cost of capital in all circumstances. Project financing will not necessarily lead to a lower cost of capital in all circumstances. Project financing will be more cost-effective than conventional direct financing when

i) Project financing permits a higher degree of leverage than the sponsors could achieve on their own and

ii) The increase in leverage produces tax shield benefits sufficient to offset the higher cost of debt funds, resulting in a lower overall cost of capital for the project.

b)

Return for the year (all changes on a per year basis)

Particulars	(₹/Unit)
Change in price (₹ 13.00 - ₹ 12.25	0.75
Dividend received	1.25

Capital gain distribution	1.00
Total return	3.00

Return on investment = $\frac{3.00}{12.25} \times 100$ = 24.49%.

If all dividends and capital gain are reinvested into additional units at ₹ 12.50 per unit the position would be:

Total amount reinvested = ₹ 2.25 x 300 = ₹ 675
Additional units added = ₹ 675 / 12.50 = ₹ 54 units
Value of 354 units as on 31.12.2011 = ₹ 4,602
Price paid for 300 units on 31.12.2010 (300 x ₹ 12.25) = ₹ 3,675

Return = $\frac{₹4,602 - ₹3,675}{₹3,675} = \frac{₹927}{₹3,675}$ = 25.22%

3.

a) A Mutual Fund Co. has the following assets under it on the close of business as on:

Company	No. of Shares	1st February 2012 Market price per share(₹)	2nd February 2012 Market Price per share (₹)
L Ltd	**20,000**	**20.00**	**20.50**
M Ltd	**30,000**	**312.40**	**360.00**
N Ltd	**20,000**	**361.20**	**383.10**
P Ltd	**60,000**	**505.10**	**503.90**

Total No. of Units 6, 00,000

i) Calculate Net Assets Value (NAV) of the Fund.

ii) Following information is given: Assuming one Mr. A, submits a cheque of ₹30, 00,000 to the Mutual Fund and the Fund manager of this company purchases 8,000 shares of M Ltd; and the balance amount is held in Bank. In such a case, what would be the position of the Fund?

iii) Find new NAV of the fund as on 2nd February 2012.

b) An aggressive mutual fund promises an expected return of 18 per cent with a possible volatility (standard deviation) of 20%. On the other hand, a conservative mutual fund promises an expected return of 17 per cent and volatility of 19%.

i) Which fund would you like to invest in?

ii) Would you like to invest in both if you have money?

iii) Assuming you can borrow money from your provident fund at an opportunity cost of 10%, which fund you would invest your money in?

iv) Would you consider both funds if you could lend or borrow money at 10%?

[8+4=12]

Solution:

a)

i) NAV of the Fund

$= \frac{₹4,00,000 + ₹93,72,000 + ₹72,24,000 + ₹3,03,06,000}{6,00,000}$

$= \frac{₹4,73,02,000}{6,00,000} = ₹ 78.8366$ rounded to ₹ 78.84

ii) The revised position of fund shall be as follows:

Shares	No. of shares	Price	Amount (₹)
L Ltd.	20,000	20.00	4,00,000
M Ltd.	38,000	312.40	1,18,71,200
N Ltd.	20,000	361.20	72,24,000
P Ltd.	60,000	505.10	3,03,06,000
Cash			5,00,800
Total			5,03,02,000

No of units of fund = 6,00,000 + $\frac{30,00,000}{78.8366}$ = 6,38,053

iii) On 2nd February 2012, the NAV of fund will be as follows:

Shares	No. of shares	Price	Amount (₹)
L Ltd.	20,000	20.50	4,10,000
M Ltd.	38,000	360.00	1,36,80,000
N Ltd.	20,000	383.10	76,62,000
P Ltd.	60,000	503.90	3,02,34,000
Cash			5,00,800
Total			5,24,86,800

NAV as on 2nd February 2012 = $\frac{₹5,24,86,800}{6,38,053}$ = ₹ 82.26 per unit

b)

i) It depends on your preference and risk-taking attitude.

ii) You can achieve diversification gains if you invest in both.

iii) The slopes of the capital market line for two funds are:

- Aggressive fund = (16 - 10)/20 =0.30; and
- Conservative fund: (13-10)715 = 0.20. Aggressive fund is preferable.

iv) Benefits of diversification can be obtained if you invest in both funds and also lend and borrow.

4. Write short notes three of the following

i) Multi-Commodity Exchange of India Limited (MCX)

ii) Project financing versus Capital Financing

iii) Repo and Reverse Repo

iv) Liquidity Adjustment Facility (LAF)

[3×4=12]

Solution:

i) Multi-Commodity Exchange of India Limited (MCX)

MCX an independent and de-mutulized multi commodity exchange has permanent recognition from Government of India for facilitating online trading, clearing and settlement operations for commodity futures markets across the country. Key shareholders of MCX are Financial Technologies (India) Ltd., State Bank of India, NABARD, NSE, HDFC Bank, State Bank of Indore, State Bank of Hyderabad, State Bank of Saurashtra, SBI Life Insurance Co. Ltd., Union Bank of India, Bank Of India, Bank Of Baroda, Canara Bank, Corporation Bank.

Headquartered in Mumbai, MCX is led by an expert management team with deep domain knowledge of the commodity futures markets. Through the integration of dedicated resources, robust technology and scalable infrastructure, since inception MCX has recorded many first to its credit.

Inaugurated in November 2003 by Shri Mukesh Ambani, Chairman & Managing Director, Reliance Industries Ltd, MCX offers futures trading in the following commodity categories: Agri Commodities, Bullion, Metals- Ferrous & Non-ferrous, Pulses, Oils & Oilseeds, Energy, Plantations, Spices and other soft commodities.

MCX has built strategic alliances with some of the largest players in commodities eco-system, namely, Bombay Bullion Association, Bombay Metal Exchange, Solvent Extractors' Association of India, Pulses Importers Association, Shetkari Sanghatana, United Planters Association of India and India Pepper and Spice Trade Association.

Today MCX is offering spectacular growth opportunities and advantages to a large cross section of the participants including Producers / Processors, Traders, Corporate, Regional Trading Centers, Importers, Exporters, Cooperatives, Industry Associations, amongst others MCX being nation-wide commodity exchange, offering multiple commodities for trading with wide reach and penetration and robust infrastructure, is well placed to tap this vast potential.

ii) Project financing versus Capital Financing

Countries across the globe use Project Finance vis-à-vis Corporate Finance in industries like infrastructure where there are large cash flows. Project Finance involves significant costs compare to Corporate Finance however the mitigation of Agency Cost (since certain assets like tangible assets with high cash flows are susceptible to costly agency conflicts) and reduction in the deadweight cost of bankruptcy are primary motivators for using Project Finance (Subramanian, Tung, & Wang, 2007). The creation of a project company provides an opportunity to create asset-specific, new governance systems to address the conflicts between ownership and control. Another feature of Project Companies is that they utilize high leverage and joint ownership to discourage costly agency conflicts.

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

a) 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

c) 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.

iii) Repo and Reverse Repo

Repo or ready forward contact is an instrument for borrowing funds by selling securities with an agreement to repurchase the said securities on a mutually agreed future date at an agreed price which includes interest for the funds borrowed. Repo rate is the return earned on a repo transaction expressed as an annual interest rate.

The reverse of the repo transaction is called 'reverse repo' which is lending of funds against buying of securities with an agreement to resell the said securities on a mutually agreed future date at an agreed price which includes interest for the funds lent.

It can be seen from the definition above that there are two legs to the same transaction in a repo/ reverse repo. The duration between the two legs is called the 'repo period'. Predominantly, repos are undertaken on overnight basis, i.e., for one day period. Settlement of repo transactions happens along with the outright trades in government securities.

The consideration amount in the first leg of the repo transactions is the amount borrowed by the seller of the security. On this, interest at the agreed 'repo rate' is calculated and paid along with the consideration amount of the second leg of the transaction when the borrower buys back the security. The overall effect of the repo transaction would be borrowing of funds backed by the collateral of Government securities.

The money market is regulated by the Reserve Bank of India. All the above mentioned money market transactions should be reported on the electronic platform called the Negotiated Dealing System (NDS).

iv) Liquidity Adjustment Facility (LAF)

LAF is a facility extended by the Reserve Bank of India to the scheduled commercial banks (excluding RRBs) and primary dealers to avail of liquidity in case of requirement or park excess funds with the RBI in case of excess liquidity on an overnight basis against the collateral of Government securities including State Government securities. Basically LAF enables liquidity management on a day to day basis. The operations of LAF are conducted by way of repurchase agreements (repos and reverse repos – please refer to paragraph numbers 30.4 to 30.8 under question no. 30 for details) with RBI being the counter-party to all the transactions. The interest rate in LAF is fixed by the RBI from time to time. Currently the rate of interest on repo under LAF (borrowing by the participants) is 6.25% and that of reverse repo (placing funds with RBI) is 5.25%. LAF is an important tool of monetary policy and enables RBI to transmit interest rate signals to the market.

Section – B
(Answer any one of the following)

5.

a) A USA based company is planning to set up a software development unit in India. Software development at the India unit will be bought back by the US parent at a transfer price of US $ 10 million. The unit will remain in existence in India for one year; the software is expected to get developed within this time frame.
The US based company will be subject to corporate tax of 30per cent and a with-holding tax of 10% in India and will not be eligible for tax credit in the US. The software developed will be sold in the US market for US $ 12.0 million. Other estimates are as follows:

Rent for fully furnished unit with necessary hard ware in India	**₹15,00,000**
Man power cost (80 software professional will be working for 10 hours each day)	**₹400 per man hour**
Administrative and other costs	**₹12,00,000**

Advise the US Company on financial viability of the project. The rupee-dollar rate rate is ₹48/$.

b) During a year the price of British Gilts (face value £100) rose from £105 to £110, while paying a coupon of £8. At the same time the exchange rate moved from $/£ of 1.80 to 1.70. What is the total return to an investor in USA who invested in this security?

c) Describe the role of hedging as foreign exchange risk management.

[10+5+5=20]

Solution:

a)

1. Cost of Operating the Indian Unit for 1 Year

Particulars	**Value**
Rental Cost [assumed to be annual]	₹ 15.00 Lakhs
Man Power Cost [80 Professionals X 365 Days x 10 Hours per Day x ₹ 400 per Hour)	₹ 1,168.00 Lakhs
Administrative and Other Costs [assumed to be annual]	₹ 12.00 Lakhs
Total Annual Cost of Operation	₹ 1,195.00 Lakhs
Exchange Rate per USD	₹ 48.00
Total Annual Cost of Operation in USD [₹ 1195 Lakhs ÷ ₹ 48.00]	USD 24.90 Lakhs

2. Computation of Indian Withholding Tax

Particulars	**Value**
Transfer Price for the Software	USD 100.00 Lakhs
Withholding Tax Rate in India	10%
Tax withheld in India [USD 100.00 Lakhs x 10%]	USD 10.00 Lakhs

3. Computation of Gain to Indian Business Unit

Particulars	**Value**
Transfer Price for the Software	USD 100.00 Lakhs
Cost of Operation for One Year	USD 24.90 Lakhs
Gain of Indian Business Unit [Transferred to US Parent]	USD 75.10 Lakhs

4. Computation of Tax Liability for US Parent Company (in US)

Particulars	**Value**
Sale Price of the Software in US Market Less: Price at which transferred from India to US	USD 120.00 Lakhs USD 100.00 Lakhs
Profit on Sale (taxable at 30% in the US Market) Add: Share of Gain of Indian Business Unit	USD 20.00 Lakhs USD 75.10 Lakhs
Total Taxable Income of the US Parent Company	USD 95.10 Lakhs
Tax Liability at 30%	USD 28.53 Lakhs

5. Cost Benefit Analysis

Particulars		**Value**
Inflow on Sale of Software in US Market	[A]	USD 120.00 Lakhs
Summary of Outflows:		
Annual Operation Cost of Indian Software Development Unit Tax Withheld in India for which credit is not available Tax Liability in US for Total Profits of the US Company		USD 24.90 Lakhs USD 10.00 Lakhs USD 28.53 Lakhs
Total Cash Outflow to the Company	[B]	USD 63.43 Lakhs
Net Benefit / Cash Inflow	[A-B]	USD 56.57 Lakhs

Recommendation: The project yields a net surplus of USD 56.57 Lakhs or USD 5.657 Millions (approximately). Therefore, the project is financially viable and the US Company may go ahead with the project.

b)

The investor is in USA. She will have dollars which she will exchange in pounds, these pounds will be invested in British Gilts. (Gilts mean government based security).

Let us assume that the investor has 1,000 USD to invest. First of all she will convert the dollars into pounds. Two rates are given viz. Dollar/pound of 1.80 or 1.70. Which one will you use and why?

The pounds so obtained will be invested in Gilts of face value 100 pounds per security. How many securities the investor will purchase? What rate would you use for purchase of security How many securities the investor will purchase? What rate would you use for purchase of security i.e., face value of 100 or market value of 105 or 110?

What do you understand by 'a coupon of 8 pounds'?

Solution goes as given below:
A coupon of 8 pounds', it is rate of interest on that security. On one security (or bond) the interest of 8 pounds will be paid in a year.
Suppose the investor has 1,000 USD to invest. You can take any other figure as well.
The current rate is one pound = 1.80 dollars. The investor will receive 1,000/1.80 = 555.55 pounds on conversion.
The security is available at 105 pounds per security. On 555.55 pounds, she will receive 555.55/105 = 5.29 security.
Rate of interest is a coupon of 8 pounds. The investment is for one year as given in question. The interest at the rate of 8 pounds per security per year would be calculated as 5.29 x 8 = 42.32 pounds.
Rate of security is increasing i.e., there is also a capital gain per security of pound 5(110 – 105). On 5.29 security, the capital gain would be 5.29 x 5 = 26.45 pounds.
You should present the solution in a tabular form as given below:

Let the amount to be invested is 1,000 USD.		Pounds
Investment in pounds @ one pound = 1.8 dollars: 1,000/1.8		555.55
Not of securities @ 105 pounds = one security 555.55/105 = 5.29		
Coupon on security for one year @ 8 pounds per security 5.29 x 8		42.32
Capital gain @ 5 pounds per security for 5.29 security 5.29 x 5		26.45
Total pounds had by investor at the end of the year		624.32
Conversion into dollars @ 1.7 dollars per pound 624.32 x 1.7		1,061.344
Less: Initial investment in dollars		1,000.000
Net gain		61.344
Net gain in %	61.44/1,000	6.13%

c) In international finance, hedging means a transaction undertaken to offset some exposure arising from a firm's usual operation. In order to reduce or eliminate currency exposer, internal strategies such as currency invoicing, netting and offsetting, leading and lagging, indexation clause in contract, switching the base of manufacture are resorted to.
A money market hedge involves taking a money market position to cover future foreign currency payable and receivables position.
Hedging is a risk management technique, primarily done to protect the foreign exchange exposures against the volatility of exchange rates, by using derivatives like Currency Options, Currency Futures, Forward Contracts, Currency Swaps, and Money Markets etc. by taking off-setting positions against the underlying asset. Hedging refers to process, whereby one can protect the price of financial instrument at a date in the future by taking an opposite position in the present by using derivatives like Currency Options, Currency Futures, Forward Contracts, Currency Swaps, Money Markets, etc. It refers to technique of protecting the financial exposures in the underlying asset or liability due to volatility in the exchange rates by taking offsetting positions through derivatives to offset the losses in the cash market by a corresponding gain in the derivatives market.

Hedging involves

1. Foreign exchange exposure identification
2. Value of exposure
3. Creation of offsetting positions through derivatives.
4. Measurement of Hedge ratio.

In order to reduce or eliminate currency exposure, internal strategies such as currency invoicing, netting and offsetting, leading and lagging, indexation clause in contract, switching the base of manufacturer etc are resorted to.

6.

a) Make a critical assessment of WTO's contributions to world trade.

b) An Indian exporting firm, Rohit and Bros., would be covering itself against a likely depreciation of pound sterling. The following data is given:

Receivables of Rohit and Bros	**£ 5, 00,000**
Spot rate	**₹56.00/£**
Payment date	**3 months**
3 months interest rate	**India: 12% per annum**
	UK : 5% per annum

c) Write the limitation of credit rating.

[5+10+5=20]

Solution:

a) The positive contributions:

i) The system helps trade flow smoothly which leads to less political conflict and people getting more prosperous leading to promote peace.
ii) Disputes are handled constructively.
iii) WTO is rule based system and decisions are taken through consensus and ratification. Decisions being applicable to one and all, increase bargaining power for small countries. MFN status avoids complexity.
iv) Freer trade cuts the cost of living. Food and clothing has become cheaper. So is for other goods and services.
v) Customers world-over are provided with more choice of products of good qualities;
vi) Free movement of goods and services rises incomes and stimulates economic growth. China and India are good examples.
vii) The system encourages good governance and transparency.

The negative side:

George Soros (2002) an authority on international finance and globalization pointed our negativities of WTO as an institution as under:

i) Disparity in the treatment of developed and developing countries.
ii) Bias in favour of corporate interests
iii) Free Trade v. Protection
iv) Trade v. Gains: Trade is the lens to perceive development rather than the other way round. For the poorest, growth will lead to trade and not vice-versa
v) The Veto Power: Theoretically any one of the 150 members can veto an agreement.
vi) The Dispute Settlement: Too lengthy, Appeal has become a regular feature.
vii) Anti-Dumping and Countervailing Measures have been abused as protectionist tools in the hands of the developed countries.

b) The only thing left is Rohit and Bros. to cover the risk in the money market. The following steps are required to be taken:

Step1 Borrow pound sterling for 3 months. The borrowing has to be such that at the end of three months, the amount becomes £ 5, 00,000. Say, the amount borrowed is £ x. Therefore,

$$x\left[1+0.05\times\frac{3}{12}\right] = 5,00,000 \quad \text{or} \quad x = £\ 4,93,827$$

Step 2 Convert the borrowed sum into rupees at the spot rate.
This gives: £ 4, 93,827 × ₹ 56 = ₹ 27,654,312

Step3 The sum thus obtained is placed in the money market at 12 per cent to obtain at the end of 3 months:

$$S = ₹\ 27,654,312 \times \left[1+0.12\times\frac{3}{12}\right] = ₹\ 28,483,941$$

Step4 The sum of £ 5, 00,000 received from the client at the end of 3 moths is used to refund the loan taken earlier.
From the calculations it is clear that the money market operation has resulted into a net gain of ₹ 483,941 (i.e. 28,483,941 – 5, 00,000 × 56).
If pound sterling has depreciated in the meantime, the gain would be even bigger.

c) Credit rating is a very important indicator for prudence but it suffers from certain limitations. Some of the limitations are:

i) **Conflict of Interest** – The rating agency collects fees from the entity it rates leading to a conflict of interest. Since the rating market is very competitive, there is a distant possibility of such conflict entering into the rating system.

ii) **Industry Specific rather than Company Specific –**Downgrades are linked to industry rather than company performance. Agencies give importance to macro aspects and not to micro ones; overreact to existing conditions which come from optimistic / pessimistic views arising out of up / down turns. At times, value judgments are not ruled out.

iii) **Rating Changes –** Ratings given to instruments can change over a period of time. They have to be kept under constant watch. Downgrading of an instrument may not be timely enough to keep investors educated over such matters.

iv) **Corporate Governance Issues –** Special attention is paid to:
- Rating agencies getting more of their revenues from a single service or group.
- Rating agencies enjoying a dominant market position. They may engage in aggressive competitive practices by refusing to rate a collateralized / securitized instrument or compel an issuer to pay for services rendered.
- Greater transparency in the rating process viz. in the disclosure of assumptions leading to a specific public rating.

v) **Basis of Rating** – Ratings are based on 'point of time' concept rather than on 'period of time' concept and thus do not provide a dynamic assessment.

vi) **Cost Benefit Analysis –** Since rating is mandatory, it becomes essential for entities to get themselves rated without carrying out cost benefit analysis.

Section C

(Answer any one of the following)

7.

a) Mr. Tamarind intends to invest in equity shares of a company the value of which depends upon various parameters as mentioned below:

Factor	Beta	Expected value in %	Actual value in %
GNP	1.20	7.70	7.70
Inflation	1.75	5.50	7.00
Interest rate	1.30	7.75	9.00
Stock market index	1.70	10.00	12.00
Industrial production	1.00	7.00	7.50

If the risk free rate of interest be 9.25%, how much is the return of the share under Arbitrage Pricing Theory?

b) The stock research division of MMG Investment Ltd. Has developed ex-ante probability distribution for the likely economic scenarios over the next one-year and estimates the corresponding one period rates of return on stock A, Stock B and Market index as follows:

Economic Scenario	Probability	One period rate of return (%)		
		Stock A	Stock B	Market
Recession	0.15	-15	-3	-10
Low growth	0.25	10	7	13
Medium growth	0.45	25	15	18
High growth	0.15	40	25	32

The expected risk-free real rate of return and the premium for inflation are 3% and 6.5% per annum respectively.

You, as an ANALYST of MMG investment service Ltd. Are required to:

i) calculate the following for Stock A and B:
   - **a. expected return**
   - **b. Covariance of returns with the market returns.**
   - **c. Beta (a)**

ii) Recommend for fresh investment in any of these two stocks.

---------- show all the necessary calculations.

[4+12=16]

Solution:

a) Return on the stock under APT

Factor	Actual value in %	Expected value in %	Difference	Beta	Difference x Beta
GNP	7.70	7.70	0.00	1.20	0.00
Inflation	7.00	5.50	1.50	1.75	2.63
Interest rate	9.00	7.75	1.25	1.30	1.63
Stock index	12.00	10.00	2.00	1.70	3.40

Ind. Production	7.50	7.00	0.50	1.00	0.50
					8.16
Risk free rate in %					9.25
Return under APT					**17.41**

b) VCK INVESTMENT SERVICES LTD.

a)

i) Expected return on stock A [E (R_A)]. Stock B [E(R_B)] and Market [E(R_M)]:

$E(R_A) = \Sigma R_S P_S$
$= 0.15(-15) + 0.25 \times 10 + 0.45 \times 25 + 0.15 \times 40 = 17.5\%$

$E(R_B) = 0.15 \times (-3) + 0.25 \times 7 + 0.45 \times 15 + 0.15 \times 25$
$= 11.8\%$

$E(R_M) = 0.15 \times (-10) + 0.25 \times 13 + 0.45 \times 18 + 0.15 \times 32$
$= 14.65\%$

ii) Co variances:

$COV_{AM} = \Sigma [R_{As} - E(R_A)][R_{Ms} - E(R_M)]P_s$
$= 0.15\ [(15) - 17.5]\ [(10) - 14.65] + 0.25\ [10 - 17.5]\ [13 - 14.65] + 0.45\ [25 - 17.5]\ [18 - 14.65] + 0.15\ [40 - 17.5]\ [32 - 14.65]$
$= 193.13\ (\%)^2$

$COV_{BM} = 0.15\ [(-3) - 11.8]\ [(-10) - 14.65] + 0.25\ [7 - 11.8]\ [13 - 14.65] + 0.45\ [15 - 11.8]\ [18 - 14.65] + 0.15\ [25 - 11.8]\ [32 - 14.65]$
$= 95.88\ (\%)^2$

$VAR_M\ (\sigma^2_M) = 0.15\ [(-10) - 14.65]^2 + 0.25\ [13 - 14.65]^2 + 0.45\ [18 - 14.65]^2 + 0.15\ [32 - 14.65]^2 = 142.03(\%)^2$

iii) $\beta_A = [COV_{AM} / \sigma^2_M] = (193.13/142.03) = 1.36$

$\beta B = [COV_{BM} / \sigma^2_M] = 95.88 / 142.03 = 0.675 \approx 0.68$

b) For ex ante SML $R(r_i) = r_0 + r_i \beta_m$

Where, r_0 = Intercept of SML

R_1 = Slope of the SML

If the assumptions at the CAPM are correct, then

$R(r_1) = r_1 + [E(r_m) - r_f], \beta_m$

Where, r_f = risk free rate

$E(r_m) - r_f$ = Slope of SML

Given $r_f = 3.0 + 6.5 = 9.5\%$

Where, r_f = Inflation adjusted nominal risk free rate

i) $R(r_A) = 9.5 + 1.36 \times [14.65 - 9.5] = 16.50\%$

$\sigma_A = E(R_A) - R(r_A) = 17.50 - 16.50 = 1.0\%$

Hence, A is underpriced.

ii) $R(r_B) = 9.5 + 0.675 \times [14.65 - 9.5] = 12.98\%$

$\sigma_a = E(R_B) - R(r_B) = 11.80 - 12.98 = -1.18\%$

Hence, B is overpriced.

Therefore, it is recommended to invest in stock A

8. You are running a portfolio management business and have assembled the following portfolio for client A.

Scrip	Value	Beta
Infosys	₹5 lakhs	1.21
Hind. Lever	₹8 lakhs	0.97
Hind. Lever	₹5 lakhs	1.09
Reliance	₹5 lakhs	1.09
Tata Motors	₹2 lakhs	1.32

Your client insists that the portfolio should comprise the above 4 scrips alone and that each scrip should be at least 10% of the total portfolio value. You project the Sensex which is currently 4200 to move to 4500 by the end of 3 months and to 4800 by the end of 6months.

i) What will be the value of your portfolio at the end of 3 months and 6 months?
ii) What is the portfolio beta currently?
iii) What could you do to improve the portfolio performance given your view on the market?
iv) If you do take such action, what will the portfolio value be after 3 months and after 6 months?
v) What will be the portfolio beta in such a case?
vi) At the end of 6 months, you believe that the bull market would have had its run and that the Sensex will now start moving down to around 4600 levels at the end of 9 months from now. How will you again restructure the portfolio at the end of 6 months from now?

[2+2+4+2+2+4=16]

Solution:

Current Portfolio	Value (₹)	Weightage	Beta	Port. Beta
Infosys	5,00,000	25%	1.21	0.3025
Hind Lever	8,00,000	40%	0.97	0.3880
Reliance	5,00,000	25%	1.09	0.2725
Tata Motors	2,00,000	10%	1.32	0.1320
	2,00,000	100%		1.0950

End of	Senses	Senses % rise	Portfolio % rise	Port. value
Current	4,200			
3 months	4,500	7.14%	7.82%	21,56,429
6 months	4,800	14.29%	15.64%	23,12,857

The weight age of Tata Motors should be increased as it has highest beta and will outperform the Senses substantially, given the client's condition, other scrip are reduced to the minimum level of 10% weight age each in the portfolio.

Suggested Portfolio	Value (₹)	Weightage	Beta	Port. Beta
Infosys	2,00,000	10%	1.21	0.1210
Hind Lever	2,00,000	10%	0.97	0.097
Reliance	2,00,000	10%	1.09	0.1090
Tata Motors	14,00,000	70%	1.32	0.9240
	20,00,000	100%		1.2510

End of	Senses	Senses % rise	Portfolio % rise	Port. value
Current	4,200			
3 months	4,500	7.14%	8.94%	21,78,714
6 months	4,800	14.29%	17.87%	23,57,429

At the end of 6 months, if we see a bearish trend, we should maximize low beta stocks (in this case Levers), and increase it to 70% weightage as its beta is the lowest. The other stocks will be reduced to 10% each.

Section D

(Answer any one of the following)

9. Following are the estimates of the net cash flows and probability of a new project of M/s X Ltd.:

Particulars	Year	P = 0.3	P = 0.5	P = 0.2
Initial investment	**0**	**4,00,000**	**4,00,000**	**4,00,000**
Estimated net after tax cash inflows per year	**1 to 5**	**1,00,000**	**1,10,000**	**1,20,000**
Estimated salvage value (after tax)	**5**	**20,000**	**50,000**	**60,000**

Required rate of return from the project is 10%. Find:

i) The expected NPV of the project.

ii) The best case and the worst case NPVs.

iii) The probability of occurrence of the worst case if the cash flows are: (a) perfectly dependent overtime, (b) independent overtime.

iv) Standard deviation and coefficient of variation assuming that there are only three streams of cash flows, which are represented by each column of the table with the given probabilities.

v) Coefficient of variation of X Ltd. on its average project which is in the range of 0.95 to 1.0. If the coefficient of variation of the project is found to be less riskier than average, 100 basis points are deducted from the Company's cost of capital
Should the project be accepted by X Ltd.? [20]

Solution:

Initial investment (Year 0) = ₹ 4,00,000

Estimated annual net after tax cash inflows (Year 1 to 5)

= (1,00,000 × 0.3) + (1,10,000 × 0.5) + (1,20,000 × 0.2)= 30,000×55,000×24,000= ₹ 1,09,000

Estimated salvage value after tax (Year 5)

= (20,000 × 0.3) + (50,000 × 0.5) + (60,000 × 0.2) = 6,000 + 25,000 + 12,000 = ₹ 43,000

(i) Calculation of expected NPV of the project of X Ltd.

		₹
P.V. of cash inflows for 1 to 4 years (P.V. @ 10%)	(₹ 1,09,000 × 3.169)	3,45,421
P.V. of cash inflow for Year 5	[(₹ 1,09,000 + ₹ 43,000)×0.621]	94,392
		4,39,813
Less : Initial investment in Year 0		4,00,000
Expected NPV		39,813

(ii) Calculation of Best Case and Worst Case ENPVs

(a) Best Case ENPV of the project = (1,20,000 × 3.79) + (60,000 × 0.621) – 4,00,000

= (4,54,800 + 37,260) – 4,00,000 = ₹ 92,060

(b) Worst Case ENPV of the project= (1,00,000 × 3.790)+(20,000 × 0.621) – 4,00,000

= (3,79,000 + 12,240) – 4,00,000 = (-) ₹ 8,580

(iii) Required Probability of Occurrence

(a) The required probability of occurrence of the worst case if the cashflows are perfectly dependent overtime is 0.3.

(b) The required probability of occurrence of the worst case if the cashflows are independent overtime is (0.3) 5 = 0.00243

(iv) Calculation of Standard Deviation and Coefficient of Variation assuming that there are only three streams of cashflows, which are represented by each column of the table with given probabilities:

Best Case NPV

= (1,10,000 × 3.79) + (50,000 × 0.621) – 4,00,000

= (4,16,900 + 31,050) – 4,00,000 = ₹ 47,950

ENPV

= [- 8,580 × 0.30) +(47,950 × 0.5) + (92,060 × 0.20)

= (2,574) + 23,975 + 18,412 = ₹ 39,813

Standard Deviation of ENPV

$$= \sqrt{0.3(-8,580-39,813)^2+0.5(47,950-39,813)^2+0.2(92,060-39,813)^2}$$

(in ₹ lakhs)

$$= \sqrt{0.3\,(-0,09-0.40)^2+0.5\,(0,48-0.40)^2+0.2\,(0.92-0.40)^2}$$

$$= \sqrt{0.07203+0.0032+0.05408} = \sqrt{0.12931} = 0.35960 \text{ or } ₹\,35,960$$

Coefficient of Variation = ₹ 35,960 / ₹ 39,813 = 0.90

(v) Calculation of Risk Adjusted ENPV

Coefficient of Variation of industry is in the range of 0.95 to 1.0.

Coefficient of Variation of X Ltd. is 0.90.

The project is less riskier than average. Therefore, 100 basis points are deducted from the company's cost of capital.

Risk adjusted cost of capital of X Ltd. = 10% – 1% = 9%

Year	Expected net cashflow	P.V. factors @ 10%	Present values (₹)
0	(4,00,000)	1.000	(4,00,000)
1 to 4	1,09,000	3.239	3,53,051

5	1,52,000	0.650	98,800
ENPV			51,851

Advise – Since the ENPV is positive based on risk adjusted cost of capital at 9%, it is suggested to accept the project.

10.

a) Sanshali textile has annual sales of ₹200 crores. About 80% of its sales is on gredit, and the average collection period is 90 days. The company's debts, as the past trend reveals, are around 0.9% of credit sales. The company's annual cost of administering credit sales is ₹75 lakhs. It is possible to save ₹55 lakhs, out of the bad debts and sales administering costs, if the company avails of full-factor service from a factoring company. The company has approached a factoring company and got the following terms:

Advance payment : 80%
Discount Rate : 14% p.a.
Commission for service : 1.0% (to be paid upfront)

i) What will be the effective cost of factoring on an annual basis (assume 360 day in a year)?

ii) Sanshali textile can borrow the advance payment offered by the factoring company from a bank at 14% p.a. Should the company avail of the factoring service? Give reasons.

b) Briefly explain forfeiting as means of financing export receivables.

c) Explain the term Cross Border Leasing.

[8+8+4=20]

Solution:

a)

i) Credit sales = 200 x 0.8 = ₹ 160 crores.
Average receivables = (90 / 360) x 160 = ₹ 40 crores.
Factoring Cost

		₹ Crores.
Advance payment = 40 x 0.8	=	32.00
Discount = 32x0.14 (3/12)	=	(-) 1.12
Commission = 40 x 0.01	=	(-) 0.40
		30.48
Saving in adm. Cost	=	(+) 0.55
	=	31.03

Cost for a period of 3 months = 32 / 31.03 - 1 = 0.03126 or 3.126%
Annualized Cost = $(1+0.03126)^4-1$ = 0.1310 or 13.1%

ii) Bank borrowing rate of 14% is higher than the effective cost of factoring. So, the company should avail of factoring instead.

b) Forfeiting is a mechanism of financing exports.
- By discounting export receivables
- Evidence by bills of exchange or promissory notes
- Without recourse to the seller (viz exporter)
- Carrying medium to long term maturities

- On a fixed rate basis (discount)
- Upto 100 percent of the contract value.

Simply put, forfeiting is the non-recourse discounting of export receivables. In a forfeiting transaction, the exporter surrenders, without recourse to him, his rights to claim for payment on goods delivered to an importer, in return for immediate cash payment from a forfeiter. As a result, an exporter in India can convert a credit sale into a cash sale, with no recourse to the exporter or his banker.

All exports of capital goods and other goods made on medium to long term credit are eligible to be financed through forfeiting.

Receivables under a deferred payment contract for export of goods, evidenced by bills of exchange or promissory notes, can be forfeited.

Bills of exchange or promissory notes, backed by co-acceptance from a bank (which would generally be the buyer's bank), are endorsed by the exporter, without recourse, in favour of the forfeiting agency in exchange for discounted cash proceeds. The banker's co-acceptance is known as avalisation. The co-accepting bank must be acceptable to the forfeiting agency. EXIM. has been authorized by the Reserve Bank of India to facilitate export financing through forfeiting.

c) Cross-border leasing is a leasing agreement where lessor and lessee are situated in different countries. This raises significant additional issues relating to tax avoidance and tax shelters. It has been widely used in some European countries, to arbitrage the difference in the tax laws of different countries.

Cross-border leasing has been in practice as a means of financing infrastructure development in emerging nations. Cross-border leasing may have significant applications in financing infrastructure development in emerging nations - such as rail and air transport equipment, telephone and telecommunications, equipment, and assets incorporated into power generation and distribution systems and other projects that have predictable revenue streams.

A major objective of cross-border leases is to reduce the overall cost of financing through utilization by the lessor of tax depreciation allowances to reduce its taxable income. The tax savings are passed through to the lessee as a lower cost of finance. The basic prerequisites are relatively high tax rates in the lessor's country, liberal depreciation rule and either very flexible or very formalistic rules governing tax ownership.