SUGGESTED ANSWERS

PROFESSIONAL PROGRAMME

FINANCIAL, TREASURY AND FOREX MANAGEMENT
(PP-FTFM/2013)

THE INSTITUTE OF
Company Secretaries of India
IN PURSUIT OF PROFESSIONAL EXCELLENCE
Statutory body under an Act of Parliament

THE INSTITUTE OF COMPANY SECRETARIES OF INDIA

PROFESSIONAL PROGRAMME

FINANCIAL, TREASURY AND FOREX MANAGEMENT

ICSI

PP-FTFM/2013

SUGGESTED ANSWERS

C O N T E N T S

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The Suggested Answers contain the information based on the Laws/Rules applicable at the time of preparation. However, students are expected to be well versed with the amendments in the Laws/Rules made upto **six** months prior to the date of examination.

PROFESSIONAL PROGRAMME

FINANCIAL, TREASURY AND FOREX MANAGEMENT

TEST PAPER 1/2013

Time allowed : 3 hours   *Max. Marks : 100*

NOTE : *Answer All Questions.*

PART A

Question No. 1

(a) *Discuss the salient features of risk containment measures developed by National Securities Clearing Corporation Ltd. (NSCCL) for the futures and option segment.*
(6 marks)

(b) *State the main features of Commodity Exchanges in India.*   *(6 marks)*

(c) *Briefly discuss the various functions of Treasury Management.*   *(8 marks)*

Answer to Question No. 1(a)

Salient features of risk containment measures developed by NSCCL

Most futures contracts do not lead to the actual physical delivery of the underlying asset. The settlement is done by closing out open positions, physical delivery or cash settlement. All these settlement functions are taken care of by an entity called clearinghouse or clearing corporation. National Securities Clearing Corporation Limited (NSCCL) undertakes clearing of trades executed on the NCDEX. The settlement guarantee fund is maintained and managed by NCDEX.

Clearing of trades that take place on an exchange happens through the exchange clearing house.

A clearing house is a system by which exchanges guarantee the faithful compliance of all trade commitments undertaken on the trading floor or electronically over the electronic trading systems. The main task of the clearing house is to keep track of all the transactions that take place during a day so that the net position of each of its members can be calculated. It guarantees the performance of the parties to each transaction.

Risk Management Procedures of Clearing House

The clearing house has a number of members, who are mostly financial institutions responsible for the clearing and settlement of commodities traded on the exchange. The margin accounts for the clearing house members are adjusted for gains and losses at the end of each day (in the same way as the individual traders keep margin accounts with the broker).

Imposition of membership requirements, including capital requirements, and an ongoing monitoring of compliance with such requirements in order to limit the likelihood

1

of defaults; Imposition of security deposit, collateral requirements and exposure ceilings to limit loss by using more than one settlement bank. Another technique to minimize the risk of settlement bank failure is to convert customer cash held in deposits at the settlement bank into securities, e.g. Treasury bonds, held by the settlement bank. While a cash deposit account creates a debtor/creditor relationship between the bank and its customer for the amount on deposit and a customer claim against the assets of the bank in the event of its insolvency, customer securities held by a settlement bank are segregated for the benefit of the customer on its books, are not included in its assets upon its insolvency and can be recovered by the customer free of any claims against the bank.

Answer to Question No. 1(b)

Features of Commodity Exchanges

A commodities exchange is an exchange where various commodities and derivatives products are traded. Most commodity markets across the world trade in agricultural products and other raw materials (like wheat, barley, sugar, maize, cotton, cocoa, coffee, milk products, pork bellies, oil, metals, etc.) and contracts based on them.

A commodity exchange is considered to be essentially public because anybody may trade through its member firms. The commodity exchange itself regulates the trading practices of its members while prices on a commodity exchange are determined by supply and demand.

There are four commodity exchanges in India:

(i) National Commodity & Derivatives Exchange Limited (NCDEX) Mumbai;

(ii) Multi Commodity Exchange of India Limited (MCX) Mumbai; and

(iii) National Multi- Commodity Exchange of India Limited (NMCEIL), Ahmadabad;

(iv) Indian Commodity Exchange Limited (ICEX), Gurgaon.

The unique features of commodity exchanges are:

(i) They are demutualized, meaning thereby that they are run professionally and there is separation of management from ownership. The independent management does not have any trading interest in the commodities dealt with on the exchange.

(ii) They provide online platforms or screen based trading as distinct from the open-out-cry systems (ring trading) seen on conventional exchanges. This ensures transparency in operations as everyone has access to the same information.

(iii) They allow trading in a number of commodities and are hence multi-commodity exchanges.

(iv) They are national level exchanges which facilitate trading from anywhere in the country.

Answer to Question No. 1(c)

The main functions of treasury management are as follows:

(1) Keeping a track, on monthly, fortnightly or weekly basis, of all cash inflows and outflows and their variance with budget projections.

(2) Maintaining a record of all receivables and payables, credit instruments, credit sales, deposits, loans and advances etc.

(3) Study regularly the quantity and quality of current assets and liabilities and position of current liquidity.

(4) Assess from time to time the long-term and short-term solvency of the company and its overall solvency position.

(5) Keep liaison with stock exchanges, where the shares of the company are listed for a study of the share price movements.

(6) Keep liaison with banks and financial institutions for ant change in borrowing limits or to inform them of any imminent changes in company's financial position or policies. Payments of interest and installment of principal are to be arranged at the right times.

(7) Keep liaison with Registrar of Companies and government departments concerned with the investment and financing decisions for any information regarding policy changes.

(8) Keep abreast with all legal and procedural requirements for raising funds and investment decisions.

(9) Keep the top management or the board informed of any likely changes in the financial position of the company due to internal factors.

Question No. 2

(a) *Distinguish between any two of the following with reference to foreign exchange market:*

(i) *Fixed exchange rate and flexible exchange rate.*

(ii) *Leading and lagging*

(iii) *Forward exchange contract and future contract.* (10 marks)

(b) *Shares of Resham Ltd. are currently selling at Rs.47. Estimate the value of a call with strike price of Rs.50 and expiring six months later. The risk-less interest rate is 10% and the standard deviation of returns on the stock is 0.40 per year. Also find out the value of options on the same stock with identical strike price and expiry using the Black Scholes Model.* (6 marks)

Answer to Question No. 2(a)(i)

Difference between fixed exchange rate and flexible exchange rate

Fixed Exchange Rate : The exchange rate which the government sets and maintains as the official exchange rate, called fixed exchange rate. A set price will be determined against a major world currency. In order to maintain the local exchange rate, the central bank buys and sells its own currency on the foreign exchange market in return for the currency to which it is pegged.

Flexible Exchange Rate : A flexible exchange rate is determined by the private market through supply and demand. A flexible rate is often termed "self-correcting," as

any differences in supply and demand will automatically be corrected in the market. A flexible exchange rate is constantly changing.

Answer to Question No. 2(a)(ii)

Difference between Leading and Lagging

Leading is the payment of an obligation before due date. It is attractive for the company. This technique is used when there is apprehension that in future foreign currency will be dearer.

Lagging is delaying the payment of an obligation past due date. There is possibility to incur loss due to increase in exchange rate.

The purpose of these techniques is for the company to take advantage of expected devaluation or revaluation of the appropriate currencies. Lead and lag payments are particularly useful when forward contracts are not possible. This technique is used when there is apprehension that in future foreign currency will be cheaper.

Answer to Question No. 2(a)(iii)

Difference between forward exchange contract and future contract:

Future Contracts : Futures contracts are exchange-traded and, therefore, are standardized contracts. These contracts have clearing houses that guarantee the transactions, which drastically lowers the probability of default to almost never. Futures contracts are marked-to-market daily, which means that daily changes are settled day by day until the end of the contract.

Forward contracts : Forward contracts are private agreements between two parties and are not as rigid in their stated terms and conditions. Because forward contracts are private agreements, there is always a chance that a party may default on its side of the agreement. Settlement of these contracts occurs at the end of the contract.

Answer to Question No. 2(b)

Computation of Value of Call Option if Current Price is Rs.47

Basic Data

Factor	Notation	Value
Current Stock Price	SP0	47
Exercise Price	EP	50
Time	t	0.50
Risk Free Rate of Return	r	10% or 0.10
Standard Deviation of Return	s	0.40
Variance	2 s	0.160

Value of call = $SP_0 \times N(D_1) - [EP \times e^{-rt} \times N(D_2)]$

Where D_1 $=$ $\dfrac{L_n(SP_0/EP) + \{(r + .50s^2) \times t\}}{s \times t^{1/2}}$

$=$ $\dfrac{L_n(47/50) + \{(.10 + .50 \times .160) \times .50\}}{.40 \times .707}$

$=$ $\dfrac{L_n.0.94 + .09}{.2828} = \dfrac{-.0619 + .09}{.2828} = .0993$

Value of $N(D_1)$ $=$ $N(.0993) = .03596 + .50 = .5396$

Value of $N(D_2)$ $=$ $D_1 - st^{1/2} = .0993 - .40 \times .5^{1/2} = N(-.1835) = .5 - .0714 = .4286$

Hence Value of Call $= 47 \times .5396 - (50 \times e^{-.10 \times .50}) \times .4286$

$=$ $25.38 - (50 \times e^{-.05} \times .4286) = 25.38 - 20.38 = 5.00$ Approximate

Question No. 3

(a) Discuss the relationship between Treasury Management and Financial Management. (8 marks)

(b) On March 30, 2013 a customer in Mumbai requested a bank to remit DG 250,000 to Holland in payment of import of diamonds under an irrevocable LC. However, due to bank strikes, the bank could affect the remittance only on April 2, 2013. The interbank market rates were as follows:

	March 30, 2013	April 2, 2013
Mumbai	$/Rs.100 : 3.15-3.10	3.12 – 3.07
London	$/£ : 1.7250/60	1.7175/85
DG/£	3.9575/90	3.9380/90

The bank wishes to retain an exchange margin of 0.125%. How much does the customer stand to gain or lose due to the delay? (8 marks)

Answer to Question No. 3(a)

Finance function is a key element in the corporate activity. Its main objective is to keep the firm in good financial health.

To secure financial health, the finance manager has to perform the following functions:

  i. Investment functions and decisions

  ii. Financing function and decisions

Investment function elates to the efficient use of funds in alternate activities. The aim is to allocate funds to each activity so as to obtain optimal returns from such allocation. The short-term and long-term investment strategy has to be planned in line with the objective of maximization of wealth of shareholders. The utilization of funds, as and when they accrue, should take care of two prime considerations. The first consideration is that there should not be any idle funds and second consideration is that there should be no threat of liquidity crisis. Idle funds have their own cost and it results in lowering of

profitability. Extreme tightness of funds, on the other hand, raises the specter of default and loss of commercial reputation. So a delicate balance between these two conflicting objectives has to be maintained by the finance manager. It is in this context that the function of finance becomes crucial to the survival and growth of a firm. The financing function refers to the securing of right resources of funds at an appropriate cost and at the right time. Here the decision is to be taken about the least cost combination of funds for capital requirements and for working capital needs. Whether owners' equity should be used for financing or should the firm resort to external financing? If owners' equity is to be arranged, what returns are to be assured? If borrowing has to be done, then what rate of interest is to be paid ?

In line with the twin objectives of investment and financing, the finance manager has to take responsibility for all decisions pertaining to these areas. In the finance function, a macro view of the requirements and uses of funds is to be taken. The finance manager has to arrange the funds within the approved capital structure of the firm. The funds may be debt or equity. Once the funds have been arranged, it is left to the treasury function to utilize these funds according to the approved parameters. Financial management is also concerned with the overall solvency and profitability of the firm. By overall solvency, we mean that the funds should be able at all times to meet its liabilities.

The treasury function is concerned with management of funds at the micro level. It means that once the funds have been arranged and investments identified, handling of the funds generated from the activities of the firm should be monitored with a view to carry out the operations smoothly. Since funds or cash is the lubricant of all business activity, availability of funds on day to day basis is to be ensured by the treasury manager. The role of treasury management is to manage funds in an efficient manner, so that the operations in the area of finance are facilitated in relation to the business profile of the firm. The treasury function is thus supplemental and complemental to the finance function. As a supplemental function, it reinforces the activities of the finance function by taking care of the finer points while the latter delineates the broad contours. As a complementary function, the treasury manager takes care of even those areas which the finance function does not touch. Looked at from this point of view, the treasury function integrates better with manufacturing and marketing functions than the finance function. This is because the treasury department of a firm is involved in more frequent interaction with other departments. For the purpose of performing this role, the treasury manager operates in various financial markets including the inter-corporate market, money market, G-sec market, forex market etc.

Answer to Question No. 3(b)

1. *Determination of Rupee Value of DG 1 on 30 March, 2013*

   Process : Buy US $ at Ask Rate at Bombay

   Buy Pound (using US $) at Ask Rate at London

   Sell Pound at Bid Rate for DG

   Therefore, DG = Ask Rate at Bombay (for Purchase of Dollar) x Ask Rate for Pound at London (for Purchase of Pound) x Bid Rate for DG (for conversion of Pound into DG)

   = 100/3.10 x 1.7260 x (1/3.9575) = Rs. 14.07 per DG

2. *Determination of Rupee Value of DG 1 on 02 April, 2013*

   Process :   Buy US $ at Ask Rate at Bombay

                  Buy Pound (using US $) at Ask Rate at London

                  Sell Pound at Bid Rate for DG

   Therefore, DG = Ask Rate at Bombay (for Purchase of Dollar) x Ask Rate for Pound at London (for Purchase of Pound) x Bid Rate for DG (for conversion of Pound into DG)

   =   100/3.07 x 1.7185 x (1/3.9380) = Rs 14.21 per DG

3. *Loss because of Delay*

   (a) *Loss without considering Banker's Margin (Extra Money payable by the Company)*

       =   Amount Payable x (Exchange Rate on the date of actual payment - Exchange Rate on the date on which payable) = DG 2,50,000 x (14.21 - 14.07) = Rs.35,000

   (b) Banker's Margin on Loss = 35,000 x 0.125% = 44

   (c) Total Loss to the Company = 35,000 + 44 = 35,044

Question No. 4

   (a) *A UK company has imported goods worth $ 3,64,897 payable in 6 months time. The spot and forward rates are:*

       Spot Rate $ 1.5617 - 1.5673

       6 months forward $ 1.5455 - 1.5609

       The borrowing rates in UK and US are 7% and 6% respectively and the deposit rates are 5.5% and 4.5% respectively.

       Currency Options are available under which one option contract is for 12,500. The option premiums for £ at a strike price of $ 1.70/£ are $ 0.037 (Call Option) and $0.096 (put option) for 6 months period. The company has 3 choices before it: Forward cover, Money Market cover and Currency option. Which is the best alternative for the company ?   (8 marks)

   (b) *Write short note on*

       (i) *Intrinsic Value of Option*

       (ii) *Time Value of Option*   (4 marks each)

Answer to Question No. 4(a)

Relevant Rule for Conversion: Based on nature of Quote (Direct or Indirect)

	Buying Foreign Currency (Converting Home Currency into Foreign Currency)	Selling Foreign Currency (Converting Foreign Currency into Home currency)
Direct Quote, relevant rate is	Ask Rate	Bid Rate
Indirect Quote, relevant rate is	1 ÷ Bid Rate	1 ÷ Ask Rate

(a) *Forward Market*

Particulars	Computation	Amount ($)
Amount Payable	Given	$ 3,64,897
Amount under Forward Contract	$ 3,64,897 ÷ 1.5455 (Forward Bid Rate)	£2,36,103

(b) *Cash Money Market*

1. Requisite: Money Market Hedge is possible only in case of difference in rates of interest for borrowing and investing.

2. Activity Flow :

   Borrow: Borrow Sterling equivalent of money at 7% p.a. for 6 Months for investing.

   Convert : Convert the money borrowed in Sterling to US $ at Spot Rate (Bid)

   Invest : Invest US $ so converted in Dollar Deposits at 4.5% p.a. for 6 Months

   Realize: Realize the Deposit including Interest and use the proceeds to settle the liability.

3. Cash Flow:

Particulars	Amount
Amount Payable After 6 Months	US $ 3,64,897
Amount to be Invested at 4.5% p.a. for realizing	US $ 3,64,897
= US $3,64,897 ÷ (1 + Interest Rate of 4.5% p.a. x 6/12) = $3,64,897 ÷ 1.0225	US $ 3,56,867
Amount be borrowed Amount to be invested in US $ 3,64,897 ÷ 1.5617 (Spot Bid Rate)	£2,28,512
Interest payable On money borrowed @ 7% p.a. for 6 Months	
= 2,28,512 x 7% x 6 Months / 12 Months	£ 7,998
Total Amount Payable - Amount Borrowed £ 2,28,5124+ Interest £ 7,998	£2,36,510

(c) *Currency Options*

Payment is to be made in Pounds after 6 months' hence Put option to sell Pounds is relevant.

Number of Options Contract

Value of one Options Contract = Value per unit X Exercise price = £ 12,500 x 1.70 = £21,250

Number of Contracts to be purchased = Amount payable in 6 month's time ÷ Value per contract = 3,64,897 ÷ 21,250 = 17.17 Contracts

Alternative 1 : 17 Options Contracts are undertaken and the balance through Forward Contract.

Value covered under Options = 17 Contracts X $ 21,250 per Contract = $ 3,61,250

Value under Forward Contract = Amount payable after 6 months - Value under Options

= $ 3,64,897 - $ 3,61,250 = $3,647

Cash Flows under Options

Particulars	Amount
Value of Forward Contract in £ = ($ 3,64,897 - $] ÷ 1.5455)	£ 2360
Premium Payable [$0.096 X 17 x 12,500 = $ 20,400 = $ 20,400 ÷1.5617 (Spot Bid Rate)	£ 13,063
Value of the 17 Options Contract [17 x 12,500]	£2,12,500
Total Outflow under Options	£ 2,27,923

Alternative 2 : 18 Option Contracts are undertaken and the excess Dollars are sold in the Forward Market

Value covered under Options = 18 Contracts X $ 21,250 per Contract = $ 3,82,500

Value sold under Forward Contract = Amount payable after 6 months - Value under Options

= $3,64,897 - $ 3,82,500 = $17,603

Cash Flows under Options

Particulars	Amount
Value of Forward Contract in £ = ($ 17,063 ÷ 1.5609)	£ 11,277
Premium Payable [$0,096 X 18 x 12,500 = $ 21,600 = $21,400 ÷ 1.5617 (Spot Bid Rate)	$21,600
Value of the 18 Options Contract [18 x 12,500]	£ 2,25,000
Total Outflow under Options	£ 2,27,554

Answer to Question No. 4(b)(i)

Intrinsic Value

This is simply the difference between the exercise (strike) price and the underlying stock price. Warrants are also referred to as in-the-money or out-of-the-money, depending on where the current asset price is in relation to the warrant's exercise price. Thus, for instance, for call warrants, if the stock price is below the strike price, the warrant has no intrinsic value (only time value - to be explained shortly). If the stock price is above the strike, the warrant has intrinsic value and is said to be in-the-money.

The following equations will allow you to calculate the intrinsic value of call and put options:

- *Call Options* : Intrinsic value = Underlying Stock's Current Price - Call Strike Price

- *Put Options* : Intrinsic value = Put Strike Price - Underlying Stock's Current Price

Answer to Question No. 4(b)(ii)

Time Value

Time value can be considered as the value of the continuing exposure to the movement in the underlying security that the warrant provides. Time value declines as the expiration of the warrant gets closer. This erosion of time value is called time decay. It is not constant, but increases rapidly towards expiration. Time value is affected by time to expiration, volatility, dividends and interest rates.

Time value is the amount by which the price of an option exceeds its intrinsic value. Also referred to as extrinsic value, time value decays over time.

Time Value = Put Premium - Intrinsic Value

Time Value = Call Premium - Intrinsic Value

Question No. 5

(a) *Discuss the settlement of Option Contracts.* (6 marks)

(b) *Find out the value of 3 months put option with a strike price of Rs. 50. The current market price is also Rs.50 and the risk-free rate of interest is 10% and volatility is 30%.*

What difference will it make if a dividend of Rs.1.50 is expected in two months time? (10 marks)

Answer to Question No. 5(a)

Option contract is a type of derivatives contract which gives the buyer/holder of the contract the right (but not the obligation) to buy/sell the underlying asset at a predetermined price within or at end of a specified period. The buyer/holder of the option, purchases the right from the seller/writer for a consideration which is called the premium. The seller/writer of an option is obligated to settle the option as per the terms of the contract when the buyer/holder exercises his right. The underlying asset could include securities, an index of prices of securities, etc

Each option contract has a buyer, called the holder, and a seller, known as the writer. If the option contract is exercised, the writer is responsible for fulfilling the terms of the contract by delivering the shares to the appropriate party. In the case of a security that cannot be delivered such as an index, the contract is settled in cash. For the holder, the potential loss is limited to the price paid to acquire the option. When an option is not exercised, it expires. No shares change hands and the money spent to purchase the option is lost. For the buyer, the upside is unlimited..

Answer to Question No. 5(b)

Computation of Value of put Option if Current Price is Rs.50

(a) Basic Data

Factor	Notation	Value
Current market Price	SP_0	50
Exercise price	EP	50
Time	T	3 months or .25
Risk free rate of return	R	10% or .10
Standard deviation	S	30% or .3

Value of Put option : $= [EP \times e^{-rt} \times N(-D_2] - [SP_0 \times N(-D_1)]$

$$\text{Where} \quad D_1 \quad = \quad \frac{L_n(SP_0/EP) + \{(r + .50s^2) \times t\}}{s \times t^{1/2}}$$

$$= \quad \frac{L_n(50/50) + \{.10 + .50 \times .090)\} \times .25}{.30 \times .5}$$

$$= \quad \frac{L_n 1 + .1375}{.15} = \frac{0 + .03625}{.15} \quad = .24166$$

Value of $N(-D_1)$ = N(-.024167) = .50-.9045 = .4045

Value of $N(-D_2)$ = $D_1 - st^{1/2}$ = .24166-.30 x $.25^{1/2}$ = N(-.0916) = .5-.0359 = .4634

Hence Value of Put = $[(50 \times e^{-.10 \times .25}) \times .4634] - [50 \times .4045]$

= (50 x .9753 x .4634) - (20.20) = 22.59 - 20.22 = 2.37

If dividend is receivable in two months time than:

Present value of dividend = 1.5 x $e^{-.10 \times .16667}$ = 1.47

Factor	Notation	Value
Adjusted market Price	SP_0	50 - 1.47 = 48.53
Exercise price	EP	50
Time	T	3 months or .25
Risk free rate of return	R	10% or .10
Standard deviation	S	30% or .3

Putting all the revised value in the formula we will get value of put Rs. 3.26.

Question No. 6

(a) *"Buying a call option is risky because the holder commits to purchase a share at a later date." Discuss.* *(6 marks)*

(b) *What are the various techniques to off set the foreign exchange risk ?* *(10 marks)*

Answer to Question No. 6(a)

A call option gives its owner the right to buy the underlying asset at a predetermined price at a future date.

The striking price (also called the exercise price) is the price stated in the option contract at which the call (put) owner can buy (sell) the underlying asset up to the expiration date, the final calendar date on which the option can be traded.

Selling a call option is riskier than buying a call option. This is because the maximum loss for selling a call option is unlimited if the underlying stock price keeps soaring.

The advantage to buying a call option is that it gives the underlying asset its limited risk. For a call option the most a purchaser can lose is the initial investment, the option premium.

So far as the buyer of call is concerned he is not oblige to buy share if it is available in the market at a price below exercise price.

So it is wrong to say that buying a call option is risky because the holder commits to purchase a share at a later date.

Answer to Question No. 6(b)

The general protection measures are those measures which are implemented on an ongoing basis as a part of a firm's normal operations. The assumption here is that in a multinational setting, the subsidiaries are wholly-owned. If there are shareholders in the host countries of the subsidiaries, these measures could at times conflict with their interests.

(a) *Invoicing Policies* : if a firm has subsidiaries abroad, there may be transaction among them or between a subsidiary and the parent firm. Or, the parent and the subsidiaries may have transactions in foreign currencies with third parties. The foreign exchange effect on intra-firm payments on a consolidated basis does not depend upon the currency denomination of the invoice. For, a payable in the books of an importing subsidiary is off-set by an exactly equal amount of a receivable in the same currency in the books of the exporting subsidiary. It is immaterial from the parent's point of view whether the invoice is in the currency of the exporting subsidiary of that of the importing subsidiary. Even if the invoice is in a third currency, The foreign exchange risk will be shared by the exporting and importing subsidiaries concerned.

(b) *Transfer Pricing* : It is a mechanism by which profits are transferred through an adjustment of prices on intra-firm transactions. It can be applied to transactions between the parent firm and its subsidiaries or between strong currency and weak currency subsidiaries. Subject to the demands of competition, a parent

may charge higher prices to its weak currency subsidiary, thereby increasing its own profit and reducing that of the subsidiary. The taxable income of the subsidiary comes down. Recovering higher level of operating charges from the subsidiaries also serves the same purpose. It is likely that audit profession, exchange controls and customs duties of the host country may supervene to negate this strategy. So, the mechanism may be applied moderately—gradually over a long period, without upsetting the environment in which the subsidiaries operate.

(c) *Leading and Lagging and extension of Trade Credit* : Leading implies speeding up collections on receivables if the foreign currency in which they are invoiced is expected to appreciate. Lagging implies delaying payments of payables invoiced in a foreign currency that is expected to depreciate. At the level of an individual transaction this is a specific protection measure; but at the corporate level this requires forecasting of currency movements, centralisation of information on transactions, and evolving guidelines for subsidiaries. Hence, it has been located here as a general protection measure.

(d) *Netting* : All transactions-gross receipts and payments among the parent firm and subsidiaries should be adjusted and only net amounts should be transferred. This technique is called netting. This again involves centralisation of data at the corporate level, selection of the time period at which netting is to be done, and choice of the currency in which netting is to be done. The currency could be the home currency of the firm. Netting reduces costs of remittance of funds, and increases control of intra-firm settlements. It also produces savings in the form of lower float (funds in the pipe-line) and lower exchange costs.

(e) *Matching* : It is a process whereby cash inflows in a foreign currency are matched with cash outflows in the same currency with regard, to as far as possible, amount and maturation. Hedging of exchange risk could be done for the unmatched portion. When there are cash inflows in one foreign currency and cash outflows in another foreign currency, the two could still be matched, provided they are positively correlated i.e. expected to move in tendem. There is the risk of exchange rates going off the expectations.

Other techniques

(a) Forward Exchange Contracts.

(b) Currency Futures and Options.

(c) Currency Swap Arrangement.

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TEST PAPER 2/2013

Time allowed : 3 hours   *Max. Marks : 100*

Attempt All Questions

NOTE : *Answer any FIVE Questions including Question No. 1 which is COMPULSORY.*

Question No. 1

(a) *"Internal treasury control is a process of self-improvement". Explain   (8 marks)*

(b) *"Stability in payment of dividends has a marked bearing on the market price of the shares of a corporate firm." Explain the statement.   (6 marks)*

(c) *In a portfolio of the company, Rs.2,00,000 have been invested in asset X which has an expected return of 8.5%, Rs.2,80,000 in asset Y, which has an expected return of 10.2% and Rs.3,20,000 in asset Z which has an expected return of 12%. What is expected return for the portfolio?   (6 marks)*

Answer to Question No. 1(a)

All economic units have the goal of profit maximization or wealth maximization. This objective is achieved by short-term and long-term planning for funds. The plans are incorporated in the budget in the form of activities and corresponding targets are fixed accordingly. The next step in the process is the control function to see that the budgets are being implemented as per plans. Control is thus part of planning and budgeting in any organization.

Control is a process of constant monitoring to ensure that the activities are being carried out as per plans. It is also noticed whether there is any divergence from the plans, what are the reasons for the divergence and what remedial action can be suggested.

The control aims at operational efficiency and removal of wastages and inefficiencies and promotion of cost effectiveness in the firm. The control is exercised under phases of planning and budgeting. These phases include setting up of targets, laying down financial standards, evaluation of performance as per these norms and reporting in a standard format.

The quarterly and annual budgets would set the targets for each department and financial standards are set out for each activity. Monthly budgets are evaluated by the performance sheets maintained daily and regular reports go to the financial controller. Reporting and evaluation go together and on the basis of information system built in the past, plans are prepared for the next period.

Internal treasury control concerned with all flows of funds, cash and credit and all financial aspects of operations. From time to time and on regular basis, the internal treasury control is exercised on financial targets. The financial aspects of operations include procuring of inputs, paying creditors, making arrangement for finance against

14

inventory and receivables. The gaps between inflows and outflows are met by planned recourse to low cost mix of financing.

Hence it is true to say "Internal treasury control is a process of self improvement".

Answer to Question No. 1(b)

The dividend decision should reflect the different factors already mentioned above as well as company's present operating and financial position. In this total framework, the firm will find that it has a choice of several dividend policies to follow, viz.:

Steady dividend, dividend fluctuating, low regular dividend plus extra dividends; elimination of dividend entirely.

Profit of the firm fluctuates considerably with changes in the level of business activity. Most companies seek to maintain a target dividend per share. However, dividend increase with a lag after earnings rise and this increase in earnings appear quite sustainable and relatively permanent. When dividends are increased strenuous efforts are made to maintain them at increased new level. This stability could take three forms:

(1) keep dividends at a stable rupee amount but allow its payout ratio to fluctuate, or

(2) maintain stable payout ratio and let the rupee dividend fluctuate, or

(3) set low regular dividend and then supplement it with year end "extras" in years when earnings are high.

As earnings of the firm increase the customary dividend will not be altered but a year end "extras" will be declared.

The dividend policy has to be adopted to the nature and environments of the firm, industry and economy. If the company is operating in highly cyclical industry, like the machine tools industry, its management cannot create through regular dividends as stability does not exist. A low pay out in boom period cannot be off set by continuing dividends in prolonged period of large losses. It is better to relate dividends to earnings and not unduly attempt to protect shareholders from large fluctuations in earnings so inherent in business. Failure to pay dividends in one year may shock the market price of share and remove the security from the approved list of the investments used by institutional investors.

A stable Dividend policy may lead to higher stock prices because it sustains investors confidence as they value more the dividend which are certain to be received. If dividends fluctuate investors may discount with some percentage probability factor i.e. the likelihood of receiving any particular amount of dividend. Hence it is better to keep a consistent dividend payment policy.

Answer to Question No. 1(c)

Assets	Return	Amount	Weight	Weight x Return
X	8.5%	2,00,000	25%	2.125%
Y	10.2%	2,80,000	35%	4.2%
Z	12%	3,20,000	40%	4.8%
Total		8,00,000	100%	11.125%

Question No. 2

(a) A Company is considering whether it should spend Rs.4 lacs on a project to manufacture and sell a new product. The unit variable cost of the product is Rs.6. It is expected that the new product can be sold at Rs.10 per unit. The annual fixed costs (only cash) will be Rs.20,000. The project will have a life of six years with a scrap value of Rs.20,000. The cost of capital of the company is 15%. The only uncertain factor is the volume of sales. To start with the company expects to sell at least 40,000 units during the first year.

You are required to find out:

(i) Net Present Value of the project based on the sales expected during the first year and on the assumption that it will continue at the same level during the remaining years.

(ii) The minimum volume of sales required to justify the project.   (10 marks)

(b) Lockers Pvt. Ltd. is considering the use of a lockbox system to handle its daily collections. The company's credit sales are Rs.160 crore per year, and it currently processes 1,300 cheques per day. The cost of the lockbox system is Rs.95,000 per year. The system allows for up to 1,000 cheques per day. Any additional cheques are processed at an additional charge of Rs.1.50 per cheque. The company estimates that the system will reduce its float by 3 days. The firm's discount rate for equally risky projects is 15 per cent, its tax rate is 40 per cent, and its cost of short-term capital is 12 per cent. (Assume a 360-day year).

(a) How much cash will be released for other uses if the lockbox system is used ?

(b) What net benefit will Lockers Ltd. gain from using lockbox system ?

(c) Should Lockers Ltd. adopt the proposed lockbox system ?

(d) Assume now that the institution that offers the lockbox system requires a Rs.7,00,000 compensating balance to be held for the complete year in a non-interest-bearing account. Should Lockers Ltd. adopt the system ?
                                                                                                        (6 marks)

Answer to Question No. 2(a)(i)

Units		40,000
Selling Price (1)		10
Variable cost (2)		6
Contribution (3)=(1-2)		4
Total contribution (1x3)		160,000
Less : Fixed Cost :	Depreciation*	NA
	Other fixed Cost	20,000
Cash inflow p.a.		140,000
Cumulative PV Factor @ 15%		3.784
Present Value of Inflow		529,760.00
Add : PV of scrap value at the end of 6th Year @ 15%		8,647

Total Inflow	538,407
Total Outflow	400,000.00
NPV	138,407.00

*Not Considered because there is no tax

Answer to Question No. 2(a)(ii)

Required NPV = zero, Present value of Cash inflow must be equal to Rs. 4,00,000.

Particulars	*Rs.*
Required Present Value of Inflow	4,00,000
Less: PV of scrap value at the end of 6th Year @ 15%	8,647
Further required Inflow	3,91,353
Cumulative PV Factor @ 15%	3.784
Cash flow per annual required 391,353/3.784	103423
+ Fixed cost	20,000
Per annual contribution required	1,23,423
Contribution per unit	Rs.4
No. of unit (rounded off)	30,855

Answer to Question No. 2(b)

1. Credit sales per day = 160 croe / 360 days = 44,44,444

2. Cost if lock box system is adopted

   Cost of lock box = Rs.95,000

   Additional cost for cheques = 300 cheque x Rs.1.5 x 360 = Rs. 1,62,000

   Opportunity cost = 2,57,000 x 12% = 30,840

   Total cost = 257,000 + 30,840 = 2,87,840.

3. Cost of Funds = 7,00,000 x 12% = 84,000.

4. Reduction in float days = 3

   (a) Cash that will be released for other use = 44,44,444 x 3 days = 1,33,33,332.

   (b) Cost of locker = 2,87,840.

   Gain on release of fund = 1,33,33,332 x 15% = 20,00,000 Apprx.

   Hence net benefit from use of lock box = 20,00,000 - 287,840 =17,12,160.

   (c) Lockers Ltd. should adopt the lock box system.

   (d) Total cost if Rs. 7,00,000 to be deposited = 84,000 + 2,87,840 = 3,71,840.

   Net gain = 20,00,000 - 371,840 = 16,28,160. Still Lockers Ltd. should adopt the lock box system.

Question No. 3

(a) The distribution of return of security 'F' and the market portfolio 'P' is given below:

Probability	(Return %)	
	F	P
0.30	30	-10
0.40	20	20
0.30	0	30

You are required to calculate: (i) the expected return of security 'F' and market portfolio 'P', (ii) the covariance between the market portfolio and security and (iii) beta for the security. *(8 marks)*

(b) XYZ Ltd. holds fixed rate bonds with coupon rate of 7%. ABC Ltd. is a recipient of floating rate interest through floating rate bonds with coupons rate of LIBOR + 2%. Both apprehend a fluctuation in interest rate in the coming years. ABC Ltd. and XYZ Ltd. enter into a swap arrangement through a dealer, on the following terms:

— ABC Ltd. to pay floating rate interest of LIBOR + 2%,

— ABC Ltd. to receive from dealer fixed interest of 6.5%,

— XYZ Ltd. to pay a fixed interest of 7%,

— XYZ Ltd. to receive from the dealer a floating rate of LIBRO + 2%.

Show the cash flow position of all the three parties. *(8 marks)*

Answer to Question No. 3(a)

(i) 1. Expected Return and Risks of Security P

Scenario	Probability (P)	Return (R)%	Expected Return %	Deviation (D)%	D2	Variance (P x D2)
(1)	(2)	(3)	(4) = (2) x (3)	(5) = (3) - (R)	(6)	(7) = (2) x (6)
1	0.30	30	9	13	169	50.7
2	0.40	20	8	3	9	3.6
3	0.30	0	0	(17)	289	86.7
			17%			141

Expected Return on Security P = **17.00%**

Risk on Security

2. Expected Return and Risks of Market Portfolio Q

Scenario	Probability (P)	Return (R)%	Expected Return %	Deviation (D)%	D2	Variance (P x D2)
(1)	(2)	(3)	(4) = (2) x (3)	(5) = (3) - ($\bar{R}$)	(6)	(7) = (2) x (6)
1.	0.30	(10)	(3)	(25.5)	650.25	195.075
2	0.40	20	8	4.5	20.25	8.1
3	0.30	35	10.5	19.5	380.25	114.07
			15.50%			317.245

Expected Return on Market Portfolio Q = 15.50%

(ii) Computation of Covariance of Securities P and Market Portfolio Q

Scenario	Probability (P)	Deviation (DP) from Mean for	Deviation (DQ) from Mean for Q%	Deviation Product (DPQ) = DP X DQ	Covariance (P X DPQ) P%
(1)	(2)	(3)	(4)	(5) = (3) x (4)	(6) = (2) x (5)
1	0.30	13	(25.5)	(331.5)	(99.45)
2	0.40	3	4.5	13.5	5.4
3	0.30	(17)	19.5	(331.5)	(99.45)
					(193.5)

(iii)   **Beta** = CovPQ ÷ 2 P s = -193.5 ÷ 317.245 = - 0.6099

Answer to Question No. 3(b)

Name of company	XYZ	ABC
Interest position	Fixed	Floating
Interest rate	7%	LIBOR+2%
Desired	Floating	Fixed

After swap arrangement ABC shall receive LIBOR + 2%,

XYZ shall receive fixed 6.5%

Dealer shall receive .5%.

Question No. 4

(a) Give the following information:

           Exchange rate   –   Canadian dollar 0.665 per DM (spot)

                                            Canadian dollar 0.670 per DM (3 months)

           Interest rates   –   DM 7% p.a.

                                            Canadian dollar 9%p.a.

    What operations would be carried out to take the possible arbitrage gains ?

                                                              (6 marks)

(b) (i) *Write a short note on operating leverage.*

    (ii) *Discuss the various tools of treasury management.*   *(5 marks each)*

Answer to Question No. 4(a)

Exchange rate for Canadian dollar/Dm:

Spot 0.665 per DM (spot), Forward 0.670 per DM (3 months)

Theoritcal forward rate Canadian dollar/DM

$$= \text{ Spot rate } \times \frac{1+ \text{canadian dollar interest rate}}{1+ \text{DM interest rate}}$$

$$= 0.665 \times \frac{1+.09\,(3/12)}{1+.07\,(3/12)} = \frac{.665 \times 1.0225}{1.0175} = .6682$$

Actual forward rate .670 is greater than theoretical forward rate .6682, therefore course of action for arbitrage gain- buy spot, sell forward.

Steps for arbitrage

Borrow in Canadian dollar @ 9% p.a. for 3 months

Convert Canadian dollar in DM at spot

Invest DM @7 % p.a. for 3 months also enter into forward for selling DM into Canadian dollar after 3 months

Realize maturity proceeds of DM deposit after 3 months

Convert DM into Canadian dollar under forward contract

Repay Canadian liability balance is gain.

Answer to Question No. 4(b)(i)

    Operating leverage is concerned with the extent to which a firm commits itself to high level of fixed costs other than interest payments. A firm that uses rented premises has less leverage than a firm that incurs huge cost in development of its own property. A firm that has substantial vertical integration has created a highly leveraged situation. If a firm integrates vertically by acquiring its raw materials supplier it may have to spend less on purchase of raw materials. But at the same time it will have to bear the fixed costs associated with the supplier subsidiary.

Answer to Question No. 4(b)(ii)

Treasury manager is required to work in a fast changing and competitive environment. For carrying out his activities, he has resort to certain tools and techniques. Most of the tools originate from the finance department and as such can not be considered to be an exclusive prerogative of the treasury department. Yet it is the treasury manager which is using these tools most extensively. The tools are being described below:

1. *Analytic and planning tools*

   In treasury function, planning and budgeting are essential to achieve targets and to keep effective control on costs. Analysis of the data and information is necessary for planning and budgeting. Performance budgeting is referred to as setting of physical targets for each line of activity. The financial outlay or expenditure needed for each is earmarked to choose the least cost mode of activity to achieve the targets. Productivity and efficiency improves by decentralization of responsibility and that is achieved by performance budgeting, where each department or section is made a profit center and is accountable for its targets, financial involvement and profits in financial terms, relative to the targets in physical terms.

   This type of planning involving performance budgeting is best suited for service industry say a financial services company or bank where every department can function in a decentralized manner and achieve the targets.

2. *Zero Based Budgeting (ZBB)*

   Another tool of analysis and performance is ZBB wherein each manager establishes objectives for his function and gain agreement on them with top management. Then alternate ways for achieving these targets are defined and most practical way for achieving the targets is selected. This alternative is then broken into incremental levels of effort required to achieve the objective. For each incremental level of activity, costs and benefits are assessed. The alternative with the least cost is then selected.

3. *Financial Statement Analysis*

   Financial analysis of a company is necessary to help the treasury manager to decide whether to invest in the company. Such analysis also helps the company in internal controls. The soundness and intrinsic worth of a company is known only by such analysis. The market price of a share depends, among other things on the sound fundamentals of the company, the financial and operational efficiency and the profitability of that company. These factors can be known by a study of financial statements of the company.

Question No. 5

(a) *The capital structure of the Progressive Corporation consists of ordinary share capital of Rs.10,00,000 (shares of Rs.100 each) and Rs.10,00,000 of 10% debentures. The selling price is Rs.10 per unit; variable costs amount to Rs.6 per unit and fixed expenses amount to Rs.2,00,000. The income tax rate is assumed to be 50%. The sales level is expected to increase from 1,00,000 units to 1,20,000 units.*

    (A) You are required to calculate:

      (i)   The percentage increase in earnings per share

      (ii) The degree of financial leverage at 1,00,000 units and 1,20,000 units

      (iii) The degree of operating leverage at 1,00,000 units and 1,20,000 units

    (B) Comment on the behaviour of operating and financial leverages in relation to increase in production from 1,00,000 units to 1,20,000 units   (8 marks)

  (b) A company belongs to a risk-class for which the appropriate capitalization rate is 10%. It currently has outstanding 25,000 shares selling at Rs.100 each. The firm is contemplating the declaration of dividend of Rs.5 per share at the end of the current financial year. The company expects to have a net income Rs.2.5 lacs and a proposal for making new investments of Rs.5 lacs.

    Show that under MM assumptions, the payment of dividend does not affect the value of the firm.   (8 marks)

Answer to Question No. 5(A)(i)

The percentage increase in earnings per share

	1,00,000	1,20,000
Units	1,00,000	1,20,000
Selling price(1)	10	10
Variable cost (2)	6	6
Contribution (3)=(1)-(2)	4	4
Total contribution (4)= (3) x Units	4,00,000	4,80,000
Less : Fixed cost (5)	2,00,000	2,00,000
Interest on 10% Debentures =	1,00,000	1,00,000
Net profit before tax (6)=(4)-(5)	1,00,000	1,80,000
Less : Tax @ 50%	50,000	90,000
Profit after tax	50,000	90,000
No. of shares	10,000	10,000
Earnings per share	5	9
Percentage increase in earnings	(9-5)/5 x 100 = 4/5 X 100 = 80%	

Answer to Question No. 5(A)(ii)

The degree of financial leverage at 1,00,000 units and 1,20,000 units

Degree of financial leverage (DOF) = $\dfrac{EBIT}{EBIT - Interest}$

	1,00,000	1,20,000
Units	1,00,000	1,20,000
EBT(1)	1,00,000	1,80,000
Add : Interest on 10% Debentures (2)	1,00,000	1,00,000
EBIT(3)=(1)+(2)	2,00,000	2,80,000
DOF(3)/(1)	2	1.55

Answer to Question No. 5(A)(iii)

The degree of operating leverage at 1,00,000 units and 1,20,000 units

Degree of operating leverage (DOL) = Contribution/EBIT

Units	1,00,000	1,20,000
Selling price (1)		
Contribution	4,00,000	4,80,000
DOL	2	1.71

Answer to Question No. 5(B)

Operating leverage is the impact of fixed cost on firm' EBIT. A firm which is able to extract more advantages from fixed cost is able to generate more earnings before tax. In the given case to increase production from 1,00,000 to 1,20,000, the firm is able to increase EBIT by Rs. 80,000.

Answer to Question No. 5(b)

Basic data

Particular	Notation	Amount
Number of shares outstanding at the beginning of the year	n	25,000
Number of shares issued at the end of the year at P_1	m	To be computed
Market price at the beginning of the year	P_0	100
Market price at the end of the year	P_1	To be computed
Dividend per share at the end of the year	D_1	5
Investment at the end of the year	I_1	5,00,000
Net earnings after tax at the end of the year	X_1	2,50,000
Cost of equity	K_e	10%

i. Computation of Market price at the end (P_1)

a. When dividend is declared

$$P_0 = \frac{P_1 + D_1}{1 + K_e}$$

$$100 = \frac{P_1 + 5}{1 + 10\%}$$

$$P_1 = 105$$

b. when dividend is not declared

$$P_0 = \frac{P_1 + 0}{1 + K_e}, \quad 100 = \frac{P_1}{1 + 10\%}$$

$$P_1 = 110$$

ii. Computation of number of shares to be issued:

Particular	When dividend is declared	When dividend is not declared
Net Earning	2,50,000	2,50,000
Less : Dividend	1,25,000	NILS
Retained earnings (a)	1,25,000	2,50,000
Investment to be made I_1	5,00,000	5,00,000
Further equity to be raised (I1-a)	3,75,000	2,50,000
Market Price P1	105	110
Number of shares	3571.428	2272.727
Existing number of share	25,000	25,000
Total number of share	28,571.428	27,272.727
Value of firm (Total No. x P_1)	30,00,000 round of	30,00,000

Hence in both the cases value of the firm remain same.

Although shares cannot be issued in fraction but for the purpose of calculation share has been considered in fraction.

Question No. 6

(a) Treasury management has both macro and micro aspects. Discuss. *(6 marks)*

(b) X Ltd. has 8 lakh equity shares outstanding at the beginning of the year 2013. The current market price per share is Rs. 120. The Board of Directors of the company is contemplating Rs. 6.40 per share as dividend. The rate of capitalisation, appropriate to the risk class to which the company belongs, is 9.6%.

   (i) Based on M-M Approach, calculate the market price of the share of the company, when the dividend is (a) declared; and (b) not declared.

   (ii) How many new shares are to be issued by the company, if the company desires to fund an investment budget of Rs. 3.20 crores by the end of the year assuming net income for the year will be Rs.1.60 crores ? *(6 marks)*

(c) Decan Ltd. has an EPS of Rs 2, Expected DP Ratio of 75%, ROE of 12% and equity capitalization rate of 10%.

   (a) Find out the growth rate, share value & PE Ratio.

   (b) If the company follows a retention ratio of 40%, what would be expected dividend, growth rate, share value and price-earning ratio ? *(4 marks)*

Answer to Question No. 6(a)

Government sector, business sector and the foreign sector are the major sectors of country's economy. For macro operations of these sectors, there is requirement of cash, currency and credit. In broader terms, all financial resources including foreign exchange are to be made available to the industrial or business units. Similarly, at the

macro level return flow of funds in the form of taxes and repayment of loans is needed. Such to and from movement of funds is part of the financial functioning.

Any business enterprise requires finance to start business operations. The first requirement is in the form of capital for setting up of the project. Project finance needs long term funds.

These funds can be obtained from equity and debt both. Equity and internal accruals are considered the owners' contribution whereas debt is treated as the outsiders' stake in the project. Once the company starts operations of production and manufacture, it needs working capital funds also. These funds are required to meet the payments for raw materials and other inputs, spares, utilities etc. The quantum of funds needed for working capital depends upon nature of the company's business and nature of its products or services.

The function of treasury management is concerned with both macro and micro facts of the economy. At the macro level, the pumping in and out of cash, credit and other financial instruments are the functions of the government and business sectors, which borrow from the public. These two sectors spend more than their means and have to borrow in order to finance their ever-growing operations. They accordingly issue securities in the form of equity or debt instruments. The latter are securities including promissory notes and treasury bills which are redeemable after a stipulated time period. Such borrowings for financing the needs of the government and the business sector are met by surplus funds and savings of the household sector and the external sector. These two sectors have a surplus of incomes over expenditure. The micro units utilize these surpluses and build up their capacities for production of output and this leads to the productive system and distribution and consumption systems.

Answer to Question No. 6(b)(i)

Basic data

Particular	Notation	Amount
Number of shares outstanding at the beginning of the year	n	8,00,000
Number of shares issued at the end of the year at P_1	m	To be computed
Market price at the beginning of the year	P_0	120
Market price at the end of the year	P_1	To be computed
Dividend per share at the end of the year	D_1	6.4
Investment at the end of the year	I_1	3.2 crore
Net earnings after tax at the end of the year	X_1	1.6 crore
Cost of equity	K_e	9.6%

Computation of Market price at the end (P_1)

B.   When dividend is declared   b.   when dividend is not declared

$$P_0 = \frac{P_1 + D_1}{1 + K_e}$$

$$120 = \frac{P_1 + 3.6}{1 + 9.6\%}$$

$$P_1 = 125.12$$

$$P_0 = \frac{P_1 + 0}{1 + K_e}, \quad 120 = \frac{P_1}{1 + 9.6\%}$$

$$P_1 = 131.52$$

Answer to Question No. 6(b)(ii)

Computation of number of shares to be issued:

Particular	When dividend is declared	When dividend is not declared
Net Earning	1.6 crore	1.6 crore
Less : Dividend 8 lacs x 6.4	.512 crore	NIL
Retained earnings (a)	1.088	1.6
Investment to be made I_1	3.6	3.6
Further equity to be raised (I_1-a) Rs.	2.512 crore	2 crore
Market Price P_1	125.12	131.12
No of shares to be issued rounded off	2,00,767	152532

Answer to Question No. 6(c)

(a) Growth Rate (g)   =   Retention Ratio (RR) x ROE

                       =   (1 - DP Ratio) x ROE

                       =   (1-75%) x 12%

                       =   3%

    Share Value   = D_0 x (1+g) / K_e – g

                       =   1.5 x (1+ 0.03) / 0.10 – 0.03

                       =   Rs. 22.07

    PE Ratio   =   MPS / EPS

                       =   22.07 / 2

                       =   11 times

(b) Growth Rate (g) =   Retention Ratio (RR) x ROE

                       =   40% x 12%

                       =   4.8%

Share Value $=$ $D_0 \times (1+g)/ K_e - g$

               $=$ $1.5 \times (1+ 0.048) / 0.10 - 0.048$

               $=$ Rs. 30.23

PE Ratio $=$ MPS / EPS

               $=$ 30.23 / 2

               $=$ 15 times

Question No. 7

Write short notes on:

(a) *Advantages of mutual funds*

(b) *Operating cycle*

(c) *Securitisation of mortgages*

(d) *Social cost-benefit analysis.*   *(4 marks each)*

Answer to Question No. 7(a)

The advantages of investing in a Mutual Fund are:

1. *Professional Management* : Investors avail the services of experienced and skilled professionals who are backed by a dedicated investment research team which analyses the performance and prospects of companies and selects suitable investments to achieve the objectives of the scheme.

2. *Diversification* : Mutual Funds invest in a number of companies across a broad cross-section of industries and sectors. This diversification reduces the risk because seldom do all stocks decline at the same time and in the same proportion. Investors achieve this diversification through a Mutual Fund with far less money than one can do on his own.

3. *Convenient Administration* : Investing in a Mutual Fund reduces paper work and helps investors to avoid many problems such as bad deliveries, delayed payments and unnecessary follow up with brokers and companies. Mutual Funds save investors time and make investing easy and convenient.

4. *Return Potential* : Over a medium to long term, Mutual Fund have the potential to provide a higher return as they invest in a diversified basket of selected securities.

5. *Low Costs* : Mutual Funds are a relatively less expensive way to invest compared to directly investing in the capital markets because the benefits of scale in brokerage, custodial and other fees translate into lower costs for investors.

6. *Liquidity* : In open ended schemes investors can get their money back promptly at net asset value related prices from the Mutual Fund itself. With close-ended schemes, investors can sell their units on a stock exchange at the prevailing market price or avail of the facility of direct repurchase at NAV related prices which some close ended and interval schemes offer periodically.

7. *Transparency* : Investors get regular information on the value of their investment in addition to disclosure on the specific investments made by scheme, the proportion invested in each class of assets and the fund manager's investment strategy and outlook.

Answer to Question No. 7(b)

Operating Cycle

The operating cycle is the length of time between the company's outlay on raw materials, wages and other expenditures and the inflow of cash from the sale of the goods. In a manufacturing business, operating cycle is the average time that raw material remains in stock less the period of credit taken from suppliers, plus the time taken for producing the goods, plus the time the goods remain in finished inventory, plus the time taken by customers to pay for the goods. Operating cycle concept is important for management of cash and management of working capital because the longer the operating cycle the more financial resources the company needs.

Answer to Question No. 7(c)

Securitisation

(a) Securitisation is the process by which financial assets (e.g. Loan Receivables. Mortgage backed receivables, Credit Card balances, Hire Purchase Debtors, Trade Debtors, etc.) are transformed into securities. Securitisation is different from Factoring since the latter involves transfer of debts without transformation thereof into securities.

(b) Securitisation is a mode of financing, wherein securities are issued on the basis of a package of assets (called Asset Pool). In this method of recycling funds, assets generating steady cash flows are packaged together and against this asset pool, market securities can be issued.

Securitisation Process

(a) *Initial Lending / Origination Function* : Originator gives various Loans to different Borrowers (Obligors). Borrowers have to repay the loans in EMFs (Interest + Principal). These EMI's constitute financial assets / receivables for the Originator.

(b) *Securitisation Function* : Financial Assets / Receivables or defined rights therein, are transferred, fully or partly, by the Originator to a SPE. SPE pays the Originator immediately in cash or in any other consideration for taking over the financial assets. The assets transferred are termed 'Securitised Assets' and the assets or rights retained by the Originator are called 'Retained Assets'.

(c) *Financing Function* : SPE finances the assets transferred to it by issue of securities such as Pass Through Certificates (PTCs) and/or debt securities to Investors. These are generally sold to Investors (Mutual Funds, LIC, etc), through Merchant Bankers.

Advantages of Securitisation

To the Originator

1. The assets are shifted off the Balance Sheet, thus giving the Originator recourse to off-Balance Sheet funding.

2. It converts illiquid assets to liquid portfolio.

3. It facilitates better Balance Sheet management as assets are transferred off Balance Sheet facilitating satisfaction of capital adequacy norms.

4. The Originator's credit rating enhances

To the Investor

1. Securities are tied up to definite assets (Asset Pool).

2. New investment avenues are opened up.

Answer to Question No. 7(d)

In Social Cost-Benefit Analysis, a project is analyzed from the point of view of the benefit it will generate for the society as a whole.

There are three principal measures which may be employed to select projects that would best sub-serve the goal of economic development of a nation. These are as follows:

(1) *Maximum social benefits*— Which is equal to the present value of total project benefits minus present value of total costs;

(2) *Benefit cost ratio* — present value of total benefits divided by present value of total costs;

(3) *Internal rate of return* — it is the discount rate which makes the present net worth of a project equal to zero, it represents the average earning power of the money used in the project over the project life and the higher it is, the more profitable for the nation.

The important questions in making cost benefit analysis are what cost to be included, what benefit to be sought, what are the main and immediate objectives of the project, how to value them, what rate of interest will be appropriate at which these are to be discounted, what are the relevant constraints etc. Some of the answers to these queries are that costs are to interpreted in economic terms. Further, costs are to be calculated in terms of the opportunities foregone for employing factors of production for a particular project. Similarly, labour costs are not to be calculated at the existing rate in places where serious unemployment or under employment exist, because existing rate may be artificial due to minimum wage legislation. Therefore, shadow price of labour will have to be calculated. Based on these guidelines, cost-benefit analysis is done to assess the following gains:

(1) impact on national income

(2) impact on government finance

(3) impact on immediate beneficiaries.

TEST PAPER 3/2013

Time allowed : 3 hours   *Max. Marks : 100*

Attempt All Questions

NOTE : *Answer any SIX Questions including Question No. 1 which is COMPULSORY.*

Question No. 1

(a) (i) *"Depreciation is a non-cash item of an expense and it is said that it is a source of finance." – Discuss.*   *(5 marks each)*

   (ii) *"It is possible for an investor to construct a zero-risk portfolio of two securities." Discuss.*

(b) *Explain the Capital Assets Pricing Model. How dose it help in the estimation of expected return of security ?*   *(10 marks)*

Answer to Question No. 1(a)(i)

Depreciation is the funds set apart for replacement of worn-out assets. Depreciation is a deduction out of profits of the company calculated as per accounting rules on the basis of estimated life of each assets each year to total over the life of the assets to an amount equal to original value of the assets. Although depreciation is meant for replacement of particular assets but generally it creates a pool of funds which are available with a company to finance its working capital requirements and sometimes for acquisition of new assets including replacement of worn-out plant and machinery. Depreciation is an expenditure recorded in the accounting system of a company and is allowed to be deducted while arriving at the net profits of the company subject provisions of the tax laws.

Amongst all the sources of internal finance, main source is depreciation on an average as revealed by some research studies done by research scholars. The second source is reserves and surplus and lastly the bonus issue of preference shares or equity shares.

There exists a controversy whether depreciation should be taken as a source of funds. Whatever may be the outcome of such controversy, the fact remains that the depreciation is a sum that is set apart out of profits and retained within the business and finance the capital needs in the normal business routine, and as such depreciation in true academic sense be deemed as a source of internal finance.

Answer to Question No. 1(a)(ii)

There is always some risk involved in purchase of shares in the market, however it is also possible to reduce risk to a minimum acceptable level. The portfolio which have

lowest risk called efficient portfolio. Efficient portfolios may contain any number of asset combinations. We examine efficient asset allocation by using two risky assets for example. After we understand the properties of portfolios formed by mixing two risky assets, it will be easy to see how portfolio of many risky assets might best be constructed.

Two-risky-assets portfolio

Because we now envision forming a -portfolio from two risky assets, we need to understand how the uncertainties of asset returns interact. It turns out that the key determinant of portfolio risk id the extent to which the returns on the two assets tend to vary rather in tandem or in opposition. The degree to which a two-risky-assets portfolio reduces variance of returns depends on the degree of correlation between the returns of the securities.

Suppose a proportion denoted by w_A is invested in asset A, and the remainder $1-w_A$, denoted by w_B, is invested in asset B. The expected rate of return on the portfolio is a weighted average of the expected returns on the component assets, with the same portfolio proportions as weights.

$$E(r_p) = w_A E(r_A) + w_B E(r_B) \qquad \text{(X.5)}$$

The variance of the rate of return on the two-asset portfolio is

$$\sigma^2{}_p = (w_A \sigma_A + w_B \sigma_B)^2 = w_A{}^2 \sigma_A{}^2 + w_B{}^2 \sigma_B{}^2 + 2 w_A w_B{}^2 \rho_{AB} \sigma_A \sigma_B \qquad \text{(X.6)}$$

where ρ_{AB} is the correlation coefficient between the returns on asset A and asset B. If the correlation between the component assets is small or negative, this will reduce portfolio risk.

First, assume that $\rho_{AB} = 1.0$, which would mean that Asset A and B are perfectly positively correlated, the right-hand side of equation X.6 is a perfect square and simplifies to

$$\sigma^2{}_p = w_A{}^2 \sigma_A{}^2 + w_B{}^2 \sigma_B{}^2 + 2 w_A w_B{}^2 \sigma_A \sigma_B$$

$$= (w_A \sigma_A + w_B \sigma_B)^2$$

or

$$\sigma_p = w_A \sigma_A + w_B \sigma_B$$

Therefore, the portfolio standard deviation is a weighted average of the component security standard deviations only in the special case of perfect positive correlation. In this circumstance, there are no gains to be had form diversification. Whatever the proportions of asset A and asset B, both the portfolio mean and the standard deviation are simple weighted averages. Figure X.1 shows the opportunity set with perfect positive correlation - a straight line through the component assets. No portfolio can be discarded as inefficient in this case, and the choice among portfolios depends only on risk preference. Diversification in the case of perfect positive correlation is not effective.
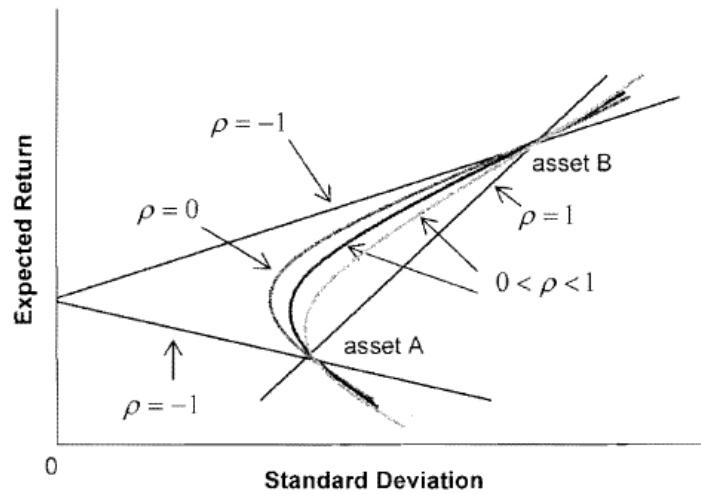
Figure X.1 Investment opportunity sets for asset A and asset B with various correlation coefficients

Perfect positive correlation is the only case in which there is no benefit from diversification. With any correlation coefficient less than 1.0 (ρ <1), there will be a diversification effect, the portfolio standard deviation is less than the weighted average of the standard deviations of the component securities. Therefore, there are benefits to diversification whenever asset returns are less than perfectly correlated.

Our analysis has ranged from very attractive diversification benefits (ρ_{AB} <0) to no benefits at all ρ_{AB} = 1.0 . For ρ_{AB} within this range, the benefits will be somewhere in between.

Negative correlation between a pair of assets is also possible. Where negative correlation is present, there will be even greater diversification benefits. Again, let us start with an extreme. With perfect negative correlation, we substitute ρ_{AB} = -1.0 in equation X.6 and simplify it in the same way as with positive perfect correlation. Here, too, we can complete the square, this time, however, with different results.

$$\sigma^2_{p} = (w_A\sigma_A + w_B\sigma_B)^2$$

And, therefore,

$$\sigma_{p} = ABS(w_A\sigma_A + w_B\sigma_B) \qquad (X.7)$$

With perfect negative correlation, the benefits from diversification stretch to the limit. Equation X.7 points to the proportions that will reduce the portfolio standard deviation all the way to zero.

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1   The proofs of the slope and the shape of extreme correlation between asset A and asset B are in Appendix A.

Answer to Question No. 1(b)

Capital Asset Pricing Model (CAPM) and Its Assumptions

William F. Sharpe and John Linter developed the Capital Asset Pricing Model (CAPM). The model is based on the portfolio theory developed by Harry Markowitz. The model emphasises the risk factor in portfolio theory which is a combination of two risks, systematic risk and unsystematic risk. The model suggests that a security's return is directly related to its systematic risk which cannot be neutralized through diversification. The combination of both types of risks stated above provides the total risk. The total variance of returns is equal to market related variance plus company's specific variance. CAPM explains the behavior of security prices and provides a mechanism whereby investors could assess the impact of a proposed securities are determined in such a way that the risk premium or excess return are proportional to systematic risk, which is indicated by the beta coefficient. The model is used for analyzing the risk – return implication of holding securities.

A. *Features:*

(a) CAPM explains the relationship between the Expected Return, Non-Diversifiable Risk (Systematic Risk) and the valuation of securities.

(b) CAPM is based on the premise that the diversifiable risk of a security is eliminated when more and more securities are added to the Portfolio.

(c) All securities do not have same level of systematic risk and therefore, the required rate of return goes with the level of systematic risk. It considers the required rate of return of a security on the basis of its (Systematic Risk) contribution to the total risk.

(d) Systematic Risk can be measured by Beta, p, which is a function of the following—

• Total Risk Associated with the Market Return,

• Total Risk Associated with the Individual Securities Return,

• Correlation between the two.

B. *Assumptions:*

(i) With reference to Investors:

• Investment goals of investors are rational. They desire higher return for any acceptable level of risk and lower risk for any desired level of return.

• Their objective is to maximize the utility of terminal wealth.

• Their choice is based on the risk and return of a security.

• They have homogenous expectations of Risk and Return over an identical time horizon.

(ii) With reference to Market:

• Information is freely and simultaneously available to all investors.

• Capital Market is not dominated by any individual investors.

• Investors can borrow and lend unlimited amount at the risk-free rate.

- No taxes, transaction costs, restrictions on short-term rates or other market imperfections.
- Total asset quantity is fixed, and all assets are marketable and divisible.

C. *Formula for Computing Expected Return:*

E(RP) = RF+ (RM-R F) ß

Where E(RP) = Expected Return on Portfolio

        RF   = Risk Free Rate of Interest/ Return

        ß   = Portfolio Beta

        RM   = Expected Return on Market Portfolio

Question No. 2

(a) *Twinkle Ltd. is planning to have an access to a machine for a period of 5 years. The company can either have an access through the leasing arrangement or it can borrow money at 14% to buy the machine. The company is in 50% tax bracket.*

In case of leasing, the company will be required to pay annual year-end lease rent of Rs.1,20,000 for 5 years. All maintenance, insurance and other costs are to be borne by the lessee.

In case of purchasing the machine (which costs Rs.3,43,300); the company would have to repay 14% five-year loan in 5 equal annual instalments; each instalment becoming due at the end of each year. Machine would be depreciated on a straight line basis, with no salvage value. Advise the company which option it should go for, assuming lease rents are paid at the end of the year.

(8 marks)

(b) *Domicile Ltd. are on the verge of commencing commercial production for which the following projections are available for first 12 months of operations:*

(i)	*Sales and production:*	*1 Machine per month*
(ii)	*Average selling price*	*Basic price Rs.40,00,000*
		Excise Duty at 10%
		Sales Tax at 5%
(iii)	*Material cost*	*50% of basic sales price*
(iv)	*Employment cost:*	

Category	Number	Monthly Cost
Managerial	*5*	*Rs.10,000 each*
Supervisory	*10*	*Rs.6,500 each*
Work-men	*50*	*Rs,4,000 each*

(v)	Power and fuel	Rs.5,00,000 per month
(vi)	Factory Overheads	Rs.1,75,000 per month
(vii)	Selling Overheads	Rs.1,00,000 per machine
(viii)	Sales collection	30 days
(ix)	Material cost payment	60% in the same month and balance in next
(x)	Production time	30 days

(xi) *Entire work force is engaged from day 1 of the commercial production and payment to employees is made in the next month. For other expenses the company has a credit of 1 month. Sales tax is payable in the next month of the sale.*

(xii) *The bank has allowed the company a borrowing limit of Rs.50,00,000 on which interest at the rate of 20% is charged every quarter, which is calculated based on average drawings of each quarter and is payable at the beginning of the next quarter.*

Prepare a cash budget for the first 6 months. (8 marks)

Answer to Question No. 2(a)

Lease option

Lease rent	1,20,000
Tax-50%	60,000
After Tax cash flow	60,000
CPVF at 14%, 5 year	3.433
Outflow	2,05,985

Loan Option

Year (1)	Principal O/s (2)	Interest @ 14% (3)=(2) x 14%	Installment (4)	Principal repaid (5)=(4)-(3)	Balance O/s (6)=(2)-(5)
1	3,43,300	48,062	1,00,000	51,938	2,91,362
2	2,91,362	40,791	1,00,000	59,209	2,32,153
3	2,32,153	32,501	1,00,000	67,499	1,64,654
4	1,64,654	23,052	1,00,000	76,948	87,706
5	87,706	12,294 (bf)	1,00,000	87,706	Nil

Amount of installment

= 3,43,300/3.433 =1,00,000

Present value of Outflow

Installment	Depreciation	Interest @ 14%	Total of Dep & interest	Tax Benefit @ 50%	Outflow net of tax benefit	PV factor @ 14%	Present value
1,00,000	68,660	48,062	1,16,722	58,361	41,639	.877	36,517
1,00,000	68,660	40,791	1,09,451	54,726	45,274	.769	34,816
1,00,000	68,660	32,501	1,01,161	50,580	49,420	.675	33,358
1,00,000	68,660	23,052	91,712	45,856	54,144	.592	32,053
1,00,000	68,660	12,294 (bf)	80,954	40,477	59,523	.519	30,892
Total							167,636

Present value of outflow under:

Lease option   2,05,985

Buy option   167,636

Since present value of outflow is lower under buy option, hence it is better to buy machine.

Answer to Question No. 2(b)

Month	1	2	3	4	5	6
Material 50% of price	2,000,000.00	2,000,000.00	2,000,000.00	2,000,000.00	2,000,000.00	2,000,000.00
Paid in current month-60%	1,200,000.00	1,200,000.00	1,200,000.00	1,200,000.00	1,200,000.00	1,200,000.00
Balance-40% in next	-	800,000.00	800,000.00	800,000.00	800,000.00	800,000.00
Total	1,200,000.000	2,000,000.00	2,000,000.00	2,000,000.00	2,000,000.00	2,000,000.00
Managerial payment 5@ 10,000	-	50,000.00	50,000.00	50,000.00	50,000.00	50,000.00
Supervisory 10@Rs.6,500	-	65,000.00	65,000.00	65,000.00	65,000.00	65,000.00
Labour 50 @ 4,000	-	200,000.00	200,000.00	200,000.00	200,000.00	200,000.00
Power & Fuel	-	500,000.00	500,000.00	500,000.00	500,000.00	500,000.00
Factory overhead	-	175,000.00	175,000.00	175,000.00	175,000.00	175,000.00
Selling overhead	-	100,000.00	100,000.00	100,000.00	100,000.00	100,000.00
Excise duty	-	400,000.00	400,000.00	400,000.00	400,000.00	400,000.00

Month	1	2	3	4	5	6
Sales tax	-	200,000.00	200,000.00	200,000.00	200,000.00	200,000.00
Interest 12,00,000 x 3/12x15%	-	-	45,000	-	-	-
Total payment A.	1,200,000.00	3,690,000.00	3,690,000.00	3,690,000.00	3,690,000.00	3,690,000.00
B. Collection		4,000,000.00	4,000,000.00	4,000,000.00	4,000,000.00	4,000,000.00
Surplus	-12,00,000	3,10,000	3,10,000	3,10,000	3,10,000	3,10,000
Opening cash	-	Nil	10,000	20,000	12,40,000	
Payment of O/D	-	3,00,000	3,00,000	3,00,000	3,00,000	3,00,000
Closing cash	Nil	10,000	20,000	30,000		

Note.1. Sales tax & Excise duty has been calculated on sales price. Alternatively it can be calculated by reverse calculation.

Question No. 3

(a) The following is the capital structure of Machenical Ltd. as on 31.12.2013:

        Equity Shares: 10,000 shares (of Rs.100 each)   :   Rs.10,00,000

        10% Preference Shares (of Rs.100 each)   :   4,00,000

        12% Debentures   :   6,00,000

                                               20,00,000

The market price of the company's share is Rs.110 and it is expected that a dividend of Rs.10 per share would be declared after 1 year. The dividend growth rate is 6%:

(i) If the company is in the 50% tax bracket, compute the weighted average cost of capital.

(ii) Assuming that in order to finance an expansion plan, the company intends to borrow a fund of Rs.10 lacs bearing 14% rate of interest, what will be the company's revised weighted average cost of capital? This financing decision is expected to increase dividend from Rs.10 to Rs.12 per share. However, the market price of equity share is expected to decline from Rs.110 to Rs.105 per share.   *(10 marks)*

(b) US Dollar is selling in India at Rs.45.50, If the interest rate for a 6-month borrowing in India is 8% per annum and the corresponding rate in USA is 2%.

(i) Do you expect US Dollar to be at a premium or at discount in the Indian forward market ?

(ii) What is the expected 6-month forward rate for US Dollar in India ?

(iii) What is the rate of forward premium or discount?   *(6 marks)*

Answer to Question No. 3(a)(i)

Weighted average cost of capital

	Amount	Weight	Cost %	Weighted cost (Weight x cost)
Equity share capital	10,00,000	.50	15.09	7.545
Preference share capital	4,00,000	.20	10	2
12% Debenture	6,00,000	.30	6	1.8
Total	20,00,000			11.345

1. Cost of Equity $(K_e) = \dfrac{\text{Dividend x 100}}{P_0} + g = \dfrac{10 \times 100}{110} + 6 = 15.09\%$

2. Cost of preference = rate of dividend = 10%

3. Cost of debenture = rate (1-t) = 12%(1-50%)=6%

Answer to Question No. 3(a)(ii)

Computation of revised cost of capital

	Amount	Weight	Cost %	Weighted cost (Weight x cost)
Equity share capital	10,00,000	.3333	17.42	5.8089
Preference share capital	4,00,000	.1333	10.00	1.3333
12% Debenture	6,00,000	.2000	6.000	1.2000
14% Debenture	10,00,000	.3333	7.000	2.3331
Total	30,00,000			10.6753

Based on above, Revised weighted average cost of capital will be 10.6753%

1. Cost of Equity $(K_e) = \dfrac{\text{Dividend x 100}}{P_0} + g = \dfrac{12 \times 100}{105} + 6 = 17.42\%$

2. Cost of preference =rate of dividend=10%

3. Cost of debenture=rate (1-t)=12%(1-50%)=6% & 14%(1-50%) = 7%

Answer to Question No. 3(b)

(i) Indian interest rate of 8% is higher than US interest rate 2%. Hence Rs. Is expected to weaken at a higher rate than US $. Therefore in the forward market, US$ will be quoted at a premium.

(ii) Forward rate $= $ Spot Rate x $\dfrac{(1+\text{rate of interest on Home currency})}{(1+\text{rate of interest on Home currency})}$

$= \dfrac{45.50 \times (1+4\%)}{(1+1\%)} = 46.8515$

(iii) Premium $= \dfrac{(\text{Forward rate} - \text{Spot Rate}) \times 100 \times 12 \text{ month}}{\text{Spot rate} \times \text{forward period}}$

$= 5.94\%$

Question No. 4

(a) Describe the meaning of 'index futures'. *(4 marks)*

(b) What are the steps taken by financial institutions while appraising the project? How do the financial institutions monitor the projects financed by them?
(6 marks)

(c) Following information is available in respect of dividend, market price and market condition after one year.

Market Condition	Probability	Market Price	Dividend per share
Good	0.25	₹115	₹9
Normal	0.50	107	5
Bad	0.25	97	3

The existing market price of an equity share is Rs.106 (Face value Re.1), which is cum 10% bonus debenture of Rs.6 each, per share, M/s. X Ltd. has offered the buy-back of debentures at face value.

Find out the expected return and variability of returns of the equity shares. And also advise-whether to accept buyback offer? *(6 marks)*

Answer to Question No. 4(a)

Index Futures: Futures contracts in which underlying assets is based on indexes such as the S & P 500, SENSEX, NIFTY or Value Line Index. An index future entitles the buyer to any appreciation in the index over and above the index futures price and the seller to any depreciation in the index from the same benchmark. Index future represents to buy /sell a set/basket of securities. Since index cannot be purchased or delivered hence these are the cash settlement contracts.

Answer to Question No. 4(b)

Project appraisal is a process whereby a lending financial institution makes an independent and objective assessment of the various aspects of an investment proposal, for arriving at a financing decision.

Appraisal exercises are aimed at determining the viability of a project, and sometimes reshape the project so as to upgrade its viability.

Steps in Appraisal : Major steps undertaken by Financial Institutions under project appraisal are —

(a) *Promoters' Capacity* : Promoters capacity and competence is examined, with reference to their Management Background,

- Traits as entrepreneurs,
- Business or industrial experience,
- Past performance, etc.

Different considerations are applied in the case of new entrepreneurs.

(b) *Project Report* : Project report must be complete in all aspects so that its appraisal becomes easy and relevant. For this purpose, the project report should be a self-contained study with necessary feasibility report, market surveys, etc.

(c) *Viability Test* : Viability test of a project is to be carried out by examining the project from different aspects viz. technical, economic, financial, commercial, management, social and other related aspects as discussed below :-

(i) Technical Feasibility

It involves consideration of technical aspects like location and size of the project, availability, quality and cost of services, supplies of raw materials, fuel, power, land, labour, housing, transportation, etc.

(ii) *Economic Viability*

It is done on the basis of market analysis of the product or service with particular reference to the size of the market, projected growth in market demand, and the market share expected to be captured.

(iii) *Financial Viability*

It involves evaluation of project cost in the light of period of construction work, provision for cost escalation, timing of raising funds, projected cost of production and profitability, and cash flow projections, to ensure the potentiality of the project to meet the current and long-term obligations.

(iv) *Commercial Viability*

This is assessed in terms of the potential demand for the product, estimated sales price, cost structure, the ability of the Firm to achieve the target sales at competitive price, and the intensity of competition.

(v) *Management Capability*

It is an examination of the track record of Promoters, their background and capabilities, and competence of the management team.

(vi) *Social Relevance*

Social relevance of a project like conformity with national policies and plant priorities are also important factors to be considered in project appraisal.

(d) *Appraisal in Inflationary and Deflationary Situations* : Project Appraisal during inflationary and deflationary conditions does not differ materially from that of an appraisal during normal conditions, except that the financial, economic and commercial aspects require to be taken care of:-

- Inflationary Situations

- Deflationary Situations

(i) Project Cost, prices of raw materials and labour cost will go up. Hence, there would be a decline in the profitability, as the prices of end products are controlled by the Government or market.

(ii) Market may not be prepared to pay a higher price during an inflationary period. Such a situation impairs the financial viability of the project.

(iii) During a recessionary period, the stock of finished goods tends to accumulate resulting in the blocking up of working capital, and thereby contributing to the sickness of the project.

(iv) It is important to take into consideration the economic conditions while appraising a project.

For an efficient project monitoring, the lending institutions generally require the assisted units to furnish various reports as under either directly or through nominee directors, and officials of the financial institutions also make site visits:

(1) monthly production report.

(2) monthly progress report.

(3) half yearly/yearly statement of account, working results, and financial reports.

(4) quarterly progress report.

(5) periodical site inspection and review of performance.

(6) reporting through need based management information system.

(7) review of reports received from the nominee directors.

$\sqrt{PD^2}$

Answer to Question No. 4(c)

Market Condition	Probability P	Total Return (MP+ DIV)	Net return (Total return -100)	Expected return (P x Net return)	Deviation D (Expected return-12)	D^2	P x D^2
Good	0.25	124	24	6	12	144	36
Normal	0.50	112	12	6	0	0	0
Bad	0.25	100	0	0	-12	144	36
				12			72

Expected return   =   12%

Variability of return = $\sum PD^2$

SD =   = $\sqrt{72}$ = 8.49

Note: *Present market price of the share is Rs. 106 cum bonus 10% debenture of Rs. Hence net cost is ₹100.*

2. Acceptance or not of Buy Back

1. X Ltd. has offered the buy-back of debentures at Face value.

2. There is 10% rate of return on equity shares compare to expected return of 12% from the market.

3. Credit worthiness of the company seems to be very good considering the dividend and market price.

4. The decision regarding buy back should be taken considering the maturity period and opportunity in the market. Normally if the maturity period is low say upto one year, it is advisable to wait than to opt for buy back.

Question No. 5

(a) *From the following selected data, determine the value of the firms, P and Q belonging to the homogeneous risk class under (a) the Net Income (NI) approach, and (b) the Net Operating Income (NOI) approach.*

	Firm P	*Firm Q*
EBIT	₹ 2,25,000	₹2,25,000
Interest at 15%	₹75,000	
Equity capitalization rate, Ke,	20%	
Corporate tax rate	50%	

Which of the two firms has an optimal capital structure under the (i) NI approach, and (ii) NOI approach? (12 marks)

(b) *Distinguish between 'capital market line' and 'security market line'.* (4 marks)

Answer to Question No. 5(a)

Computation of various factors

Firm	P	Q
EBIT	2,25,000	2,25,000
Interest	75,000	nil
EBT	1,50,000	2,25,000
Tax @ 50%	75,000	1,12,500
Earnings available to equity shareholders	75,000	1,12,500
Cost of equity (K_e)	20%	20%
Cost of debt (K_d)	15%	15%

(a) *Computation of value of firm under Net Income (N.I.) Approach*

Value of the firm = Value of Equity (MVE) + Value of debt (MVD)

MVE for firm P = (Income available to equity shareholders/K_e) x 100
= 75,000/20% = 3,75,000

MVD for firm P = (Interest on debts/K_d) x 100 = 75000/15% = 5,00,000

Value of firm P =   3,75,000 + 5,00,000 = 8,75,000

Value of the firm Q = Value of Equity (MVE) + Value of debt (MVD)

MVE   =   (Income available to equity shareholders/Ke) X 100
         =   1,12500/20%
         =   5,62,500

Value of the firm Q = 5,62,500

(b) Computation of value of firm under Net Operating Income (N.O.I.) Approach

    i.   Firm P : Value of levered firm (where tax is applicable)=Value of unlevered firm + present value of tax shields

        Value of unlevered firm =   EBIT (1-t)/Ke(of unlevered firm)
                                     =   2,25,000(1-50%)/.20
                                     =   5,62,500

        Present value of tax shields = Debt x tax rate = 5,00,000 x 50%=2,50,000

        Hence value of firm = 5,62,500 + 2,50,000 = 8,12,500

        Firm Q: Value of unlevered firm =   Value EBIT (1-t)/Ke
                                     =   1,12500/20%
                                     =   5,62,500

    ii. Under both approach, market value of the firm P is greater than the firm Q. Hence firm P has optimum capital structure.

Answer to Question No. 5(b)

Differences between Security Market Line And Capital Market Line:

Aspect	Capital Market Line	Security Market Line
1. Risk Considered	Capital Market Line uses Standard Deviation, i.e. Total Risks across the x-axis.	Security Market Line uses Beta or Systematic Risk across the x-axis. (i.e. that part of Total Risk which is common to the whole of market).
2. Nature of Portfolios	It uses only efficient port-folios, i. e. one which is a perfect replication of the Market Portfolio in terms of risks and rewards.	Security Market Line uses both efficient and non-efficient portfolios.
3. Combination	Every point on the Capital Market Line is a proportional combination between Risk free Rate of Return and Market Return.	It graphs all portfolios and securities which he on and off the Capital Market Line.

Question No. 6

(a) ABC Motors purchases 9,000 units of spare parts for its annual requirements, ordering one month usage at one time. Each spare part costs ₹20. The ordering cost per order is ₹15 and the carrying charges are 15% of unit cost. You have been asked to suggest a more economical purchasing policy for the company. What advice would you offer and how much would it save the company per year? *(6 marks)*

(b) (i) What is credit rating and how does it benefit the investors and the company?

(ii) "Economic value added (EVA) concept is in conformity with the objective of wealth maximization". Explain. *(5 marks each)*

Answer to Question No. 6(a)

Present purchase policy = 9,000/12 = 750

Annual requirement A = 9,000

Ordering cost (O) = 15

Carrying cost (C) = 15%

Economic order quantity = $[(2 \times A \times O)/C]^{1/2}$ = $[(2 \times 9000 \times 15)/20 \times 15\%]^{1/2}$

= 300 parts

	Cost at EOQ (300)	Present purchase (750)
Annual requirement	9,000	9,000
No. of order (requirement/purchase at one time)	30 order	12 order
Ordering cost @ 15 ₹	450	180
Total	900	1305

Company should buy at EOQ. Saving in cost = 1305 - 900 = ₹405.

Answer to Question No. 6(b)(i)

Credit Rating is the assessment of a borrower's credit quality. It is the assessment carried out from the viewpoint of credit-risk evaluation on a specific date, on the quality of a :

- Specific debt-security issued, or
- Obligation undertaken by an enterprise (Term Loans, etc.)

Areas of Assessment : Assessment is done on the:-

- *Ability* : Financial Strength,
- *Willingness* : Integrity and Attitude, of the obligant to meet principal and interest payments on the rated debt instrument in a timely manner.

Need for Credit Rating : A Firm has to ascertain the credit rating of prospective customers, to ascertain how much and how long can credit be extended. Credit can be

granted only to a customer who is reliably sound. This decision would involve analysis of the financial status of the party, his reputation and previous record of meeting commitments.

Feature : Ratings are expressed in alphabetical or alphanumeric symbols, enabling the investor to differentiate between debt instruments based on their underlying credit quality.

Benefits

Guidance to Investors : To provide guidance to investors / creditors in determining a credit risk associated with a debt instrument / credit obligation.

(a) *Current Opinion on Credit Risk* : Credit Rating is based on the relative capability and willingness of the issuer of the instrument to service the debt obligations (both principal and interest) as per the terms of the contract. Thus, it acts as an indicator of the current opinion of the credit risk and can be changed from time to time.

(b) *Relative Ranking* : Credit Rating ranks the fixed income investment based on the probability of it (Investment / Instrument) defaulting, in comparison with other rated instruments.

Answer to Question No. 6(b)(ii)

Economic value added (EVA) is the after tax cash flow generated by a business minus the cost of the capital it has deployed to generate that cash flow. Representing real profit versus paper profit, EVA underlines shareholder value, increasingly the main target of leading companies strategies. Shareholders are the players who provide the firm with its capital; they invest to gain a return on that capital.

There are two key components to EVA. The net operating profit after tax (NOPAT) and the capital charge, which is the amount of capital times the cost of capital. In other words, it is the total pool of profits available to provide cash return to those who provided capital to the firm. The capital charge is the product of the cost of capital times the capital tied up in the investment. In other words, the capital charge is the cash flow required to compensate investors for the riskiness of the business given the amount of capital invested. On the one hand, the cost of capital is the minimum rate of return on capital required to compensate debt and equity investors for bearing risk-a cut-off rate to create value and capital is the amount of cash invested in the business, net of depreciation (Dierks and Patel, 1997). In formula form,

EVA = (Operating Profit) - (A Capital Charge)

EVA = NOPAT - (Cost of Capital x Capital)

There is growing evidence that EVA, not earnings, determines the value of a firm. There is difference between EVA, earnings per share, return on assets, and discounted cash flow, as a measure of performance.

Earnings per share tells nothing about the cost of generating those profits. If the cost of capital (loans, bonds, equity) as say, 15 per cent, then a 14 per cent earning is actually a reduction, not a gain, in economic value. Profits also increase taxes, thereby

reducing cash flow.

Return on assets is a more realistic measure of economic performance, but it ignores the cost of capital. Leading firms can obtain capital at low costs, via favourable interest rates and high stock prices, which they can then invest in their operations at decent rates of return on assets. That tempts them to expand without paying attention to the real return, economic value-added.

Discounted cash flow is very close to economic value-added, with the discount rate being the cost of capital.

Hence it is true that "Economic value added (EVA) concept is in conformity with the objective of wealth maximization."

Question No. 7

Write short notes on:

(i) *Venture Capital*

(ii) *Domestic Resource Cost*

(iii) *Spot contract v. Forward Contract*

(iv) *Direct and Indirect Quote.* *(4 marks each)*

Answer to Question No. 7(i)

Venture Capital

Venture Capital Financing refers to financing of high risk ventures promoted by new, qualified entrepreneurs who require funds to give shape to their ideas. Here, a financer (called Venture Capitalist) invests in the equity or debt of an Entrepreneur (Promoter/ Venture Capital Undertaking) who has a potentially successful business idea, but does not have the desired track record or financial backing. Generally, venture capital funding is associated with - (a) heavy initial investment businesses e.g. energy conservation, quality up gradation or (b) sunrise sector like information technology.

Methods of Venture Capital Financing

(a) *Equity Financing* : VCU's generally require funds for a longer period but may not be able to provide returns to the investors during initial stages. Hence, Equity Share Capital financing is advantageous. The Investor's contribution does not exceed 49% of the total Equity Capital of the VCU. Hence, the effective control and ownership remains with the entrepreneur.

(b) *Conditional Loan* : A Conditional Loan is repayable in the form of a royalty after the venture is able to generate sales. No interest is paid on such loans. The rate of royalty (say 2% to 15%) may be based on factors like - (i) gestation period, (ii) cash flow patterns, (iii) extent of risk, etc., Sometimes, the VCU has a choice of paying a high rate of interest (say 20%) instead of royalty on sales once the activity becomes commercially sound.

(c) *Income Note* : It is a hybrid type of finance, which combines the features of both conventional loan and conditional loan. The VCU has to pay both interest and royalty on sales but at substantially low rates.

(d) *Participating Debentures* : Interest on such debentures is payable at three different rates based on the phase of operations - (i) Start-up and commissioning phase- NIL Interest (ii) Initial Operations Stage— Low rate of interest and (iii) After a particular level of operations - High rate of interest.

Answer to Question No. 7(ii)

Domestic Resource Cost

DRC measures the resource cost of manufacturing a product as against the cost of importing/exporting it. It indicates the long term comparative advantage a country enjoys in the production of a particular product.

The output from any project adds to domestic availability implying a notional reduction in imports to the extent of output of the project or an addition to exports if the product is being exported. This in turn implies that foreign exchange is saved to the extent there is reduced imports or foreign exchange is earned to the extent there is increased exports.

However, in the setting up of the project itself and in the manufacturing of the product, foreign exchange outflows may be incurred in order to procure machinery, raw materials etc. The foreign exchange saved or earned thus has to be adjusted for such outflow.

Method

The foreign exchange saved/earned thus has to be seen in relation to the domestic resources deployed in production. It may be noted that in arriving at domestic resources deployed, the rupee costs are taken net of taxes and duties as these constitute transfer payment to the economy.

DRC is therefore computed as the quantum of domestic resources or costs deployed in production to the net foreign exchange (US$) saved or earned.

In computing foreign exchange saved or earned, sales realization is taken at border prices, viz. The c.i.f. price for a product substituting for imports and f.o.b. prices for a product to be exported. All direct and indirect foreign exchange outflows i.e., c.i.f. cost of imported inputs, depreciation of imported equipment and cost on foreign capital employed are then deducted to obtain the net foreign exchange savings/earnings. In order to ensure uniformity and comparability, the net foreign exchange saved/earned is expressed in terms of US$.

Variants of DRC

There are two variants of DRC: Crude DRC (C-DRC) and Refined (R-DRC). In C-DRC, tradeable raw materials which are locally procured, are included in Domestic Resource Cost and form part of numerator, while in R-DRC tradeable raw materials which are locally procured are treated as notional foreign exchange loss and valued at international prices (including in denominator). R-DRC is normally lower than C-DRC.

Answer to Question No. 7(iii)

Spot contract v. Forward Contract

Differences between spot contract and forward contract

- In a spot contract, at least one component, i.e. either the price or the goods/services is tendered at the time of the contract. In a forward contract, both the components are exchanged at a specified future date.

- In a spot contract, both the parties transact on the basis of their present capability. The buyer purchases according to his ability to pay for the goods or services and the seller sells according to his present ability to deliver the goods or services. In a forward contract, a leveraging of capabilities is involved. Since no down payment is involved, the buyer might contract to buy a larger number of goods or services, expecting to derive some benefits from the perceived price differential between the spot price and the likely price at the time of maturity of the forward contract. Also the seller, feeling that a larger number of goods shall be available at the contracted price at the time of maturity, agrees to sell a far larger number of goods.

- In a spot contract, execution of the contract is more or less certain because both the components, i.e. money and goods are available. Even through the transaction does not pass through a regulated delivery and payment mechanism yet the chances of default are very less. The problems of payment and delivery get magnified in the case of a forward contract.

Answer to Question No. 7(iv)

Direct and Indirect Quote

There are two major ways of offering exchange rate quotes. These are called the direct quote and indirect quote.

A direct quote indicates the number of units of the domestic currency required to buy one unit of foreign currency.

An indirect quote indicates the number of units of foreign currency that can be exchange for one unit of the domestic currency.

As already stated, that the foreign exchange rates are relative to each other, the direct quote an indirect quote are related to each other in an inverse relationship i.e., an indirect quote is the inverse of a direct quote.

So, Indirect Quote $= \dfrac{1}{\text{Direct Quote}}$