

# Answer to PTP\_Final\_Syllabus 2012\_Dec2013\_Set 1

## Paper 14: Advance Financial Management

### Answer Question No.1 which is compulsory

Total Allowed: 3hours

Full Marks: 100

1.

a) MS. VASUDA is considering an investment in a Mutual Fund with a 2% load. As another alternative, she can also invest in a Bank deposit paying 10% interest. Her investment planning period is 3 years. What should be the annual rate of return on Mutual fund so that she prefers the investment in the fund to the investment in Bank Deposit? [3]

b) Distinguish between 'pay-through' and 'pass-through' certificates. [3]

c) An extract from exchange rate list of a Kolkata based bank is given below :

₹/¥: 0.3992: 0.4002

(i) How many Yen will it cost for a Japanese tourist visiting India to purchase ₹ 2,500 worth of jackfruit?

(ii) How much will Mr. Basu in Kolkata have to spend in rupees, to purchase a Sony Camcorder worth Yen 1,25,000? [5]

d) The following two types of securities are available in the market for investment:

Security	Return (%)	Standard Deviation (%)
Gilt-edge Security	7	0
Equity	25	30

Using the above two securities, if you are planning to invest ₹ 1,00,000 to construct a Portfolio with a standard deviation of 24%, what is the return of such portfolio? [2]

e) The coefficient of correlation between returns of Spark Ltd and Sensex is 1.10. The expected returns on the stock of Spark and Sensex are 18% and 14.37% respectively. The return on 182 day T-Bill is 6.31%. What would be the standard deviation of the returns of Spark if the standard deviation of Sensex's return is 17%? [2]

f) Megatron LTD. paid a dividend of ₹2.60 during the last year and the growth rate in the dividends are expected to be 8%. The current market price of the stock is ₹30.00. The beta of the stock is 1.60 and the return on the market index is 13%. If the risk free rate of return is 8%, by how much should the price of the stock be raised in percentage terms so that it is at equilibrium? [3]

g) S Limited earns ₹6 per share has capitalization rate of 10% and has a return on investment at the rate of 20%. According to Walter's model, what should be the price per share at 30% dividend payout ratio? [2]

Solution

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- a)  $(1-0.02)X(1+r)^3 \geq (1.10)^3$   
or,  $0.98 X (1+r)^3 \geq 1.331$  or  $(1+r)^3 \geq (1.331 \div 0.98)$  or,  $(1+r)^3 \geq 1.358163$   
or  $(1+r) \geq (1.107433)$  or,  $r = (1.107433-1)$  or  $r = 0.107433$  i.e  $r = 10.743\%$   
The annual rate of return on mutual fund = 10.743%
- b) When the cash flows from the assets are directly and immediately given to the investors, it is called pay through certificate because the cash flows are paid to the investors immediately.  
  
When the cash flows from assets are collected at some point and then paid to the investors as per some predetermined schedule, such payments are called pass through certificate.
- c) The Japanese will have to pay  
(₹2500/0.3992) or = ₹ 6263 for the jackfruit  
Mr. Basu will have to pay  
(₹125000×0.4002) or ₹50025 rounded off ₹50000 for the Camcorder.
- d)  
 $\sigma_p^2 = w_1^2\sigma_1^2 + w_2^2\sigma_2^2 + 2w_1w_2\sigma_1\sigma_2P_{12}$   
  
Since, standard deviation of Gilt-edged securities is 0 and its co-relation with the Equity is also 0, the formula will be reduced to  $\sigma_p^2 = w_2^2\sigma_2^2$  or  
 $\sigma_p = w_2\sigma_2$  or  $0.24 = 0.30w_2$  or  $w_2 = 0.8$   
  
 $R_p = w_1R_1 + w_2R_2 = 0.2 \times 0.07 + 0.8 \times 0.25 = 0.214$   
Return in Rupees =  $100000 \times 0.214 = ₹ 21400$
- e) The return of the Portfolio  
 $0.18 = R_F + (R_M - R_F) \beta = 0.0631 + 0(0.1437 - 0.0631)$   
Or,  $\beta = 0.1169 / 0.0806 = 1.45$   
Again  $\beta = (\sigma_i P_{im} / \sigma_m)$   
Or  $\sigma_i = \beta \sigma_m / P_{im} = (1.45 \times 0.17) / 1.1 = 0.2241$  i.e. 22.41%.
- f) The required rate of Return:  $R_t + \beta (R_m - R_t) = 8 + 1.6 (13 - 8) = 16\%$   
Expected rate of Return:  $[D_o (1 + g) / P_o] + g$   
 $= [2.60 (1 + 0.08) / 30] + 0.08$   
 $= 17.36\%$   
  
At equilibrium, the required rate of return is equal to the expected rate of return.  
 $0.16 = [2.60 (1.08) / P_o] + 0.08$   
Or,  $0.08P_o = 2.808$

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Or,  $P_0 = 2.808/0.08 = ₹ 35.10$

Hence the price should be increased by ₹ 5.10 (35.10 – 30.00) or 17.00%

So that it is at equilibrium.

$$g) \text{ Market value of share } (p) = \frac{D + \frac{r}{k_e}(E - D)}{k_e} = \frac{1.8 + \frac{0.20}{0.10}(6 - 1.80)}{0.10} = \text{Rs.102}$$

### Section A

(Answer any two of the following)

2.

- a) A mutual Fund having 300 units has shown its NAV of ₹ 8.75 and ₹9.45 at the beginning and at the end of the year respectively. The Mutual Fund has given two options:
- Pay ₹0.75 per unit as dividend and ₹0.60 per unit as a capital gain, or
  - These distributions are to be reinvested at an average NAV of ₹8.65 per unit.

What difference it would make in terms of returns available and which Option is preferable?

- b) How to manage the risk in Infrastructure Project. Explain

[6+6=12]

**Solution:**

a)

- (i) Returns for the year:  
[All changes on a Per -Unit Basis]

Change in Price: ₹ 9.45 – ₹ 8.75 = ₹ 0.70

Dividends received: ₹ 0.75

Capital gains distribution ₹ 0.60

Total reward ₹ 2.05

Holding period reward:  $\frac{₹ 2.05}{₹ 8.75} = 23.43\%$

- (ii) When all dividends and capital gains distributions are re-invested into additional units of the fund @ (₹ 8.65/unit)

Dividend + Capital Gains per unit

= ₹ 0.75 + ₹ 0.60 = ₹ 1.35

Total received from 300 units = ₹ 1.35 × 300 = ₹ 405/-.

Additional Units Acquired

= ₹ 405/₹ 8.65 = 46.82 Units.

Total No.of Units = 300 units + 46.82 units

= 346.82 units.

Value of 346.82 units held at the end of the year

= 346.82 units × ₹ 9.45 = ₹ 3277.45

Price Paid for 300 Units at the beginning of the year

= 300 units × ₹ 8.75 = ₹ 2,625.00

Holding Period Reward

₹ (3277.45 – 2625.00) = ₹ 652.45

% of Holding Period Reward

$$\frac{\text{₹ } 652.45}{\text{₹ } 2625.00} = 24.85\%$$

**Conclusion:** Since the holding period reward is more in terms of percentage in option-two i.e., reinvestment of distributions at an average NAV of ₹8.65 per unit, this option is preferable.

- b) The raising of debt and equity capital needed to fulfill the financing needs of infrastructure in developing countries continues to remain a challenge. Over the last couple of decades there has been a growing interest in using risk mitigation instruments to facilitate mobilization of private capital to finance public and private infrastructure projects. Risk Mitigation Instruments are financial instruments that transfer certain defined risks from project financiers (lenders and equity investors) to creditworthy third parties (guarantors and investors) that have a better capacity to deal with such risks. These instruments are extremely helpful for the governments of developing countries that have low credit ratings or insufficient track record in the eyes of the private investors to be able to attract private capital. For India, risk management is crucial as this has been a major roadblock in attracting the required private investment in the infrastructure sector.

**The advantages of risk mitigation for India are many:**

1. India would be able to mobilize international and domestic private capital for development of infrastructure and as a supplement to limited public resources.
2. When risk mitigation instruments cover the excessive risks or practically unmanageable risks as perceived by the investors, then private investors would be interested in investing in the sector.
3. It becomes easier for the Government to share the risks of infrastructure development using its limited financial resources when it is tendered help by the private sector; thereby leading to greater increase in infrastructural development.
4. Government can upgrade its own credit as borrower or as a guarantor for public and private projects by using risk mitigation instruments of more creditworthy institutions which can significantly lower the cost of capital for the infrastructure project.
5. Risk mitigation instruments facilitate the creation of commercial and sustainable financing mechanisms for infrastructure development and efficiency in the flow of international and local private capital.

3.

- a) **What makes Commodity Trading Attractive?**

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- b) What are needs for a range of various performance measures in an organization?  
What are the various categories of performance indicators?

[6+6=12]

### Solution

- a)
- A good low-risk portfolio diversifier
  - A highly liquid asset class, acting as a counterweight to stocks, bonds and real estate.
  - Less volatile, compared with, equities and bonds.
  - Investors can leverage their investments and multiply potential earnings.
  - Better risk-adjusted returns.
  - A good hedge against any downturn in equities or bonds as there is
  - Little correlation with equity and bond markets.
  - High co-relation with changes in inflation.
  - No securities transaction tax levied.
- b) The needs for a range of performances measures are as under:
- i) To know current status, degree of achievement and how far to go to achieve the ultimate goal
  - ii) For strategic alignments to communicate and reinforce messages to employees on company focus, direction and targets
  - iii) For strategic learning to know what works and what does not.

As to the selection of a range of performance measures which are appropriate to a particular company, this selection will have to be made taking into account company's intentions.

Performance indicators can be categorized as under

Competitive advantage

Financial performance

Quality of service

Flexibility

Resource utilization

Innovation.

4. Explain the issues and challenged constraining Infrastructure Funding [12]

### Answer

While there are multiple roadblocks like delays in approvals, land acquisition, and environment clearances etc. impeding the acceleration of the infrastructure development, one of the key one which will be critical for future is the availability of funds.

An important distinction to draw when considering the financial elements of an infrastructure project is that between funding and financing. The funding for a project could be defined as its long-term source of support. In the case of public infrastructure, this may be revenues generated by the project, dedicated tax revenues or general resources of the sponsoring public sector entity. The financing of a project is the means by which the funding is leveraged to provide

enough up-front cash to purchase construct or adapt the project. While there may be many creative financing vehicles available, once the funding structure is established, all of these financing vehicles will be “securitizing” the same project economics.

Based on industry analysis, we have identified key issues and challenges that are thought to be constraining the flow of funds towards infrastructure development. These issues and challenges are as listed below:

### **(i) Regulatory & Macro-economic Constraints**

Highly regulated investment norms constrain the flow of funding to infrastructure projects.

- NBFCs infrastructure investment growth is limited by their access to bank finance. Tighter prudential limits on bank lending to NBFCs have capped their access to commercial bank funds
- IRDA has set stringent guidelines towards investment in infrastructure bonds. As per the guidelines, the rating quality of investment bonds should not be less than AA whereas a typical non-recourse infrastructure project is rated BB. Moreover, 75 per cent of all debt investments in an insurance company's portfolio (excluding government and other approved securities) must have AAA rating
- Statutory restrictions imposed by Government of India on infrastructure: Some key restrictions include minimum credit rating for debt instruments and minimum dividend payment record of seven years for equity. These are difficult conditions for private infrastructure projects to meet as they have been set up recently and do not enjoy high credit rating in the initial years
- Equity markets are not favorable for financing projects because of uncertainties in the global economy and due to present regulatory requirements limiting exit options, which hinder equity infusion. Moreover, most infrastructure companies have already diluted their equity in public to raise capital and further dilution is not possible due to contractual restrictions imposed on them
- Sale of unlisted projects is subject to capital gains tax which acts as a disincentive to most equity investors. There is also a growing perception amongst the equity shareholders that the termination payments in the event of government agency defaults are not adequate in most concession agreements
- The PFRDA guidelines allows investment in credit risk bearing fixed income instruments (Asset class C). However, at least 75% of the investment in this category is to be made in instruments having an investment grade rating from at least one credit rating agency. The sectoral cap of 75% of the investment having an investment grade rating under Asset class C scheme, has led to Pension Funds missing on the opportunity to invest in infrastructure projects
- Sovereign credit rating of BBB- limits investments from foreign funds

### **(ii) Under-developed financial markets**

- Absence of a well-developed financial system facilitating long term financing has put additional burden on the banks to fill the void. It is risky and limits the lending ability of banks when they engage short term funds for long investment in infrastructure projects that have a long gestation period (above 5 years). To offset this bank lends on floating rates which is derived on the base rate. Eventually, the project cost may escalate as it becomes susceptible to interest rate fluctuations

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- Lack of derivative market and interest rate derivative market that implies that investors are unable to manage risks efficiently
- ECB imposes all in cost ceiling that allows access only to highly rated companies. Financial intermediaries, such as banks, Fls, HFCs and NBFCs are not eligible to raise sums through ECB
- Almost one third of India's saving rate of 37% is directed towards physical assets. Also, financial savings are not properly channelized towards infrastructure projects due to lack of long term savings options in the form of pension and insurance
- Foreign exchange hedging: Foreign exchange hedging is not available for long tenures especially for a period of more than 8 years and even if they are available, they attract high premiums. Foreign investors are not comfortable betting on India for long tenures.

### **(iii) Institutional Constraints**

- Most of the life insurance players except LIC have limited non ULIP liabilities that they can deploy in infrastructure. Thus, they face asset liability mismatch in investing long term
- Public insurance companies are inherently very risk averse. They invest mostly in government securities and in publicly-listed infrastructure companies towards meeting their mandated minimum infrastructure and social sector requirements rather than funding infrastructure projects
- Most EPC contractors in the country are already working on stretched working capital and debt exposure limits. Moreover, constraints such as labor and manpower shortage, lack of skilled resources, shortage of equipment add to time and cost overruns
- Low ratings of infrastructure SPV's: The level of ratings achieved by SPV's restricts the flow of foreign funds in the form of debt. High levels of risk attached leads to equity investments in place of debt financing. SPV's normally do not have a proven credit history and strong balance sheets. This further affects their ability to secure financing from outside.

### **Section – B**

**(Answer any one of the following)**

5.

- a) **Bharat's subsidiary in India, Emami, procures most of its soaps from a Japanese company. Because of the shortage of working capital in India, payments terms for the Indian importers are typically 180 days or more. Emami wishes to hedge an 8.5 million Japanese Yen payable. Although options are not available on the Indian Rupee (₹), forward rates are available against the Yen. Additionally, a common practice in India is, for companies' like Emami, to work with a currency agent who will, in this**

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case, lock in the current spot exchange for a 4.85% fee. Using the following data, recommend a hedging strategy.

Spot rate, USD/JPY	yen 120.60/\$
Spot rate, USD/INR	₹47.75/\$
180-day forward rate, JPY/INR	₹0.4166/yen
Expected spot exchange rate in 180 days	₹0.3846/yen
180-day yen investment rate	1.5%
180-day rupee investment rate	8.0%
Cost of capital	12.0%

- b) What is swaps? Explain its necessity. Also state financial benefits created by swap transactions?
- c) Mr. A purchased a 3-month call option for 100 shares in XYZ Ltd. at a premium of ₹30 per share, with an exercise price of ₹550. He also purchased a 3-month put option for 100 shares of the same company at a premium of ₹5 per share with an exercise price of ₹450. The market price of the share on the date of Mr. A's purchase of options is ₹500. Calculate the profit or loss that Mr. A would make assuming that the market price falls to ₹350 at the end of 3 months.

[10+5+5=20]

**Solution:**

a)

180 – day account payable, Japanese Yen	8500000
Spot rate, Yen/\$	120.60
Spot rate, Rupee/\$	47.75
Implied (calculated) spot rate Yen/ Rupee (120.60/47.75)	2.5257
180 – day Forward rate: Yen/ Rupee	2.4000
Expected spot rate in 180 – days Yen/Rupee	2.6000
180 – day Indian Rupee investing rate	8.00%
180 – day Japanese yen investing rate	1.50%
Currency Agent's exchanges rate fee	4.80%
Emami's cost capital	12.00%

HEDGING ALTERNATIVES:

1. REMAIN UNCOVERED	Rate Yen per Rupee	Amount (₹)
Settling Account	2.5257	
Payable in 180 – days at spot rate.		
*If spot rate in 180- days is same as current spot	(8500000/2.5257)	3365464.34 Risky
*If spot rate in 180 – days is same as Forward rate [8500000/2.4000]	2.4000	3541666.67 Risky
* if spot rate in 180 – days is expected	2.600	3269230.77 Risky

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Spot rate [8500000/2.6000]		
<b>2. BUY JAPANESE YEN FORWARD 180 DAYS</b>		
Settlement amount at forward rate. [8500000/2.400]	2.400	3541666.67 Certain
<b>3. MONEY MARKET HEDGE:</b>		
Principle Account Payable:	Yen 8500000	
Discount factor for year		
Investing Rate for 180 days (1/1.0075)	0.99256	
Principle needed to meet	Yen 8436760.00	
Account payable in 180 – days: (8500000 x 0.99256)		
Current spot rate	Yen per rupee 2.5257	
Indian Rupee Current amount: [8436760/2.5257]	₹3340365.05	

Emami WACC carry – forward Factor for 180 days: 1.0600

FUTURE VALUE OF MONEY MARKET HEDGE: ₹3540786.95 certain

<b>4. INDIAN CURRENCY AGENT HEDGE:</b>	
Principle Account Payable	Yen 8500000
Current spot rate Yen per rupee	2.5257
Current account payable (8500000/2.5257)	₹3365403.65 (A)
Plus: Agent's Fees (4.85%)	₹163222.08
Emami's WACC	
Carry – forward factor for 180 days on fee (163222.08 x 1.06)	₹173015.40 (B)
Total	₹3538419.05 Certain.

### EVALUATION ALTER NATIVES:

Hedging through currency agents is the best alternative hedging strategy if risk avoidance is the objective.

- b) Swaps Exchange of one obligation with another -- Financial swaps are funding technique, which permit a borrower to access one market and exchange the liability for another market / instrument - exchange one type of risk with another. Necessity –
1. Difference in borrowers and investors preference and market access
  2. Low cost device
  3. Market saturation
  4. Differences in financial norms followed by different countries.

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Financial Benefits Created by Swap Transactions

- A. The Theory of Comparative Advantage
- B. Information asymmetries.

- c) Since the market price at the end of 3 months falls to ₹350 which is below the exercise price under the call option, the call option will not be exercised. Only put option becomes viable.

	Particulars	(₹)
Gain per share	(₹450 – ₹350 = ₹100)	
Total gain per 100 shares	(100 x ₹100)	10,000
Cost or premium paid	(₹30 x 100) + (₹5 x 100)	3,500
Net gain on put option		6,500

6.

- a) The shares of TIC Ltd are currently priced at ₹415 and call option exercisable in three month's time has an exercise rate of ₹400. Risk Free Interest Rate is 5% p.a and Standard Deviation (volatility) of share Price is 22%. Based on the assumption that TIC Ltd is not going to declare any dividend over the next three months, is the option worth buying for ₹25?
- i) Calculate value of aforesaid call option based on Black Scholes Valuation Model if the current Price is considered as ₹380.
  - ii) What would be the worth of put option if current price is considered ₹380?
- b) Write short note on any two out of the following
- i) Green Shoe Option
  - ii) Forward as hedge instrument
  - iii) Foreign Currency Convertible Bonds (FCCBs)

[10+10=20]

**Solution**

- a) Computation of Value of option if Current Price is ₹415

i) Basic data

Factor	Notation	Value
Current stock Price	$SP_0$	₹415
Exercise Price	EP	₹400
Time	t	0.25
Risk Free rate of return	r	5% or 0.05
Standard deviation of Return	$\sigma$	0.22
Variance	$\sigma^2$	0.0484

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$$D_1 = \frac{\ln\left(\frac{SP_0}{EP}\right) + [(r + 0.50\sigma^2) \times t]}{\sigma\sqrt{t}} = \frac{\ln\left(\frac{415}{400}\right) + [(0.05 + 0.50 \times 0.0484) \times 0.25]}{0.22 \times \sqrt{0.25}}$$

$$= \frac{\ln 1.0375 + [(0.05 + 0.0242) \times 0.25]}{0.22 \times 0.5}$$

$$= \frac{(\ln 1.0375 + 0.01855)}{0.11} = \frac{0.05777}{0.11} = \mathbf{0.5252}$$

$$D_2 = \frac{\ln\left(\frac{SP_0}{EP}\right) + [(r - 0.50\sigma^2) \times t]}{\sigma\sqrt{t}} = D_1 - \sigma\sqrt{t}$$

$$= 0.5252 - 0.22 \times \sqrt{0.25} = 0.5252 - 0.11 = \mathbf{0.4152}$$

### ii) Computation of probability factors

$$N(D_1) = N(0.5252) = 0.50 + 0.2019 = \mathbf{0.7019}$$

$$+ 0.1628 = \mathbf{0.6628}$$

$$N(D_2) = N(0.4152) = 0.50$$

### iii) Computation of value of call

$$\begin{aligned} \text{Value of call} &= SP_0 \times N(D_1) - [EP \times e^{-rt} \times N(D_2)] \\ &= [₹415 \times 0.7019] - [₹400 \times e^{-0.05 \times 0.25} \times 0.6628] \\ &= ₹291.2885 - ₹400 \times e^{-0.0125} \times 0.6628 = ₹291.2885 - ₹400 \times 0.9876 \times \\ &0.6628 \\ &= ₹291.2885 - ₹261.833 = \mathbf{₹29.4555} \end{aligned}$$

### iv) Inference

Since the price of the call is ₹25 which is less than the value of call under Black and Sholes Model, it is under priced. Hence, the call may be bought.

## 2. Computation of value of call if the current Market price is ₹380

### i) Basic Data

Factor	Notation	Value
Current stock Price	$SP_0$	₹380
Exercise Price	EP	₹400
Time	t	0.25
Risk Free rate of return	r	5% or 0.05
Standard deviation of Return	$\sigma$	0.22
Variance	$\sigma^2$	0.0484

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$$D_1 = \frac{\ln\left(\frac{SP_0}{EP}\right) + [(r + 0.50\sigma^2) \times t]}{\sigma\sqrt{t}} = \frac{\ln\left(\frac{380}{400}\right) + [(0.05 + 0.50 \times 0.0484) \times 0.25]}{[0.22 \times \sqrt{0.25}]}$$

$$= \frac{\ln 0.95 + [(0.05 + 0.0242) \times 0.25]}{[0.22 \times 0.5]}$$

$$= \frac{[\ln (0.95 + 0.01855)]}{0.11} = \frac{(-0.0513 + 0.01855)}{0.11} = \frac{(-0.03275)}{0.11} = \mathbf{0.2977}$$

$$D_2 = \frac{\ln\left(\frac{SP_0}{EP}\right) + [(r - 0.50\sigma^2) \times t]}{\sigma\sqrt{t}} = D_1 - \sigma\sqrt{t}$$

$$= -0.2977 - 0.22 \times \sqrt{0.25} = -0.2977 - 0.11 = \mathbf{-0.4077}$$

### ii) Computation of probability factors

$$N(D_1) = N(-0.2977) = 0.50 - 0.1179 = \mathbf{0.3821} \qquad N(D_2) = N(-0.4077) = 0.50 - 0.1591 = \mathbf{0.3409}$$

### iii) Computation of value of call

$$\begin{aligned} \text{Value of call} &= SP_0 \times N(D_1) - [EP \times e^{-rt} \times N(D_2)] \\ &= [₹380 \times 0.3821] - [₹400 \times e^{-0.05 \times 0.25} \times 0.3409] \\ &= ₹145.198 - ₹400 \times e^{-0.0125} \times 0.3409 = ₹145.198 - ₹400 \times 0.9876 \times 0.3409 \\ &= ₹145.198 - ₹134.669 = \mathbf{₹10.529} \end{aligned}$$

### 3. Value of put if the Current Market Price is ₹380

$$\begin{aligned} \text{Value of call option} &= ₹10.529 \\ \text{Current Market value} &= ₹380 \\ \text{Present value of Exercise Price} &= 400 \times e^{-0.05 \times 0.25} \\ &= 400 \times e^{-0.0125} \\ &= ₹400 \times 0.9876 = \mathbf{₹395.04} \end{aligned}$$

Using the put call Parity Theory,

Value of put = Value of call + Present value of Exercise Price – Spot price

$$V_p = 10.529 + 395.04 - 380 = \mathbf{₹25.569}$$

b)

#### A. Green Shoe Option:

It is an option that allows the under writing of an IPO to sell additional shares if the demand is high. It can be understood as an option that allows the underwriter for a new issue to buy and resell additional shares up to certain pre-determined quantity.

Looking to the exceptional interest of investors in terms of over subscription of the issue certain provisions are made to issues additional shares or bonds to underwriters for distribution. The issuer authorizes for additional shares or bonds. In common Parlance, it is retention of oversubscription to a certain extent, it is a Special feature of EURO-issues.

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In the Indian context, green shoe option has a limited connotation. SEBI guidelines governing public issues contain appropriate provisions for accepting over-subscriptions subject to a ceiling say, 15% of the offer made to public.

### **B. Forward as hedge instrument :**

International transactions both trade and financial give rise to currency exposures. A currency exposure if left unmanaged leaves a corporate open to profits or losses arising on account of fluctuations in currency ratio. One way in which corporate can protect itself from effects of fluctuations in currency rates is through buying or selling in forward markets.

A forward transaction is a transaction requiring delivery at future date of a specified amount of another currency.

The exchange rate is determined at the time of entering into the contract but the payment and delivery takes place on maturity. Corporate use forwards to hedge themselves against fluctuations in currency price that would have a significant impact on their financial position. Banks use forward to offset the forward contracts entered into with non-bank customers.

### **C. Foreign Currency Convertible Bonds (FCCBs):**

They mean bonds issued in accordance with relevant scheme and subscribed by a non-resident in foreign currency and convertible into depository receipts or ordinary shares of the issuing company in any manner, either in whole or in part, on the basis of any equity-related warrants attached to debt instruments. A company seeking to issue FCCBs should have consistent track record of good performance for 3 years.

FCCBs are unsecured; carry a fixed rate of interest and an option for conversion into a fixed number of equity shares of the issuer company. Interest on redemption price (if conversion option is not exercised) is payable in Dollars. Interest rates are very low by Indian domestic standards.

FCCB has been popular with issuers. Local debt markets can be restrictive with comparatively short maturities and high interest rates. On the other hand, a straight equity may cause a dilution in earnings, and certainly dilutions in control, which many shareholders, especially major family shareholders, would find unacceptable. Foreign investors also prefer FCCBs because of dollar-denominated servicing, the conversion option and the arbitrage opportunities presented by conversion of FCCBs into equity at discount on prevailing market-price in India. The major drawbacks are that the issuing company cannot plan capital structure as it is not assured of conversion of FCCBs. In addition, FCCBs would result in creation of external debt for the country, as there would be foreign exchange outflow from the country, if conversion option is not exercised by the investors.

Some other regulations are: (i) Interest payment on bond, until the conversion option is exercised, shall be subjected to TDS; (ii) Conversion of FCCBs into shares shall not give rise to capital gain in India; and (iii) Transfer of FCCBs shall not give rise to capital gain in India.

## **Section C**

**(Answer any one of the following)**

7.

## Answer to PTP\_Final\_Syllabus 2012\_Dec2013\_Set 1

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- a) “Technical analysts consider the market to be 80% psychological and 20% logical. Fundamental analysts consider the market to be 20% psychological and 80% logical”. Explain briefly.
- b) A portfolio Manager has the following four stocks in his portfolio:

Security	No. of shares	Market price per share (₹)	$\beta$
VSL	10,000	50	0.9
CSL	5,000	20	1.0
SML	8,000	25	1.5
APL	2,000	200	1.2

Compute the following:

- Portfolio Beta
- If the Portfolio Manager seeks to reduce the Beta to 0.8, how much Risk Free investment should he bring in?
- If the Portfolio Manager seeks to increase the Beta to 1.2, how much Risk Free investment should he bring in?

[6+10=16]

### Solution

- a) Not all technical signals and patterns work. When you begin to study technical analysis, you will come across an array of patterns and indicators with rules to match. For instance: A sell signal is given when the neckline of a head and shoulders pattern is broken. Even though this is a rule, it is not steadfast and can be subject to other factors such as volume and momentum. In that same vein, what works for one particular stock may not work for another. A 50-day moving average may work great to identify support and resistance for IBM, but a 70-day moving average may work better for Yahoo. Even though many principles of technical analysis are universal, each security will have its own idiosyncrasies.

Technical analysts consider the market to be 80% psychological and 20% logical. Fundamental analysts consider the market to be 20% psychological and 80% logical. Psychological or logical may be open for debate, but there is no questioning the current price of a security. After all, it is available for all to see and nobody doubts its legitimacy. The price set by the market reflects the sum knowledge of all participants, and we are not dealing with lightweights here. These participants have considered (discounted) everything under the sun and settled on a price to buy or sell. These are the forces of supply and demand at work. By examining price action to determine which force is prevailing, technical analysis focuses directly on the bottom line: What is the price? Where has it been? Where is it going?

Even though there are some universal principles and rules that can be applied, it must be remembered that technical analysis is more an art form than a science. As an art form, it is subject to interpretation. However, it is also flexible in its approach and each investor should use only that which suits his or her style. Developing a style takes time, effort and dedication, but the rewards can be significant.

- b)

## Answer to PTP\_Final\_Syllabus 2012\_Dec2013\_Set 1

### 1. Computation of Portfolio Beta

Security	No. of Shares held	MPS (₹)	Market Value of investments	Beta	Product
[1]	[2]	[3]	[4]	[5]	[6] = [5] x [4]
VSL	10,000	50	5,00,000	0.9	4,50,000
CSL	5,000	20	1,00,000	1.0	1,00,000
SML	8,000	25	2,00,000	1.5	3,00,000
APL	2,000	200	4,00,000	1.2	4,80,000
			<b>12,00,000</b>		<b>13,30,000</b>

$$\text{Therefore, portfolio beta} = \frac{\text{Product}}{\text{market Value}} = \frac{13,30,000}{12,00,000} = 1.108$$

### 2. Reduce Beta to 0.8

Beta can be reduced replacing High Beta stocks in the portfolio with Risk Free investments, which carry a Beta of Zero.

Security	Beta	Proportion (Amt. Invested)	Product
Risk Free Investments	0	x	0
Risky Securities	1.108	1 - x	1.108 - 1.108x
		1	1.108 - 1.108x

$$\text{Therefore, portfolio Beta} = \text{Product} \div \text{Amount Invested} = \frac{1.108 - 1.108x}{1} = 0.8$$

Therefore,  $1.108x = 1.108 - 0.8 \Rightarrow 1.108x = 0.308 \Rightarrow x = 0.278$  or 27.8% for Risk Free Investments and 72.2% for Risky Investments. Therefore, amount to be invested in Risk Free Investments is as follows –

#### (a) Alternative One – Overall Portfolio value is retained at ₹12,00,000:

Amount to be invested in Risk free Investments = 27.8% of ₹12,00,000 = ₹3,33,600 [ = value of Risky Investments sold, and replaced by Risk Free Investments]. Therefore, Risky Investments will constitute ₹8,66,400 (comprising the four securities in the existing ratio)

#### (b) Alternative Two – Overall Portfolio value is increased:

- Therefore, existing Risky Investments will not be disturbed. Therefore investments in Risky Securities will be ₹12,00,000 (constituting 72.2%)
- Amount of new Risk Free Investments =  $\frac{12,00,000}{72.2\%} \times 27.8\% = ₹4,62,050$ .

### 3. Increase Portfolio Beta to 1.2

Increase in portfolio Beta can be done by replacing Low Beta securities with High Beta securities. Since, it has to be done using Risk Free Securities; amount can be borrowed at Risk Free rate and invested in Risk Securities:

Security	Beta	Proportion (Amt. Invested)	Product
Risk Free Investments	0	x	0
Risky Securities	1.108	1 - x	1.108 - 1.108x
		1	1.108 - 1.108x

## Answer to PTP\_Final\_Syllabus 2012\_Dec2013\_Set 1

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Therefore, portfolio Beta = Product ÷ Amount Invested =  $\frac{1.108 - 1.108x}{1} = 1.2$

Therefore,  $1.108x = 1.108 - 1.2 \Rightarrow 1.108x = -0.092 \Rightarrow x = -0.083$  or 8.3% for Risk Free Borrowings. Therefore and 108.3% of existing portfolio value to be Invested in Risky Securities.

Therefore, Amount of Risk Free Borrowings = ₹12, 00,000 x 8.3% = 99,600 to be borrowed at Risk Free rate and Invested in Risky securities in the same proportion as existing.

8.

- a) XYZ Ltd. is a 100% equity financed company with beta of 1.24. It is a diversified company with three operating diversions. East, West and Central. The operating characteristics of east are 50% more risky than West and Central is 25% less risky than West. West is having twice market value than that of East, while Central is having equal market value than that of East. The market return is 24% and standard deviation is 16%. At present the West division has started showing under performance, the management of XYZ Ltd. planned to sell the West division and use the entire amount to purchase PQR Ltd. PQR Ltd is an all equity company and having similar market as of West division. PQR Ltd. has a revenue sensitivity of 1.5 times that of West division of XYZ Ltd. and also PQR Ltd. has operating gearing ratio of 1.8 current operating gearing ratio in West 2.00.

Assume risk free rate 11%, no synergistic, benefits from disinvestment and acquisition and taxation is to be ignored.

Required to calculate:

- i) Asset beta for each division of XYZ
  - ii) Calculate asset beta for PQR Ltd.
  - iii) Calculate asset beta for XYZ Ltd. after disinvestment and acquisition.
  - iv) Calculate the discount rate of applicable to new investment project.
- b) Mr. Khan 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?

[12+4=16]

## Answer to PTP\_Final\_Syllabus 2012\_Dec2013\_Set 1

**Solution:**

**a)**

$$\beta_A = \beta_e = 1.24$$

Let Beta of West = X

XYZ → No Debt

East	West	Central
1.5x	x	0.75x
1	2	1
0.25	0.25	0.25

Beta of Company = Weighted Average of Divisions

$$\Rightarrow 1.24 = (1.50 \times 0.25) + (X \times 0.50) + (0.75x \times 0.25)$$

$$\Rightarrow 1.24 = 1.0625x$$

$$\Rightarrow X = \frac{1.24}{1.0625} = 1.167$$

$$\text{West Beta} = 1.167$$

$$\text{East Beta} = 1.167 \times 1.50 = 1.75$$

$$\text{Central Beta} = 1.167 \times 0.75 = 0.875$$

(ii)

$$R_M = 24\%$$

$$\sigma_M = 16\%$$

Note: If PQR was exactly similar as west division of xyz, then West Division Beta = PQR Beta.

However, since riskiness is difference the west division Beta has to be adjusted as

West Division Beta x Revenue Sensitivity x Operating Gearing Effect

$$1.167 \times 1.5 \times 0.90 = 1.575 \quad (\text{Asset Beta of PQR})$$

(iii) Asset Beta of company after purchase of PQR

$$= (0.25 \times 1.75) + (0.5 \times 1.575) + 0.25 \times 0.875 = 1.44$$

(iv) Discount Rate for New Project

$$\begin{aligned} &= R_f + (R_M - R_f) \beta_A \\ &= 11 + (24 - 11) 1.575 \\ &= 31.48\% \end{aligned}$$

**b)**

Factor	Actual value	Expected Value%	Difference	Beta	Difference × 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 market Index	12.00	10.00	2.00	1.70	3.40

## Answer to PTP\_Final\_Syllabus 2012\_Dec2013\_Set 1

Industrial Production	7.50	7.00	0.50	1.00	0.50
Total					8.16

Return under Arbitrage Pricing Theory = 8.16% + 9.25% (Risk Free Rate) = 17.41%

### Section D

(Answer any one of the following)

9.

- a) A company has received 3 proposals for the acquisition of an assets on lease costing ₹1, 50,000.

**Option I:** The terms of offer envisaged payment of lease rentals for 96 months. During the first 72 months, the lease rentals were to be paid @ ₹ 30 p.m. per ₹1,000 and during the remaining 24 months @ ₹5 p.m. per ₹1,000. At the expiry of lease period, the lessor has offered to sale the assets at 5% of the original cost.

**Option II:** Lease agreement for a period of 72 months during which lease rentals to be paid per month per ₹1,000 are ₹35, ₹30, ₹26, ₹24, ₹22 and ₹20 for next 6 years. At the end of lease period the asset is proposed to be abandoned.

**Option III:** Under this offer a lease agreement is proposed to be signed for period of 60 months wherein a initial lease deposit to the extent of 15% will be made at the time of signing of agreement. Lease rentals @ ₹35 per ₹1,000 per months will have to the paid for a period of 60 months on the expiry of leasing agreement, the assets shall be sold against the initial deposit and the asset is expected to last for a further period of three years.

You are required to evaluate the proposals keeping in view the following parameters.

- (i) Depreciation @ 25%
- (ii) Discounting rate @ 15%
- (iii) Tax rate applicable @ 40%

The monthly and yearly discounting factors @ 15% discount rate are as follows:

Period	1	2	3	4	5	6	7	8
Monthly	0.923	0.765	0.685	0.590	0.509	0.438	0.377	0.325
Yearly	0.869	0.756	0.658	0.572	0.497	0.432	0.376	0.327

- b) “Cost of capital is used by a company as a minimum benchmark for its yield”. Comment. Also enumerate the applications of cost of capital in managerial decisions.

## Answer to PTP\_Final\_Syllabus 2012\_Dec2013\_Set 1

- c) An entity has ₹50 lakhs existing funds financed ₹20 lakhs from equity share capital, ₹15 lakhs from retained earnings and ₹15 lakhs from 12% debentures. It requires additional funds of ₹20 lakhs. These can be financed ₹10 lakhs from 14% debentures and ₹10 lakhs from new issue of equity shares. Tax rate applicable to the company is 35%. The company is expecting to pay ₹4 per share at the end of the year. The company is growth rate of dividends is expected to be 8% perpetually. Market price per equity share is ₹40 per share. Issue price of the new equity shares is expected to be ₹35 per share. Flotation cost to the issue is ₹3 per share. Compute weighted marginal cost of capital.

[10+5+5=20]

Solution:

a)

Option I

[Amount in ₹]

1	2	3	4	5	6	7	8	
Year	Rentals	Monthly Dis. Factor @ 15%	PV of (2)	Tax Shelter (2) x 40%	Annual Disc. Factor @ 15%	PV of (5)	Net Cash Flow (4-7)	
1	54000	0.923	49842	21600	0.869	18770	31072	
2	54000	0.795	42930	21600	0.756	16330	26600	
3	54000	0.685	36990	21600	0.658	14213	22777	
4	54000	0.590	31860	21600	0.572	12355	19505	
5	54000	0.509	27486	21600	0.497	10735	16751	
6	54000	0.438	23652	21600	0.432	9331	14321	
7	9000	0.377	3393	3600	0.376	1354	2039	
8	9000	0.325	2925	3600	0.327	1177	1748	
End	7500	0.327	2452	---			2452	
0.327 is Year ending discounting factor								<b>137265</b>

Option II

[Amount in ₹]

1	2	3	4	5	6	7	8
Year	Rentals	Monthly Dis. Factor @ 15%	PV of (2)	Tax Shelter (2) x 40%	Annual Disc. Factor @ 15%	PV of (5)	Net Cash Flow (4-7)
1	63000	0.923	58149	25200	0.869	21899	36250
2	54000	0.795	42930	21600	0.756	16330	26600
3	46900	0.685	32058	18720	0.658	12318	19740
4	43200	0.590	25488	17280	0.572	9884	15604
5	39600	0.509	20156	15840	0.497	7872	12284
6	36000	0.438	15768	14400	0.432	6221	9547
							<b>120025</b>

- b) The **cost of capital** is a term used in the field of financial investment to refer to the cost of a company's funds (both debt and equity), or, from an investor's point of view "the shareholder's required return on a portfolio of all the company's existing securities". It is used to evaluate new projects of a company as it is the minimum return that investors expect for providing capital to the company, thus setting a benchmark that a new project has to meet.

For an investment to be worthwhile, the expected return on capital must be greater than the cost of capital. The cost of capital is the rate of return that capital could be expected to earn in an alternative investment of equivalent risk. If a project is of similar risk to a company's average business activities it is reasonable to use the company's average cost of capital as a basis for the evaluation. A company's securities typically include both debt and equity, one must therefore calculate both the cost of debt and the cost of equity to determine a company's cost of capital. However, a rate of return larger than the cost of capital is usually required.

### **IMPORTANCE OF COST OF CAPITAL IN DECISION MAKING**

The cost of capital is critically important in finance. It plays a crucial role in the capital budgeting decision. The progressive management always takes notice of the cost of capital while taking a financial decision. The concept is quite relevant in the managerial decisions as :

- a) It may be used as the measuring rod for adopting an investment proposal. The firm, naturally, will choose the project which gives a satisfactory return on investment which would in no case be less than the cost of capital incurred for its financing. In various methods of capital budgeting, cost of capital is the key factor in deciding the project out of various proposals pending before the management. It measures the financial performance and determines the acceptability of all investment opportunities.
- b) It is significant in designing the firm's capital structure. A capable financial executive always keeps an eye on capital market fluctuations and tries to achieve the sound and economical capital structure for the firm. He may try to substitute the various methods of finance in an attempt to minimize the cost of capital so as to increase the market price and the earning per share.
- c) A capable financial executive must have knowledge of the fluctuations in the capital market and should analyze the rate of interest on loans and normal dividend rates in the market from time to time. Whenever company requires additional finance, he may have a better choice of the source of finance which bears the minimum cost of capital.
- d) It can be used to evaluate the financial performance of the top executives. Evaluation of the financial performance will involve a comparison of actual profitabilities of the projects and taken with the projected overall cost of capital and an appraisal of the actual cost incurred in raising the required fund.
- e) It is also important in many others areas of decision making, such as dividend decisions, working capital policy etc.

## Answer to PTP\_Final\_Syllabus 2012\_Dec2013\_Set 1

c)

$$K_d = \frac{I(1-t)}{NP} = \frac{₹14(1-0.35)}{₹100} = 9.1\%$$

$$K_e = \frac{D_1}{P_0} + g = \frac{₹4}{₹32} + 0.08 = 20.5\%$$

Capital Structure	Amount	Weights	C.O.C	WACC
Equity Share Capital	10,00,000	0.5	20.5%	10.25%
14% Debentures	10,00,000	0.5	9.1%	4.55%
	20,00,000	1.00		Ko=14.80%

10.

- a) Das Ltd. a manufacturing company produces 25,000 litres of special lubricants in its plant. The existing plant is not fully depreciated for tax purposes and has a book value of ₹ 3 lakhs (it was bought for ₹ 6 lakh six years ago). The cost of the product is as under:

Particulars	Cost/Litre (₹)
Variable costs	60.00
Fixed Overheads	15.00
	75.00

It is expected that the old machine can be used for further period of 10 Years by carrying out suitable repairs at a cost of ₹2 lakh annually.

A manufacturer of machinery is offering a new machine with the latest technology at ₹10 lakhs after trading off the old plant (machine) for ₹1 lakh. The projected cost of the product will then be:

Particulars	Cost/Litre (₹)
Variable costs	45.00
Fixed Overheads	20.00
	65.00

The fixed overheads are allocations from other department plus the depreciation of plant and machinery. The old machine can be sold for ₹ 2 lakh in the open market. The new machine is expected to last for 10 years at the end of which, its salvage value will be ₹1 lakhs. Rate of corporate taxation is 50%. For tax purposes, the cost of the new machine and that of the old one may be depreciated in 10 years. The minimum rate of return expected is 10%

It is also anticipated that in future the demand for the demand for the product will remain at 25,000 litres.

Advise whether the new machine can be purchased ignore capital gain taxes.

[Given: PVIFA (10%, 10 years) = 6.145, PVIF (10%, 10 years) = 0.386]

- b) "Forfeiting and factoring are two different ways of financing exports of international goods" Explain it.
- c) From the following, compute the net Present Value (NPVs) of the two projects for each of the possible cash flows

## Answer to PTP\_Final\_Syllabus 2012\_Dec2013\_Set 1

Particulars	Project X [₹000's]	Project Y [₹000's]
<b>Initial Cash outflows (T=0)</b>	<b>30</b>	<b>30</b>
<b>Cash inflows estimates (T=1-10)</b>		
<b>Worst</b>	<b>5</b>	<b>8</b>
<b>Most Likely</b>	<b>8</b>	<b>10</b>
<b>BEST</b>	<b>15</b>	<b>20</b>
<b>Required Rate of Return</b>	<b>14%</b>	<b>14%</b>
<b>Economic Life (years)</b>	<b>10</b>	<b>10</b>

[10+5+5=20]

**Solution:**

a)

### ANKIT LTD

#### Comparative Analysis:

	Old Machine	New Machine	Differential Cash Flow on new machine (₹) Saving/(Extra Cost) ₹
Production Ltrs	25,000	25,000	
Variable Cost per Ltr (₹)	60	45	
Total Variable Cost (₹)	15,00,000	11,25,000	3,75,000
Annual Cost of Repair (₹)	2,00,000	-----	2,00,000
Depreciation (₹)	30,000	1,00,000	(70,000)
(10.00 + 1.00 – 1.00) / 10			
Total Saving			5,05,000
Less: Tax Saving (50%)			(2,52,500)
Add: depreciation (not being cast outflow)			70,000
			3,22,500

Present Value of Cash flow if new machine is taken:

Year		Cash Flow (₹)	PV Factor (At 10%)	Present Value (₹)
0	Outflow on new Machine (₹ 10 Lakhs)	10,00,000	1.000	(10,00,000)
1-10	Annual Saving (as above)	3,22,500	6.145 (Cum)	19,81,762
10	Salvage value of new machine)	1,00,000	0.386	38,600
				10,20,362

Recommendation: Since NPV is positive, the new plant is to be acquired.

Note: Fixed overhead are allocations from other department and therefore, not relevant for the replacement decision.

b) Difference between Factoring and Forfeiting are as follows

## Answer to PTP\_Final\_Syllabus 2012\_Dec2013\_Set 1

Basis	Factoring	Securitisation
Range of Investors	In Factoring, only one party is involved.	Issues of securitisation are sold to a wide range of investors.
Issue Expenses	No issue expenses are involved in Factoring.	Issue expenses are involved.
Recourse	Factoring may be with or without Recourse.	Securitisation is generally without recourse.
Receipt of payment	Payment from the Factor comes in after a time lag, during which the Factor charges interest for any advances allowed.	In securitization, cash is generally received as soon as the issue is placed.
Other Services	Services such as credit checking and ledger maintenance are offered along with Factoring.	Securitization does not carry any such services with it.
Time Period	Short-term receivables are factored.	Long term receivables and Short-term receivables can be securitized.
Credit Rating	Credit Rating is not compulsory.	Credit rating is compulsory.
Availability	Factoring Resources are readily available.	Investors of securitized instruments are to be identified.
Mature of Receivables	Only existing receivables can be factored.	Future and existing receivables can be securitized.

c)

Particulars	Project X			Project Y		
	Worst	Most Likely	Best	Worst	Most Likely	Best
Annual Inflow	5	8	15	8	10	20
Annuity Factor @ 14% for 10 Years	5.216	5.216	5.216	5.216	5.216	5.216
Present Value of Cash Inflows	26.08	41.73	78.24	41.73	52.16	104.32
Less: Initial Investment	(30.00)	(30.00)	(30.00)	(30.00)	(30.00)	(30.00)
Net Present Value	(3.92)	11.73	48.24	11.73	22.16	74.32

Recommendation: Project Y is preferable over Project X, since, even in worst case scenario, Project Y is profitable, whereas Project X entails loss.