

Answer to PTP_Final_Syllabus 2012_Dec2013_Set 2

Paper 14: Advance Financial Management

(Answer Question No.1 which is compulsory)

Total Allowed: 3hours

Full Marks: 100

1.

- a) Mr. X earns 10% on his investments in equity shares. He is considering a recently floated scheme of a Mutual Fund where the initial expenses are 6% and annual recurring expensed are expected to be 2%.how much the Mutual Fund scheme should earn to provide a return of 10% to Mr. X? [3]
- b) Write any three differences between the primary market and the secondary market.[3]
- c) On 1st April, 3 months interest rate in the US and Germany are 6.5 percent and 4.5 percent per annum respectively. The \$/DM spot rate is 0.6560. What would be the forward rate for DM for delivery on 30th June? [5]
- d) An investor is seeking the price to pay for a security, whose standard deviation is 4.00 per cent. The correlation coefficient for the security with the market is 0.8 and the market standard deviation is 2.2 per cent. The return from government securities is 5.2 per cent and from the market portfolio is 9.8 percent. The investor knows that, by calculating the required return, he can then determine the price to pay for the security. What is the required return on the security? [4]
- e) Nile Ltd. issues 12% debentures of face value ₹100 each and realized ₹90 per debenture. The debentures are redeemable after 12 years at a premium of 10%. Company is paying tax at 35%.What will be the cost of debt. [2]
- f) Tata Ltd. Has a target capital structure of 40% debt and 60% equity for one of its new subsidiaries. The yield to maturity of the company's outstanding bonds is 9% and the tax rate is 40%. The CFO has calculated the company's WACC as 9.96%. What is the company's equity cost of capital? [3]

Solution:

- a) Rate of return the fund should earn (r_2)

$$= \frac{1}{1 - \text{Initial expenses}} \times r_1 + \text{Recurring expenses} = \frac{1}{1 - 0.06} \times 0.1 + 0.02 = 0.1264 \text{ or } 12.64\%$$

- b) Difference between the primary market and the secondary market

In the primary market, securities are offered to public for subscription for the purpose of raising capital or fund. Secondary market is an equity trading avenue in which already existing/pre- issued securities are traded amongst investors. Secondary market could be

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either auction or dealer market. While stock exchange is the part of an auction market, Over-the-Counter (OTC) is a part of the dealer market.

c)

Interest Rate parity Theorem – The theorem states that in equilibrium the difference in interest rates between two countries is equal to the difference between the forward and spot rates of exchanges. The mathematical formula representing the theorem is given below:

$$\frac{i_A - i_B}{1 + i_B} = \frac{F_0 - S_0}{S_0}$$

Where,

i_A = Interest rate of US 6.5% or 0.065

i_B = Interest rate of Germany 4.5% or 0.045

F_0 = Forward rate at the end of one year

S_0 = Spot rate 1 \$ = 0.6560 DM

$$\frac{0.065 - 0.045}{1 + 0.045} = \frac{F_0 - 0.6560}{0.6560}$$

$$\frac{0.02}{1.045} = \frac{F_0 - 0.6560}{0.6560}$$

$$0.02 \times 0.6560 = (1.045 \times F_0) - (1.045 \times 0.6560)$$

$$0.01312 = 1.045 F_0 - 0.68552$$

$$1.045 F_0 = 0.68552 + 0.01312$$

$$1.045 F_0 = 0.69864$$

$$F_0 = 0.69864 / 1.045 = 0.66855$$

$$\text{Forward rate after 12 months} = 0.66855$$

Forward premium p.a.

$$= \text{Forward rate} - \text{Spot rate} = 0.66855 - 0.6560 = 0.01255$$

$$\text{Forward premium for 3 months} = 0.01255 / 4 = 0.003137$$

Forward rate for 3 months for delivery on 30th June

$$= \text{Spot rate} + 3 \text{ months forward premium} = 0.6560 + 0.003137 = 0.6591$$

Alternatively,

Particulars	USD	DM
Spot	0.6560	1.000
Interest rate p.a	6.5%	4.5%
Interest for 91 days	0.0106	0.0112
Amount after 91 days	0.6666	1.0112
∴ Forward rate (0.6666/0.6592)	0.6666	0.6592 1.0112

Alternatively,

$$\text{Forward rate} = \frac{0.6560 \times [1 + (0.065 \times \frac{91}{365})]}{1 + (0.045 \times \frac{91}{365})} = 0.6592$$

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d)

Beta Coefficient

$$\begin{aligned} &= \frac{\text{correlation coefficient between the security and the market} \times \text{Std.deviation of the security return}}{\text{Std.deviation of the market return}} \\ &= \frac{(0.8) \times (0.04)}{(0.022)} = 1.454 \end{aligned}$$

Now, required return on the security : Rate of return on risk free security + beta coefficient (required return on market portfolio - rate of return on risk free security)

$$R = R_f + \beta (R_m - R_f) = 5.2 + 1.454 (9.8 - 5.2) = 11.89\%$$

e)

$$\text{Cost of debt } K_d = \frac{12 \left(-0.35 \right) + \frac{110 - 90}{12}}{\frac{110 + 90}{2}} = \frac{7.8 + 1.67}{100} = 0.0947 \text{ or } 9.47\%$$

f)

Debt	=40%;
Equity;	=60%
r_d	=9%;
Tax rate	=40%;
WACC	= 9.96%;
r_s	=?

$$\begin{aligned} \text{WACC} &= (W_d) (r_d) (1-T) + (W_{ce}) (r_s) \\ 9.96\% &= (0.4) (9\%) (1-0.4) + (0.6)r_s \\ 9.96\% &= 2.16\% + 0.6 r_s \\ 7.8\% &= 0.6 r_s \\ r_s &= 13\% \end{aligned}$$

Section A

(Answer any two of the following)

2. On 1st April, ABC Mutual Fund issued 20 Lakh Units at ₹10 per unit. Relevant Initial Expenses involved were ₹12 Lakhs. It invested the fund so raised in Capital Market Instruments to build a Portfolio of ₹185 Lakhs. During the month of April, it disposed off some of the instruments costing ₹60 Lakhs for ₹63 Lakhs and used the proceeds in purchasing Securities for ₹56 Lakhs. Fund Management Expenses for the month of April were ₹8 Lakhs of which 10% was in arrears. In April, the fund earned Dividends amounting to ₹2 Lakhs and it distributed 80% of the realized earnings. On 30th April, the Market ' Mi of the Portfolio was ₹198 Lakhs.

Mr. Amit an Investor subscribed to 100 units on 1st April and disposed off the same at Closing NAV on 30th April. Discuss about his Annual Rate of Earning? [12]

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Solution

Receipts	₹ lakhs	Payment	₹ lakhs
To opening balance	3.00	By purchase Securities	56.00
To dividends Received	2.00	By Management expenses (8.00 less 10% payable)	7.20
To sale Proceeds of investments	63.00	By earning distributed (Note) (` 5lakhs ×80%)	4.00
		By closing Balance (Balancing figure)	0.80
Total	68.00	Total	68.00

Given the total Initial Investments is ₹185 Lakhs, out of Issue Proceeds of ₹200 Lakhs. So, the balance of ₹15 Lakhs is attributed towards to Initial Issue Expenses (₹12 Lakhs) and Opening Cash Balance (₹3 Lakhs).

Computation of Closing NAV

Particulars	₹
1. Market Value of Capital Market Instruments (Given)	198.00
2. Cash in Hand (WN 1)	0.80
Total of Assets	198.80
Liabilities: Outstanding Expenses (₹ 8 Lakhs x 10%)	0.80
Net Asset Valued Lakhs)	198.00
No. of Units Outstanding (In Lakhs)	20.00
NAV Per unit = $\frac{\text{Net Asset of the scheme}}{\text{Number of units outstanding}} = \frac{198.00}{20.00} = ₹ 9.90$	9.90

Computation of Annual Rate of Earning

- i) Realized Dividend and Capital Gains = ₹4Lakhs ÷ 20lakh units = 0.20
- ii) Return = $\frac{D_1 + CG_1 + (NAV_1 - NAV_0)}{NAV_0} \times 100 = \frac{0.20 + (9.90 - 10.00)}{10.00} \times 100 = 1\% \text{ p.m}$
- iii) Annual Return = Monthly Return × 12 = 1 × 12 = 12.00% p.a.

3.

- a) Explain the responsibilities of the NBFCs accepting public deposits with regard to submission of returns and other information to RBI.
- b) Explain the function of Forward market commission of India.

[6+6=12]

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Solution:

- a) The NBFCs accepting public deposits should furnish to RBI
- i) Audited balance sheet of each financial year and an audited profit and loss account in respect of that year as passed in the annual general meeting together with a copy of the report of the Board of Directors and a copy of the report and the notes on accounts furnished by its Auditors;
 - ii) Statutory Quarterly Return on deposits - NBS 1;
 - iii) Certificate from the Auditors that the company is in a position to repay the deposits as and when the claims arise;
 - iv) Quarterly Return on prudential norms-NBS 2;
 - v) Quarterly Return on liquid assets-NBS 3;
 - vi) Annual return of critical parameters by a rejected company holding public deposits – NBS 4
 - vii) Half-yearly ALM Returns by companies having public deposits of ` 20 crores and above or asset size of ` 100 crores and above irrespective of the size of deposits holding
 - viii) Monthly return on exposure to capital market by deposit taking NBFC with total assets of ` 100 crores and above–NBS 6; and
 - ix) A copy of the Credit Rating obtained once a year
- b) Function of Forward market commission of India are as follows:
- i) To advice the Central Government in respect of the recognition or withdrawal of recognition from any association. It also advises government about any other matter arising out of the administration of this act.
 - ii) Second function of the act includes the task of keeping forward market s under observation and take necessary actions. The actions taken should be according to powers given to the commission by the “Forward Contract Regulation Act”.
 - iii) To collect information regarding the trading conditions in respect of goods (to which any of the provisions of this Act is made applicable) including information regarding supply, demand and prices. And publish information whenever the Commission thinks it necessary, It also performs the task of submitting to the Central Government periodical reports on the operation of this Act and on the working of forward markets relating to such goods.
 - iv) To make recommendations generally with a view to improving the organization and working of forward markets
 - v) To undertake the inspection of the accounts and other documents of [any recognized association or registered association or any member of such association] whenever it considers it necessary.
 - vi) To perform such specified duties and exercise assigned powers by the “Forward Contract Regulation Act”.
- 4.
- a) **State the problems in the working of state cooperative Banks.**
- b) **A mutual fund made an issue of 10, 00,000 units of ₹10 each on January 01, 2012. No entry load was charged. It made the following investments:**

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50,000 Equity shares of ₹100 each @ ₹160 7% Government securities 9% Debenture (unlisted) 10% Debentures (listed)	₹80,00,000 ₹8,00,000 ₹5,00,000 ₹5,00,000
	₹98,00,000

[6+6=12]

Solution:

a) The State Cooperative Banks do suffer from the following problems:-

- i) **Poor deposits mobilization:** These banks have not been successful in raising deposits as, even now, individual deposits from less than 25 per cent in many States.
- ii) **Undesirable investment of funds:** These banks are not followed the guide of RBI about the matter of investment of fund. Despite the advice of the RBI, a cautious policy is not being followed in the matter of investment of the funds which agriculture even now utilized for the purchase of shares in other cooperative institutions; or in making huge advances to the primary cooperative societies; and by way of loans to individuals.
- iii) **Failure to assess genuineness of borrowing:** The banks have failed in assessing the genuineness of the borrowings of the Central Cooperative Banks. This is evidenced from the fact that the credit limits of such banks had been fixed on the basis of their owned funds without taking into account their past performance; and the bank's own financial position.
- iv) **Ineffective supervision and inspection:** Many of the Banks have not taken up this work in right way. Some of the banks have neither adequate nor separate staff for this work. Officers of these banks sometimes pay only ad-hoc and hurried visits.
- v) **Book adjustment:** Book adjustments are often made regarding repayment of loans. The State Cooperative Banks have failed to check the fictitious transactions of the Central cooperative Banks.
- vi) **Increasing over dues:** The over dues of the Banks have been showing a rising trend. This is due to the fact that these banks have not followed the prescribed loaning procedure.
- vii) They utilize their reserve funds as working capital.

b) Calculation of net cash balance at the end

	₹
Cash balance in the beginning (100 lakhs – 98 lakhs)	2,00,000
Dividend received	12,00,000
Interest on 7% Govt. securities	56,000
Interest on 9% Debentures	45,000
Interest on 10% Debentures	50,000
	15,51,000
Less: Operating expenses	5,00,000
Net cash balance at the end	10,51,000

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Calculation of NAV

	₹
Cash balance	10,51,000
7% Govt. securities (at par)	8,00,000
50,000 equity shares @ ₹ 175 each	87,50,000
9% Debentures (unlisted) at cost	5,00,000
10% Debentures @ 90%	4,50,000
Total assets (a)	1,15,51,000
No of units (b)	10,00,000
NAV per unit (a)/(b)	₹ 11.55

Calculation of NAV, if dividend of ₹ 0.80 is paid

Net assets (₹ 1,15,51,000 – ₹ 8,00,000)	₹ 1,07,51,000
No. of Units	10,00,000
NAV per unit	₹ 10.75

Section – B (Answer any one of the following)

5.

- a) Pepsi LTD. Exports edible oils to Middle- East and African countries. In June the company exported an consignment worth \$5 million to Zambia. The payment for the same is expected to realize during the month of September. The company has entered into an option forward contract for delivery of \$5 million over the month of September. The market quotes on June 30 at the time of entering into the contract were as follows:

June 30, Spot	₹ / \$	47.05/08
Forward	1 month	23/25 paise
	2 month	47/49 paise
	3 month	70/72 paise

On September '2012, the company approached the bank for extension of the contract by another two months that is for delivery during the month of November.

The market quotes on September '2012 were as follows:

Spot	₹ / \$	47.58/60
Forward	1 month	18/20 paise
	2 month	37/39 paise
	3 month	55/57 paise

On November '2012, the company approached the bank to cancel the forward contract. The exchange rates as on November '2012 were as follows:

Spot	₹ / \$	47.97/99
Forward	1 month	16/18 paise
	2 month	33/35 paise

You are required to calculate:

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- (i) The forward rate to be quoted on June 30.
- (ii) The exchange rate to be quoted by the bank on September '2012 for the extension of the contract.
- (iii) The amount of cash flows due to extension of the contract.
- (iv) The exchange rate at which the forward contract to be cancelled on November; 2012.
- (v) The amount of cash flows due to cancellation of the contract.
(Ignore FEDAI margin for merchant quotes.)

b) Considering the following quotes

Spot (Euro/Pound) = 1.6543/1.6557

Spot (Pound/NZ\$) = 0.27860/0.2800

- i) Calculate the % spread on the Euro/Pound Rate
- ii) Calculate the % spread on the Pound/NZ\$ Rate
- iii) The maximum possible % spread on the cross rate between the Euro and the NZ\$.

c) Can it be said that "Derivatives are complex and exotic instruments that Indian investors will have difficulty in understanding"?

[10+5+5=20]

Solution:

a)

VEDIKA LTD. (V.T. LTD.)

- i) The company obtained a forward cover for its receivable of US \$5 million on June 30, for delivery in September.

The Forward rate to be quoted is:	₹47.05
Add: 2 months premium since	₹ 0.47
The Dollar is at premium	₹47.52

- ii) The exchange rate to be quoted on September for delivery November is ₹ (47.58 + 0.37): ₹47.95.
- iii) On September 01, the company approach for extension by 3 month. The request of the company is considered by canceling at one month forward selling rate, that is ₹ 47.80 (47.60 + .20).

The amount of cash Flow due to extension of the Contract is as follows:

Bank buys Dollars under original contract at:	₹ 47.52
Bank sells under cancellation at :	₹ 47.80
Difference payable by the part is per \$	₹ 0.28

Amount of CASH FLOW due to extension of the contract is:

₹ 0.28 x 5000000 = ₹14.00 lakh.

- iv) The Company approached for cancellation on November; 01 which means only cancellation by one month. The contract would be cancelled at one month forward selling rate prevailing on the date of cancellation.
That is ₹47.99 + premium ₹0.18 = ₹48.17

- v) The amount of CASH FLOW due to cancellation of Forward Contract is as follows:

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Bank buys under original contract at	₹47.95
Bank Sells on cancellation:	₹48.17
Amount payable by the company is Per \$	₹0.22

Total cash flow due to cancellation is ₹11.00 lakhs.
(5000000 x 0.22)

- b) (i) The % spread on Euro/Pound = $\frac{1.6557 - 1.6543}{1.6543} \times 100 = 0.085\%$
- (ii) % Spread on the pound/NZ \$ = $\frac{0.2800 - 0.2786}{0.2786} \times 100 = 0.50\%$
- (iii) The maximum possible % spread on the cross rate between € & NZ \$
To find out cross rate first
Given Spot (EURO/Pound) = 1.6543/1.6557
Spot (Pound / NZ\$) = 0.2786/0.2800
Spot (Euro/NZ\$) = 0.2786 x 1.6543 / 0.2800 x 1.6557
= 0.4609/0.4636
- The maximum % spread on Euro/NZ\$ = $\frac{0.4636 - 0.4609}{0.4609} \times 100 = 0.59\%$

- c) Trading in standard derivatives such as forwards, futures and options is already prevalent in India and has a long history. Reserve Bank of India allows forward trading in Rupee-Dollar forward contracts, which has become a liquid market. RBI also allows Cross-Currency options trading.
- Forward Market Commission has allowed trading in Commodity Forwards on Commodities Exchanges which are Called Futures in International markets. Commodities futures in India are available in turmeric, black pepper, coffee, Gur (jaggery) hessian, Castor seed oil etc. There are plans to set up commodities futures Exchanges in soya bean oil as also in cotton. International markets have also been allowed (dollar denominated contracts) in certain commodities. RBI also allows the users to hedge their portfolios through derivatives exchanges abroad.
- Derivatives in Commodities markets have a long history. The first commodity futures exchange was set up in 1875 in Mumbai under the aegis of Mumbai Cotton Traders Association (Dr. A. S. Naik 1968, Chairman, Forward Market Commission, India 1963-68). History and existence of markets along with setting up of new markets prove that the concept of Derivatives is not alien in India. In commodity markets there is no resistance from the users or market participants to trade in commodity futures or foreign exchange markets. Government of India has also been facilitating the setting up and operations of these markets in India by providing approvals and defining appropriate regulatory frameworks for their operations.
- This amply proves that the Concept of options and futures has been well ingrained in the Indian equities market for a longtime and is not alien as it is made out to be. Even to-day complex strategies of options are being traded in many exchanges which are called teji-mandi, Jotaphatak, bhav-bhav at different places in India (vohra and Bagari 1998). In

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that sense, the derivatives are not new to India and are also currently prevalent in various markets including equities markets.

6.

- a) The equity share of VCC Ltd. is quoted at ₹210. A 3-month call option is available at a premium of ₹6 per share and a 3-month put option is available at a premium of ₹5 per share. Ascertain the net pay offs to the option holder of a call option and a put option.
- i) The strike price in both cases is ₹220, and
 - ii) The share price on the exercise day is ₹ 200, 210, 220, 230, and 240.

Also indicate the price range at which the call and the put options may be gainfully exercised.

- b) Does interest rate parity imply that interest rates are the same in all countries? Also explain why purchasing power parity might fail to hold.
- c) An Indian exporter has sold handicrafts items to an American business house. The exporter will be receiving US\$ 1, 00,000 in 90 days. Premium for a dollar put option with a strike price of ₹48 and a 90 days settlement is ₹1. The exporter anticipates the spot rate after 90 days to be ₹46.50.
- i) Should the exporter hedge its account receivable in the option market?
 - ii) If the exporter is anticipating the spot rate to be ₹47.50 or ₹48.50 after 90 days, how would it effect the exporter's decision?

[10+5+5=20]

Solution:

a)

Net pay-off for the holder of the call option					(Rs.)
Strike price on exercise day	200	210	220	230	240
Option exercise	No	No	No	Yes	Yes
Outflow (Strike price)	Nil	Nil	Nil	220	220
Outflow (premium)	6	6	6	6	6
Total outflow	6	6	6	226	226
Less: Inflow (sales proceeds)	--	--	--	230	240
Net pay off	- 6	- 6	- 6	4	14

Net pay-off for the holder of the put option					(Rs.)
Strike price on exercise day	200	210	220	230	240
Option exercise	Yes	Yes	No	No	No
Inflow (Strike price)	220	220	Nil	Nil	Nil
Less: Outflow (purchase price)	200	210	--	--	--
Less: Outflow (premium)	5	5	5	5	5
Net pay off	15	5	- 5	- 5	- 5

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Analysis – The loss of the option holder is restricted to the amount of premium paid. The profit (positive pay off) depends on the difference between the strike price and the share price on the exercise day.

- b) No, interest rate parity implies that an investment in the U.S. with the same risk as a similar investment in a foreign country should have the same return. Interest rate parity is expressed as:

$$\frac{\text{Forward Rate}}{\text{Spot Rate}} = \frac{1 + (\text{Interest Rate in Home Country})}{1 + (\text{Interest Rate in Foreign Country})}$$

Interest rate parity shows why a particular currency might be at a forward premium or discount. A currency is at a forward premium whenever domestic interest rates are higher than foreign interest rates. Discounts prevail if domestic interest rates are lower than foreign interest rates. If these conditions do not hold, then arbitrage will soon force interest rates back to parity.

Purchasing power parity assumes there are neither transaction costs nor regulations which limit the ability to buy and sell goods across different countries. In many cases, these assumptions are incorrect which explains why PPP is often violated. An additional complication, when empirically testing to see whether PPP holds, is that products in different countries are rarely identical. Frequently, there are real or perceived differences in quantity, which can lead to price difference in different countries.

- c) The Indian exporter will be buying a put option on the US \$ to hedge against depreciation in the US \$.

For Settlement price of Rs.46.50/US \$

Option	PUT
Strike	Rs.48/US \$
Premium	1/US \$
Settlement (Expiration) Rate	46.50

Benefit from put option:

$$= \text{Max} [(\text{Strike rate} - \text{Expiration rate}), 0] - \text{Premium.}$$

$$= \text{Max} [\text{Rs.48/US \$} - \text{Rs.46.50/US \$}], 0] - \text{re } 1/\text{US \$} = \text{Rs.0.50/US \$}$$

As there is benefit in owning the put, so the exporter should hedge using the put option.

Here, if exporter remains unhedged, it will receive Rs.4650000 [Rs.46.50/US \$ X US \$ 100000]. But with hedging, using put option, the exporter receives at the end 90 days. Rs.4700000 [Rs.48/US \$ X US \$ 100000 – Re.1/US \$ X US \$ 100000]

For settlement price of Rs.47.50/US \$:

$$\text{Benefit from put option} = \text{Max} [(\text{Rs.48/US \$} - \text{Rs.47.50/US \$}), 0] - \text{Re } 1/\text{US \$} = (\text{Rs.50/US \$}) \text{ (Negative)}$$

For settlement price of Rs.48.50/US \$:

$$\begin{aligned} \text{Benefit from Put option} &= \text{Max} [(\text{Rs.48/US \$} - \text{Rs.48.50/US \$}), 0] - \text{Re } 1/\text{US \$} \\ &= 0 - \text{Re } 1/\text{US \$} = (\text{Re } 1/\text{US \$}) \text{ (Negative)}. \end{aligned}$$

So, for anticipated of Rs. 47.50/US \$ or Rs.48.50/US \$, the exporter will not be hedging through a put option as that does not have positive benefit.

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Section C

(Answer any one of the following)

7. Ms Mitrika an analyst at Ashika Securities Ltd. is considering the stocks of Spark Ltd. And Global Ltd. For investment. Expected returns on these stocks depend on the growth rate GDP. The conditional returns of the market and the stocks are given below:

Economic Scenario GDP growth rate	Probability	Return on (%)		Return on market %
		Spark Ltd.	Global Ltd.	
1.0 - 3.0%	0.18	15	9	7
3.00 - 6.00%	0.24	25	14	11
6.00 – 8.00%	0.26	38	27	18
More than 8.00%	0.32	46	33	25

The expected risk-free return is 6.5%

Assume that CAPM holds good in the market

You are required to

- i) Calculate the ex-ante-betas for the two stocks.
- ii) Find out whether the stocks of Sparks Ltd. And Global Ltd. Are underpriced or overpriced.
- iii) Calculate the proportion of systematic risk and unsystematic risk for both the companies.
- iv) Determine which stock the analyst would suggest to invest. [16]

Solution:

- i) Expected return on stock and variance of spark Ltd.
 $E(R_s) = 0.18 \times 15 + 0.24 \times 25 + 0.26 \times 38 + 0.32 \times 46 = 33.3\%$

$$\begin{aligned} \sigma^2_s \text{ (Variance): } & 0.18 \times (15 - 33.3)^2 + 0.24 \times (25 - 33.3)^2 \\ & 0.26 \times (38 - 33.3)^2 + 0.32 \times (46 - 33.)^2 \\ & = 60.28 + 16.53 + 5.74 + 51.62 = 134.17\% \end{aligned}$$

Expected return on stock and Variance of Global Ltd:

$$E(R_G) = 0.18 \times 9 + 0.24 \times 14 + 0.26 \times 27 + 0.32 \times 33 = 22.56\%$$

$$\begin{aligned} \sigma^2_G \text{ (Variance) : } & 0.18 \times (9 - 22.56)^2 + 0.24 \times (14 - 22.56)^2 + 0.26 \times (27 - 22.56)^2 + 0.32 \times \\ & (33 - 22.56)^2 \\ & = 33.10 + 17.58 + 5.13 + 34.88 = 90.69\% \end{aligned}$$

Expected return and variance on Market:

$$E(R_M) = 0.18 \times 7 + 0.24 \times 11 + 0.26 \times 18 + 0.32 \times 25 = 16.58\%$$

$$\begin{aligned} \sigma^2_m \text{ (Variance): } & 0.18 \times (7 - 16.58)^2 + 0.24 \times (11 - 16.58)^2 + 0.26 \times (18 - 16.58)^2 + 0.32 \times \\ & (25 - 16.58)^2 = 47.20\% \end{aligned}$$

$$\begin{aligned} \text{COVSM} &= 0.18 (15 - 33.3) (7 - 16.58) + 0.24 \times (25 - 33.3) (11 - 16.58) + 0.26 (38 - 33.3) \\ & (18 - 16.58) + 0.32 (46 - 33.3) (25 - 16.58) = 78.63\% \end{aligned}$$

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$$\text{CovGM} = 0.18 (9 - 22.56) (7 - 16.58) + 0.24 (14 - 22.5) (11 - 16.58) + 0.26 (27 - 22.56) (18 - 16.58) + 0.32 (33 - 22.56) (25 - 16.58) = 64.61\%$$

Betas:

$$\beta_S = \text{COVSM} / \sigma^2_M = 78.63 / 47.20 = 1.67$$

$$\beta_G = \text{COVSM} / \sigma^2_M = 64.61 / 47.20 = 1.37$$

ii) Normal return = $R_f + \beta (R_m - R_f)$

Spark Ltd. : $6.5 + 1.67 (16.58 - 6.5) = 23.33\%$

Alpha / Excess return = $33.3 - 23.33 = 9.97\%$

Global Ltd.: $6.5 + 1.37 (16.58 - 6.50) = 20.31\%$

Excess return / Alpha = $22.56 - 20.31 = 2.25\%$

The alpha i.e., excess return of both the companies is positive. Hence the stock of Spark Ltd and Global Ltd is under priced.

iii) Systematic Risk = $\beta^2 \times \sigma^2_M$

Unsystematic Risk = Total Risk – Systematic Risk

Spark Ltd:

Systematic Risk = $(1.67)^2 \times 47.20 = 131.64\%$

Unsystematic Risk = $134.17 - 131.64 = 2.53\%$

Proportion of Systematic Risk = $(131.64/134.17) \times 100 = 98.11\%$

Proportion of Unsystematic Risk = $(2.53/134.17) = 1.89\%$

Global Ltd:

Systematic Risk = $(1.37)^2 \times 47.20 = 88.59\%$

Unsystematic Risk = $90.69 - 88.59 = 2.10\%$

Proportion of Systematic Risk = $88.59/90.69 = 97.68\%$

Proportion of Unsystematic Risk = $2.10/90.69 = 2.32\%$

iv) Spark Ltd:

Excess return / stander deviation:

$$= 9.97 / \sqrt{134.17} = 9.97/11.58 = 0.86$$

Global Ltd:

Excess return / stander deviation:

$$= 2.25 / \sqrt{90.69} = 2.25/9.52 = 0.24$$

As the excess return / Alpha to Standard deviation is higher for the stock of Spark Ltd., the analyst should suggest to invest on the stock of Spark Ltd.

8.

a) Compute Return under CAPM and the Average Return of the Portfolio from the following information:

Investment	Initial Price	Dividends	Market Price at the end of the year	Beta	Risk Factor
A. Cement Ltd	25	2	50	0.80	
Steel Ltd	35	2	60	0.70	
Liquor Ltd	45	2	135	0.50	
B. govt. of Indian Bonds	1,000	140	1005	0.99	

Risk Free Return=14%.

Answer to PTP_Final_Syllabus 2012_Dec2013_Set 2

- b) X Ltd has an expected return of 22% and standard deviation of 40%. B Ltd. has an expected return of 24% and standard deviation of 38%. A Ltd. Has a beta of 0.86 and b Ltd. A beta of 1.24. the correlation coefficient between the return of A Ltd. And B Ltd. Is 0.72. The standard deviation of the market return is 20%. Suggest:
- i) Is investing in B Ltd. Better than investing in A Ltd.?
 - ii) If you invest 30% in B Ltd. And 70% in A Ltd., what is your expected rate of return and portfolio standard deviation?
 - iii) What is the market portfolios expected rate of return and how much is the risk-free rate?
 - iv) What is the beta of portfolio if A Ltd.'s weight is 70% and B Ltd.'s weight is 30%?
- [8+8=16]**

Solution:

a)

1. Computation of Expected Return and Average Return

Securities	Cost	Dividend	Capital Gain	Expected Return= $R_f + \beta(R_m - R_f)$
Cement Limited	25	2	(50-25)=25	$[14 + 0.80 \times (26.33 - 14)] = 23.86\%$
Steel Limited	35	2	(60-35)=25	$[14 + 0.70 \times (26.33 - 14)] = 22.63\%$
Liquor Limited	45	2	(135-45)=90	$[14 + 0.50 \times (26.33 - 14)] = 20.17\%$
GOI Bonds	1,000	140	(1,005-1,000)=5	$[14 + 0.90 \times (26.33 - 14)] = 26.21\%$
Total	1,105	146	145	

Notes:

Return on Market Portfolio: Expected Return on Market Portfolio (R_m)

$$= \frac{\text{Dividends} + \text{Capital Gains}}{\text{Cost of the total Investment}} = \frac{146 + 145}{1,105 \times 100} = 26.33\%$$

Note: in the absence of return of a market Portfolio, it is assumed that portfolio containing one unit of the four securities listed above would result in a completely diversified portfolio, and therefore represent the Market Portfolio.

2. Portfolio's Expected Return based on CAPM:

- i) If the portfolio contains the above securities in equal proportion in terms of value-
Expected Return = $(23.86\% + 22.63\% + 20.17\% + 26.21\%) \div 4 = 23.22\%$

- ii) If the Portfolio contains one unit of the above securities, then-

Securities	Cost	Expected Return	Product
Cement Limited	25	23.86%	$25 \times 23.86 = 596.25$
Steel Limited	35	22.63%	$35 \times 22.63 = 792.05$
Liquor Limited	45	20.17	$45 \times 20.17 = 907.65$
GOI Bonds	1,000	26.21	$1,000 \times 26.21 = 26,210$
Total	1,105		28,505.95
		Weighted Return	$\frac{28,505.95}{1,105} = 25.79\%$

Therefore, Expected Return from Portfolio (based on CAPM) = 25.79%

b)

- i) Expected return of B Ltd. is 24% as compared to 22% of A Ltd.
Standard deviation of B Ltd. is 24% as compared to 40% of A Ltd.

Answer to PTP_Final_Syllabus 2012_Dec2013_Set 2

In view of the above, A Ltd. has lower return and carried higher risk as compared to B Ltd. Hence, investing in B Ltd. is better than investing in A Ltd. but investing in both A Ltd. and B Ltd. will cause to yield the advantage due to diversification of portfolio.

$$\begin{aligned} \text{ii) } R_{AB} &= (0.22 \times 0.7) + (0.24 \times 0.3) = 22.6\% \\ \sigma_{AB} &= (0.40^2 \times 0.7^2) + (0.38^2 \times 0.3^2) + (2 \times 0.7 \times 0.3 \times 0.72 \times 0.40 \times 0.38) \\ &= (0.16 \times 0.49) + (0.1444 \times 0.09) + 0.0459648 = 0.078 + 0.0112996 + 0.0459648 \\ &= 0.1374 \end{aligned}$$

$$\sigma_{AB} = \sqrt{\sigma_{AB}^2} = \sqrt{0.1374} = 0.37 \text{ or } 37\%$$

iii) The risk-free rate will be the same for A and B Ltd. Their rates of return are given as follows:

$$\begin{array}{llll} R_A &= 22 &= R_f + (R_m - R_f) 0.86 & \\ R_B &= 24 &= R_f + (R_m - R_f) 1.24 & \\ R_A - R_B &= -2 &= (R_m - R_f) (-0.38) & \therefore R_m - R_f = -2/-0.38 = 5.26\% \\ R_A &= 22 &= R_f + (5.6) 0.86 & \therefore R_f = 17.5\% \\ R_B &= 24 &= R_f + (5.26) 1.24 & \therefore R_f = 17.5\% \\ R_m - 17.5 &= 5.26 & \therefore R_m = 22.76\% & \end{array}$$

$$\text{iv) } \beta_{AB} = (\beta_A \times W_A) + (\beta_B \times W_B) = (0.86 \times 0.7) + (1.24 \times 0.3) = 0.974$$

Section D

(Answer any one of the following)

9.

a) The following information has been extracted from the Balance Sheet of ABC Ltd. as on 31st December—

Component of capital	of	Equity Share	12% Debentures	18% Term Loan	Total
Amount	Rs. In	400	400	1200	2000
Lakhs					

- i) Determine the WACC of the Company. It had been paying dividends at a consistent rate of 20% per annum.
- ii) What difference will it make if the current price of the Rs.100 share is Rs.160?
- iii) Determine the effect of Income Tax on WACC under both the above situations. (Tax Rate = 40%).

b) "The concept of capital Budgeting arises in scenarios of uncertainty in cash flows" Explain it.

[15+5=20]

Solution:

a)

1. Computation of WACC (based on Book Value Proportions and ignoring Tax)

Component(a)	Proportion(b)	Individual Cost (c)	Wacc (d) = (b) × (c)
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Answer to PTP_Final_Syllabus 2012_Dec2013_Set 2

Equity Share Capital	4/20	Ke=20% (Dividend Approach)	4.00%
12% Debentures	4/20	Kd= 12%	2.40%
18% Term Loan	12/20	Kd= 18%	10.80%
WACC = K_o =			17.20%

Note: i) Ke = Dividend per Share **Equa** Market Price per share = ₹20.

ii) Book Value Proportions have been considered in Column (b) above.

2. (a) Computation of WACC (based on Book Value Proportions and ignoring tax)

Component (a)	Proportion (b)	Individual Cost (c)	WACC (d) = (b)×(c)
Equity Share Capital	4/20	Ke = 20÷160 = 12.50%	3.57%
12% Debentures	4/20	Kd = 12%	2.40%
18% Term Loan	12/20	Kd = 18%	10.80%
Total ₹ 2,240 Lakhs		WACC = K₀ =	15.70%

(b) Computation of WACC (based on Market Value Proportions and ignoring tax)

Component (a)	Proportion (b)	Individual Cost (c)	WACC (d) = (b) ×(c)
Equity Capital ₹ 640 Lakhs	64/224	Ke=20÷160=12.50%	3.57%
12% Debentures ₹ 400 Lakhs	40/224	Kd = 12%	2.14%
18% Term Loan ₹ 1,200 Lakhs	120/224	Kd = 18%	9.64%
Total ₹ 2,240 Lakhs		WACC = K₀ =	15.35%

3. Effect of Tax Rate of 35% on WACC

(a) Computation of WACC with tax (Situation 1 above based on Book Value Proportions)

Component (a)	Proportion (b)	Individual Cost (c)	WACC (d)=(b)×(c)
Equity Share Capital	4/20	Ke = 20%	4.00%
12% Debentures	4/20	Kd = 12%×60% = 7.20%	1.44%
18% Term Loan	12/20	Kd = 18%×60% = 10.80%	6.48%
WACC = K₀ =			11.92%

The WACC has reduced from **17.20%** to **11.92%**, due to tax saving effect.

(b) Computation of WACC with tax (Situation 2 (a) above based on Book Value Proportions)

Component (a)	Proportion (b)	Individual Cost (c)	WACC (d)=(b)×(c)
Equity Share Capital	4/20	Ke = 20 ÷160 = 12.50%	2.50%
12% Debentures	4/20	Kd = 12%×60% = 7.20%	1.44%

Answer to PTP_Final_Syllabus 2012_Dec2013_Set 2

18% Term Loan	12/20	Kd = 18%×60% = 10.80%	6.48%
WACC = K0 =			10.42%3

The WACC has reduced from **15.70%** to **10.42**, due to tax saving effect.

(c) Computation of WACC with tax (Situation 2(b) above based on Book Value Proportions)

Component (a)	Proportion (b)	Individual Cost (c)	WACC (d) = (b)×(c)
Equity Capital ₹ 640 Lakhs	64/224	Ke = 20÷160 = 12.50%	3.57%
12% Debentures ₹ 400 Lakhs	40/224	Kd = 12%×60% = 7.20%	1.29%
18% Term Loan ₹ 1,200 Lakhs	120/224	Kd = 18%×60% = 10.80%	5.780%
Total ₹ 2,240 Lakhs			WACC = K0 = 10.64%

The WACC has reduced from **15.35%** to **10.64%**, due to tax saving effect.

- b)** Option is right to do an activity, which does not carry any obligation to do the same. Options in Capital Budgeting refers to those rights or choices purchased, whereby, the Firm can choose whether or not to exercise the option depending upon the outcomes till that point.

Value of Option = NPV with Option Less NPV without Option

[Note: Generally, the price of the option would be available, and the requirement would be to ascertain the project worth by considering the value of option as an alternative cash flow.]

Circumstances

- i) The concept of Options in Capital Budgeting arises in scenarios of uncertainty in cash flows. Since Capital Budgeting involves huge capital outlay and generally the decision is not reversible, negative effect of uncertainty can cripple an organisation.
- ii) Generally, the viability or otherwise of a project will be known only after a certain point in time. Only at that time a clearer picture will emerge, putting at rest to major portion of uncertainty. However, waiting for that clearer picture may also result in losing an opportunity.

Examples:

1. Option to Expand: An important option is to expand production if conditions turn favourable and to contract production if conditions turn bad. The former is sometimes called a growth option, and the latter may actually involve the shutdown of production.
2. Option to Abandon: If a project has abandonment value, selling off the project on "as is where is" basis. This represents a put option (i.e. right to sell). Example: A Flat Promoter may dispose of his unfinished building to an Industrial House or another Flat Promoter, instead of proceeding further to sell it as individual units.

Answer to PTP_Final_Syllabus 2012_Dec2013_Set 2

3. Option to Postpone: The option to postpone, also known as an investment timing option. For some projects there is the option to wait, thereby obtaining new information.

10.

- a) Red Ltd is considering a project with the following cash Flows (in ₹)

Years	Cost of Plant	Recurring Cost	Savings
0	10,000		
1		4,000	12,000
2		5,000	14,000

The Cost of Capital is 9%. Measure the Sensitivity of the project to changes in the Levels of plant Value, Running Cost and Savings (considering each factor at a time) such that NPV becomes Zero. The P.V. Factor at 9% are as under:

Year	0	1	2
Factor	1	0.917	0.842

Which factor is the most sensitive to affect the acceptability of the project?

- b) Write short note any two
- i) Various types of Margins
 - ii) Rolling Settlement
 - iii) Global financial System (GFS)

[10+5+5=20]

Solution:

a)

1. Computation of Existing NPV:

S.N.	Particulars	Cash Flows	Year	PVF @ 9%	Disc. CF
1.	Net Savings	(Recurring Cost –Savings)			
	(a) Year 1	8,000	1	0.917	7,336
	(b) Year 2	9,000	2	0.842	7,578
2.	PV of Inflows				14,914
3.	Less: cost of Plant				(10,000)
4.	Net present Value (NPV)				4,914

2. Sensitivity of cost of Plant

Particulars	Amount (Rs.)
(a) Target Cost of Plant (for NPV = 0)	14,914
(b) Existing Cost	10,000
(c) Change = (a) – (b)	4,914
(d) Sensitivity = (c) ÷ (b)	49.14%

3. Sensitivity of Recurring cost

Particulars	Amount (Rs.)
(a) Existing Present Value of Recurring Cost = (4,000 x 0.917) + (5,000 x 0.842)	7,878
(b) Target Recurring Cost = 7,878 + 4,914	12,792

Answer to PTP_Final_Syllabus 2012_Dec2013_Set 2

(c) Change = (a) – (b)	4,914
(d) Sensitivity = (c) ÷ (a)	62.38%

4. Sensitivity of Savings

Particulars	Amount (Rs.)
(a) Existing PV of Savings = $(12,000 \times 0.917) + (14,000 \times 0.842)$	22,792
(b) Target Savings = (a) – 4,914	17878
(c) Change = (a) – (b)	4,914
(d) Sensitivity = (c) ÷ (a)	21.56%

Conclusion: Hence NPV is most sensitivity to Changes in Savings.

b)

i) Various types of Margins:

Margins (normally in form of cash or T-Bills) are amounts to be maintained by the Members of the Stock Exchange with the Clearing House. Margins can be categorized into the following types-

- i) Initial Margins on Securities: It is paid by purchasers and short sellers, and generally functions as a security for loan. It is similar to a down payment required for the purchase of a security.
- ii) Initial Margins on Derivatives: It refers to funds paid as guarantee to ensure that the party to the transaction will perform its obligation under the contract. Initial Margin on Derivatives is aimed to cover future changes that may occur in the value.
- iii) Maintenance Margins: It refers to the value over and above the Initial Margin, which must be maintained in a margin account at all times after the initial margin requirement, if any, is satisfied.
- iv) Variation Margin: It refers to funds that are required to be deposited in, or paid out of, a margin account that reflects changes in the value of the relevant instrument.

ii) Rolling Settlement :

- A. Settlement: settlement refers to the process in which traders who have made purchases make payments while those who have sold shares, deliver them. The stock exchange ensures that Buyers receive their shares and the Sellers receive payment for the same. The process of settlement is managed by Stock Exchanges through Clearing House/ Clearing Corporations.
- B. Rolling Settlement: A Rolling Settlement is the settlement cycle of the Stock Exchange, where all trades outstanding at the end of the day have to be settled, i.e. the buyer has to make payments for securities purchased and seller has to deliver the securities sold.
- C. T+X Days: Settlement is generally specified as 'T+X' day/s where X= number of business days from the date of the transactions. In case of T+ 1 Settlement, transactions entered on a day should be settled within the next working day. In case of T+2 Settlement; settlement should be made within 2 working days from the date of transaction.
- D. Advantages:
 - i) Liquidity: investors benefit from the increased liquidity because of payout. i.e. settlement of money for sale of stocks made by Investors is quicker than in weekly settlements.
 - ii) Separation of Cash and Forward Markets: the Rolling Settlement System helps to keep cash and forward market separate.

- iii) Safety: In case of Rolling Settlements, there is a higher degree of safety because the settlement is made on a day-to-day basis, and hence fluctuations can be taken care of (favourable as well as adverse.)
- iv) Electronic Trading: Rolling Settlement requires electronic transfers of funds and demats facilities in respect of securities being traded. This avoids paperwork and related risks (bad deliveries, forged documents, etc)

iii) Global financial System (GFS):

A brief definition of the **global financial system (GFS)** is the financial system consisting of institutions, their customers, and financial regulators that act on a global level.

The term global is often used synonymously with the terms "international" or "multinational". Economists do not have a standard definition for a global versus a multinational company.

Main Players

1. Global or international systemically important financial institutions, e.g., banks, hedge funds whose failure may cause a global financial crisis, the International Monetary Fund and the Bank for International Settlements,
2. Customers of the global financial system, which include multinational corporations, as well as countries, with their economies and government entities, e.g., the central banks of the G20 major economies, finance ministries EU, NAFTA, OPEC, and others.etc.
3. Regulators of the global financial system, many of which play dual roles, in that they are financial organizations at the same time. These include the above mentioned International Monetary Fund and Bank for International Settlements, particularly its "Global Economy Meeting (GEM), in which all systemic emerging economies' Central Bank governors are fully participating, has become the prime group for global governance among central banks" per Jean-Claude Trichet, President of the European Central Bank., as well as the financial regulators of the U.S.A (the US agency quintet of Federal Reserve, Office of Comptroller of the Currency, Federal Deposit Insurance Corporation, Commodity Futures Trading Commission, Federal Reserve Board, Securities and Exchange Commission), Europe (European Central Bank) and the Bank of China, besides others.