PAPER – 2 : STRATEGIC FINANCIAL MANAGEMENT

*Question No. **1** is compulsory.*

*Attempt any **five** questions from the rest.*

Working notes should form part of the answer.

Question 1

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

Factor	Beta	Expected value in %	Actual value in %
GNP	1.20	7.70	7.70
Inflation	1.75	5.50	7.00
Interest rate	1.30	7.75	9.00
Stock market index	1.70	10.00	12.0
Industrial production	1.00	7.00	7.50

If the risk free rate of interest be 9.25%, how much is the return of the share under Arbitrage Pricing Theory? (5 Marks)

(b) *The current market price of an equity share of Penchant Ltd is ₹ 420. Within a period of 3 months, the maximum and minimum price of it is expected to be ₹ 500 and ₹ 400 respectively. If the risk free rate of interest be 8% p.a., what should be the value of a 3 months Call option under the "Risk Neutral" method at the strike rate of ₹ 450 ? Given $e^{0.02} = 1.0202$* (5 Marks)

(c) *A Mutual Fund is holding the following assets in ₹ Crores :*

Investments in diversified equity shares   90.00
Cash and Bank Balances   <u>10.00</u>
     <u>100.00</u>

The Beta of the portfolio is 1.1. The index future is selling at 4300 level. The Fund Manager apprehends that the index will fall at the most by 10%. How many index futures he should short for perfect hedging so that the portfolio beta is reduced to 1.00 ? One index future consists of 50 units.

Substantiate your answer assuming the Fund Manager's apprehension will materialize.

(5 Marks)

(d) *Mr. Tempest has the following portfolio of four shares:*

Name	Beta	Investment ₹ Lac.
Oxy Rin Ltd.	0.45	0.80

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FINAL EXAMINATION : MAY, 2011

Boxed Ltd.	0.35	1.50
Square Ltd.	1.15	2.25
Ellipse Ltd.	1.85	4.50

The risk free rate of return is 7% and the market rate of return is 14%.

Required.

(i) Determine the portfolio return. (ii) Calculate the portfolio Beta. (5 Marks)

Answer

(a) Return of the stock under APT

Factor	Actual value in %	Expected value in %	Difference	Beta	Diff. x Beta
GNP	7.70	7.70	0.00	1.20	0.00
Inflation	7.00	5.50	1.50	1.75	2.63
Interest rate	9.00	7.75	1.25	1.30	1.63
Stock index	12.00	10.00	2.00	1.70	3.40
Ind. Production	7.50	7.00	0.50	1.00	0.50
					8.16
Risk free rate in %					9.25
Return under APT					17.41

(b) Let the probability of attaining the maximum price be p

$(500 - 420) \times p + (400 - 420) \times (1-p) = 420 \times (e^{0.02} - 1)$

or, $80p - 20(1 - p) = 420 \times 0.0202$

or, $80p - 20 + 20p = 8.48$

or, $100p = 28.48$

$p = 0.2848$

The value of Call Option in Rs. $= \dfrac{0.2848 \times (500 - 450)}{1.0202} = \dfrac{0.2848 \times 50}{1.0202} = 13.96$

(c) Number of index future to be sold by the Fund Manager is:

$\dfrac{1.1 \times 90,00,00,000}{4,300 \times 50} = 4,605$

Justification of the answer:

Loss in the value of the portfolio if the index falls by 10% is

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PAPER – 2 : STRATEGIC FINANCIAL MANAGEMENT

₹ $\frac{11}{100}$ x90 Crore = ₹ 9.90 Crore.

Gain by short covering of index future is: $\frac{0.1 \times 4,300 \times 50 \times 4,605}{1,00,00,000}$ = 9.90 Crore

This justifies the answer cash is not part of the portfolio.

(d) Market Risk Premium (A) = 14% – 7% = 7%

Share	Beta	Risk Premium (Beta x A) %	Risk Free Return %	Return %	Return ₹
Oxy Rin Ltd.	0.45	3.15	7	10.15	8,120
Boxed Ltd.	0.35	2.45	7	9.45	14,175
Square Ltd.	1.15	8.05	7	15.05	33,863
Ellipse Ltd.	1.85	12.95	7	19.95	89,775
Total Return					1,45,933

Total Investment ₹ 9,05,000

(i)   Portfolio Return = $\frac{₹\,1,45,933}{₹\,9,05,000}$ × 100 = 16.13%

(ii) Portfolio Beta

Portfolio Beta = Risk Free Rate + Risk Premium x β = 16.13%

          7% + 7b = 16.13%

          β = 1.30

Alternative Approach

First we shall compute Portfolio Beta using the weighted average method as follows:

Beta$_P$ = 0.45X$\frac{0.80}{9.05}$ + 0.35X$\frac{1.50}{9.05}$ + 1.15X$\frac{2.25}{9.05}$ + 1.85X$\frac{4.50}{9.05}$

    = 0.45x0.0884+ 0.35X0.1657+ 1.15X0.2486+ 1.85X0.4972 = 0.0398+ 0.058 + 0.2859 + 0.9198

  = 1.3035

Accordingly,

(i)   Portfolio Return using CAPM formula will be as follows:

    R$_P$= R$_F$ + Beta$_P$(R$_M$ – R$_F$)

    = 7% + 1.3035(14% - 7%) = 7% + 1.3035(7%)

    = 7% + 9.1245% = 16.1245%

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(ii) Portfolio Beta

As calculated above 1.3035

Question 2

(a) X Ltd. had only one water pollution control machine in this type of block of asset with no book value under the provisions of the Income Tax Act, 1961 as it was subject to rate of depreciation of 100% in the very first year of installation.

Due to funds crunch, X Ltd. decided to sell the machine which can be sold in the market to anyone for ₹ 5,00,000 easily.

Understanding this from a reliable source, Y Ltd. came forward to buy the machine for ₹ 5,00,000 and lease it to X Ltd. for lease rental of ₹ 90,000 p.a. for 5 years. X Ltd. decided to invest the net sale proceed in a risk free deposit, fetching yearly interest of 8.75% to generate some cash flow. It also decided to relook the entire issue afresh after the said period of 5 years.

Another company, Z Ltd. also approached X Ltd. proposing to sell a similar machine for ₹ 4,00,000 to the latter and undertook to buy it back at the end of 5 years for ₹ 1,00,000 provided the maintenance were entrusted to Z Ltd. for yearly charge of ₹ 15,000. X Ltd. would utilise the net sale proceeds of the old machine to fund this machine also should it accept this offer.

The marginal rate of tax of X Ltd. is 34% and its weighted average cost of capital is 12%.

Which Alternative would you recommend ?

Discounting Factors @ 12%

Year	1	2	3	4	5
	0.893	0.797	0.712	0.636	0.567

(8 Marks)

(b) A Inc. and B Inc. intend to borrow $200,000 and $200,000 in ¥ respectively for a time horizon of one year. The prevalent interest rates are as follows :

Company	¥ Loan	$ Loan
A Inc	5%	9%
B Inc	8%	10%

The prevalent exchange rate is $1 = ¥120.

They entered in a currency swap under which it is agreed that B Inc will pay A Inc @ 1% over the ¥ Loan interest rate which the later will have to pay as a result of the agreed currency swap whereas A Inc will reimburse interest to B Inc only to the extent of 9%. Keeping the exchange rate invariant, quantify the opportunity gain or loss component of the ultimate outcome, resulting from the designed currency swap. (8 Marks)

PAPER – 2 : STRATEGIC FINANCIAL MANAGEMENT

Answer

(a) First Option

	₹
Sale Proceeds	5,00,000
Tax @ 34%	1,70,000
Net Proceed	3,30,000
Interest @ 8.75% p.a.	= ₹ 28,875

NPV of this Option

	Year					
	0	1	2	3	4	5
Int. on Net Proceeds (₹)		28,875	28,875	28,875	28,875	28,875
Tax @ 34% (₹)		-9,818	-9,818	-9,818	-9,818	-9,818
Lease Rent (₹)		-90,000	-90,000	-90,000	-90,000	-90,000
Tax @34%(₹)		30,600	30,600	30,600	30,600	30,600
Terminal Cash Flow (₹)						3,30,000
Cash flow (₹)		-40,343	-40,343	-40,343	-40,343	2,89,657
PV Factor		0.893	0.797	0.712	0.636	0.567
PV of Cash Flows (₹)		-36,026	-32,153	-28,724	-25,658	1,64,236

NPV = ₹ 41,675

Second Option

	₹
Cost of New Machine	4,00,000
Net sale proceeds of old machine	3,30,000
Investment in Cash	70,000

NPV of this Option

	Year					
	0	1	2	3	4	5
Payment for new Machine (₹)	-70,000					
Tax saving ₹ 4,00,000 x 34%		1,36,000				
Maintenance (₹)		-15,000	-15,000	-15,000	-15,000	-15,000
Tax saving on above @ 34% (₹)		5,100	5,100	5,100	5,100	5,100
Terminal Cash Flow (₹)						1,00,000

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Tax on above @ 34% (₹)						-34,000
Cash Flow (₹)	-70,000	1,26,100	-9,900	-9,900	-9,900	56,100
PV Factor	1	0.893	0.797	0.712	0.636	0.567
PV of Cash Flows (₹)	-70,000	1,12,607	-7,890	-7,049	-6,296	31,809

NPV = ₹ 53,181

The second alternative is recommended.

(b)

Opportunity gain of A Inc under currency swap	Receipt	Payment	Net
Interest to be remitted to B. Inc in $ 2,00,000x9%=$18,000 Converted into ($18,000x¥120)		¥21,60,000	
Interest to be received from B. Inc in $ converted into ¥ (6%x$2,00,000 x ¥120)	¥14,40,000	-	
Interest payable on ¥ loan	-	¥12,00,000	
	¥14,40,000	¥33,60,000	
Net Payment	¥19,20,000	-	
	¥33,60,000	¥33,60,000	
$ equivalent paid ¥19,20,000 x(1/¥120)			$16,000
Interest payable without swap in $			$18,000
Opportunity gain in $			$ 2,000

Opportunity gain of B inc under currency swap	Receipt	Payment	Net
Interest to be remitted to A. Inc in ($ 2,00,000 x 6%)		$12,000	
Interest to be received from A. Inc in ¥ converted into $ =¥21,60,000/¥120	$18,000		
Interest payable on $ loan@10%	-	$20,000	
	$18,000	$32,000	
Net Payment	$14,000	-	
	$32,000	$32,000	
¥ equivalent paid $14,000 X ¥120			¥16,80,000
Interest payable without swap in ¥ ($2,00,000X¥120X8%)			¥19,20,000
Opportunity gain in ¥			¥ 2,40,000

PAPER – 2 : STRATEGIC FINANCIAL MANAGEMENT

Alternative Solution

Cash Flows of A Inc

(i) At the time of exchange of principal amount

Transactions		Cash Flows
Borrowings	$2,00,000 x ¥120	+ ¥240,00,000
Swap		- ¥240,00,000
Swap		+$2,00,000
Net Amount		+$2,00,000

(ii) At the time of exchange of principal amount

Transactions		Cash Flows
Interest to the lender	¥240,00,000X5%	- ¥12,00,000
Interest Receipt from B Inc.	¥2,00,000X120X6%	¥14,40,000
Net Saving (in $)	¥2,40,000/¥120	$2,000
Interest to B Inc.	$2,00,000X9%	-$18,000
Net Interest Cost		-$16,000

A Inc. used $2,00,000 at the net cost of borrowing of $16,000 i.e. 8%. If it had not opted for swap agreement the borrowing cost would have been 9%. Thus there is saving of 1%.

Cash Flows of B Inc

(i) At the time of exchange of principal amount

Transactions		Cash Flows
Borrowings		+ $2,00,000
Swap		- $2,00,000
Swap	$2,00,000X¥120	+¥240,00,000
Net Amount		+¥240,00,000

(ii) At the time of exchange of principal amount

Transactions		Cash Flows
Interest to the lender	$2,00,000X10%	- $20,000
Interest Receipt from A Inc.		+$18,000
Net Saving (in ¥)	-$2,000X¥120	- ¥2,40,000
Interest to A Inc.	$2,00,000X6%X¥120	- ¥14,40,000
Net Interest Cost		- ¥16,80,000

B Inc. used ¥240,00,000 at the net cost of borrowing of ¥16,80,000 i.e. 7%. If it had not opted for swap agreement the borrowing cost would have been 8%. Thus there is saving of 1%.

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FINAL EXAMINATION : MAY, 2011

Question 3

Abhiman Ltd. is a subsidiary of Janam Ltd. and is acquiring Swabhiman Ltd. which is also a subsidiary of Janam Ltd.

The following information is given :

	Abhiman Ltd.	Swabhiman Ltd.
% Shareholding of promoter	*50%*	*60%*
Share capital	*₹ 200 lacs*	*100 lacs*
Free Reserves and surplus	*₹ 900 lacs*	*600 lacs*
Paid up value per share	*₹ 100*	*10*
Free float market capitalization	*₹ 500 lacs*	*156 lacs*
P/E Ratio (times)	*10*	*4*

Janam Ltd., is interested in doing justice to both companies. The following parameters have been assigned by the Board of Janam Ltd., for determining the swap ratio:

Book value	*25%*
Earning per share	*50%*
Market price	*25%*

You are required to compute

(i)   The swap ratio.

(ii)   The Book Value, Earning Per Share and Expected Market Price of Swabhiman Ltd., (assuming P/E Ratio of Abhiman ratio remains the same and all assets and liabilities of Swabhiman Ltd. are taken over at book value.) (8 Marks)

(b)   Jumble Consultancy Group has determined relative utilities of cash flows of two forthcoming projects of its client company as follows :

Cash Flow in ₹	-15000	-10000	-4000	0	15000	10000	5000	1000
Utilities	-100	-60	-3	0	40	30	20	10

The distribution of cash flows of project A and Project B are as follows :

Project A					
Cash Flow (₹)	-15000	- 10000	15000	10000	5000
Probability	0.10	0.20	0.40	0.20	0.10

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PAPER – 2 : STRATEGIC FINANCIAL MANAGEMENT

Project B					
Cash Flow (₹)	- 10000	-4000	15000	5000	10000
Probability	0.10	0.15	0.40	0.25	0.10

Which project should be selected and why ?   (8 Marks)

Answer

(a) SWAP RATIO

	Abhiman Ltd. (₹)	Swabhiman Ltd. (₹)
Share capital	200 lacs	100 lacs
Free reserves & surplus	900 lacs	600 lacs
Total	1100 lacs	700 lacs
No. of shares	2 lacs	10 lacs
Book value for share	₹ 550	₹ 70
Promoters Holding	50%	60%
Non promoters holding	50%	40%
Free float market capitalization (Public)	500 lacs	₹ 156 lacs
Total Market Cap	1000 lacs	390 lacs
No. of shares	2 lacs	10 lacs
Market Price	₹ 500	₹ 39
P/E ratio	10	4
EPS	₹ 50.00	₹ 9.75

Calculation of SWAP Ratio

Book Value	1:0.1273	0.1273 ´ 25%	0.031825
EPS	1:0.195	0.195 ´ 50%	0.097500
Market Price	1:0.078	0.078 ´ 25%	0.019500
Total			0.148825

(i)   SWAP Ratio is 0.148825 shares of Abhiman Ltd. for every share of Swabhiman Ltd.

Total No. of shares to be issued = 10 lakh ´ 0.148825 = 148825 shares

(ii) Book value, EPS & Market Price.

Total No. shares = 200000 +148825=348825

Total capital = ₹200 lakh + ₹148.825 lac = ₹ 348.825 lac

Reserves = ₹ 900 lac + ₹ 551.175 lac = ₹ 1451.175 lac

Book value = $\dfrac{₹\,348.825\,lac\ +\ ₹\,1451.175\ lac}{3.48825\ lac}$ = ₹ 516.02

EPS = $\dfrac{Total\ Profit}{No.\ of\ shares}$ = $\dfrac{₹100\ lac\ +\ ₹\ 97.50\ lac}{3.48825\,lac}$ = ₹ 56.62

Expected market price = ₹ 56.62 × PE Ratio = ₹ 56.62 × 10 = ₹ 566.20

(b) Evaluation of project utilizes of Project A and Project B

	Project A		
Cash flow (in ₹)	Probability	Utility	Utility value
-15,000	0.10	-100	-10
10,000	0.20	-60	-12
15,000	0.40	40	16
10,000	0.20	30	6
5,000	0.10	20	2
			2

	Project B		
Cash flow (in ₹)	Probability	Utility	Utility value
-10,000	0.10	-60	-6
-4,000	0.15	-3	-0.45
15,000	0.40	40	16
5,000	0.25	20	5
10,000	0.10	30	3
			17.55

Project B should be selected as its expected utility is more

Question 4

(a) Shares of Voyage Ltd. are being quoted at a price-earning ratio of 8 times. The company retains 45% of its earnings which are ₹ 5 per share.

You are required to compute

PAPER – 2 : STRATEGIC FINANCIAL MANAGEMENT

(1)   The cost of equity to the company if the market expects a growth rate of 15% p.a.

(2)   If the anticipated growth rate is 16% per annum, calculate the indicative market price with the same cost of capital.

(3)   If the company's cost of capital is 20% p.a. & the anticipated growth rate is 19% p.a., calculate the market price per share.   *(3+3+2=8 Marks)*

(b)   An investor purchased 300 units of a Mutual Fund at ₹ 12.25 per unit on 31st December, 2009. As on 31st December, 2010 he has received ₹ 1.25 as dividend and ₹ 1.00 as capital gains distribution per unit.

Required :

(i)   The return on the investment if the NAV as on 31st December, 2010 is ₹ 13.00.

(ii)   The return on the investment as on 31st December, 2010 if all dividends and capital gains distributions are reinvested into additional units of the fund at ₹ 12.50 per unit.   *(8 Marks)*

Answer

(a)   (1)   Cost of Capital

Retained earnings (45%)	₹ 5 per share
Dividend (55%)	₹ 6.11 per share
EPS (100%)	₹ 11.11 per share
P/E Ratio	8 times
Market price	₹ 11.11 ´ 8 = ₹ 88.88

Cost of equity capital

$$= \left(\frac{Div}{Price} \times 100\right) + Growth \% = \frac{₹\,6.11}{₹\,88.88} \times 100 + 15\% = 21.87\%$$

(2)   Market Price $= \left(\dfrac{Dividend}{Cost\ of\ Capital(\%) - Growth\ Rate(\%)}\right)$

$$= \frac{₹\,6.11}{(21.87 - 16)\%} = ₹\,104.08 \text{ per share}$$

(3)   Market Price $= \dfrac{₹\,6.11}{(20 - 19)\%} = ₹\,611.00$ per share

Alternative Solution-As in the question the sentence "The company retains 45% of its earnings which are ₹ 5 per share" amenable to two interpretations i.e. one is ₹ 5 as retained earnings (45%) and another is ₹ 5 is EPS (100%). Alternative solution is as follows:

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FINAL EXAMINATION : MAY, 2011

(1) Cost of capital

EPS (100%)	₹ 5 per share
Retained earnings (45%)	₹ 2.25 per share
Dividend (55%)	₹ 2.75 per share
P/E Ratio	8 times
Market Price	₹ 5 ´ 8 = ₹ 40

Cost of equity capital

$$= \left(\frac{Div}{Price} \times 100\right) + \text{Growth \%}$$

$$= \frac{₹\,2.75}{₹\,40.00} \times 100 + 15\% = 21.87\%$$

(2) Market Price $= \left(\dfrac{Dividend}{Cost\ of\ Capital(\%) - Growth\ Rate(\%)}\right)$

$$= \frac{₹\,2.75}{(21.87 - 16)\%} = ₹\,46.85 \text{ per share}$$

(3) Market Price $= \dfrac{₹\,2.75}{(20 - 19)\%} = ₹\,275.00$ per share

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

	₹ /Unit
Change in price (₹ 13.00 - ₹ 12.25)	0.75
Dividend received	1.25
Capital gain distribution	1.00
Total Return	3.00

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

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

Total amount reinvested = ₹ 2.25 ´ 300 = ₹ 675

Additional units added $= \dfrac{₹\,675}{12.50} = 54$ units

Value of 354 units as on 31-12-2010 = ₹ 4,602

PAPER – 2 : STRATEGIC FINANCIAL MANAGEMENT

Price paid for 300 units on 31-12-2009 (300 × ₹ 12.25) = ₹ 3,675

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

Question 5

(a) Simple Ltd. and Dimple Ltd. are planning to merge. The total value of the companies are dependent on the fluctuating business conditions. The following information is given for the total value (debt + equity) structure of each of the two companies.

Business Condition	Probability	Simple Ltd. ₹ Lacs	Dimple Ltd. ₹ Lacs
High Growth	0.20	820	1050
Medium Growth	0.60	550	825
Slow Growth	0.20	410	590

The current debt of Dimple Ltd. is ₹ 65 lacs and of Simple Ltd. is ₹ 460 lacs.

Calculate the expected value of debt and equity separately for the merged entity.

(8 Marks)

(b) Tender Ltd has earned a net profit of ₹ 15 lacs after tax at 30%. Interest cost charged by financial institutions was ₹ 10 lacs. The invested capital is ₹ 95 lacs of which 55% is debt. The company maintains a weighted average cost of capital of 13%. Required,

   (a) Compute the operating income.

   (b) Compute the Economic Value Added (EVA).

   (c) Tender Ltd. has 6 lac equity shares outstanding. How much dividend can the company pay before the value of the entity starts declining? (8 Marks)

Answer

(a) Compute Value of Equity

Simple Ltd.

₹ in Lacs

	High Growth	Medium Growth	Slow Growth
Debit + Equity	820	550	410
Less: Debt	460	460	460
Equity	360	90	-50

Since the Company has limited liability the value of equity cannot be negative therefore the value of equity under slow growth will be taken as zero because of insolvency risk and the value of debt is taken at 410 lacs. The expected value of debt and equity can then be calculated as:

FINAL EXAMINATION : MAY, 2011

Simple Ltd.

₹ in Lacs

	High Growth		Medium Growth		Slow Growth		Expected Value
	Prob.	Value	Prob.	Value	Prob.	Value	
Debt	0.20	460	0.60	460	0.20	410	450
Equity	0.20	360	0.60	90	0.20	0	126
		820		550		410	576

Dimple Ltd.

₹ in Lacs

	High Growth		Medium Growth		Slow Growth		Expected Value
	Prob.	Value	Prob.	Value	Prob.	Value	
Equity	0.20	985	0.60	760	0.20	525	758
Debt	0.20	65	0.60	65	0.20	65	65
		1050		825		590	823

Expected Values

₹ in Lacs

Equity		Debt	
Simple Ltd.	126	Simple Ltd.	450
Dimple Ltd.	758	Dimple Ltd.	65
	884		515

(b)

Taxable Income	=	₹ 15 lac/(1-0.30)
	=	₹ 21.43 lacs or ₹ 21,42,857
Operating Income	=	Taxable Income + Interest
	=	₹ 21,42,857 + ₹ 10,00,000
	=	₹ 31,42,857 or ₹ 31.43 lacs
EVA	=	EBIT (1-Tax Rate) – WACC x Invested Capital
	=	₹ 31,42,857(1 – 0.30) – 13% x ₹ 95,00,000
	=	₹ 22,00,000 – ₹ 12,35,000 = ₹ 9,65,000
EVA Dividend	=	$\dfrac{₹ 9,65,000}{6,00,000}$ = ₹ 1.6083

PAPER – 2 : STRATEGIC FINANCIAL MANAGEMENT

Question 6

(a)   The following information is given for QB Ltd.

Earning per share	₹ 12
Dividend per share	₹ 3
Cost of capital	18%
Internal Rate of Return on investment	22%
Retention Ratio	40%

Calculate the market price per share using

(i)   Gordons formula   (ii)   Walters formula   (8 Marks)

(b)   (i)   Mention the functions of a stock exchange.

(ii)   Mention the various techniques used in economic analysis.   (4+4=8 Marks)

Answer

(a)   (i)   Gordons Formula

$$P_0 = \frac{E(1-b)}{K - br}$$

P_0 =   Present value of Market price per share

E   =   Earnings per share

K   =   Cost of Capital

b   =   Retention Ratio (%)

r   =   IRR

br   =   Growth Rate

$$P_0 = \frac{₹12(1-0.40)}{0.18 - (0.40 × 0.22)}$$

$$= \frac{₹7.20}{0.18 - 0.088} = \frac{₹7.20}{0.092}$$

$$= ₹78.26$$

(ii)   Walter Formula

$$V_c = \frac{D + \dfrac{R_a}{R_c}(E-D)}{R_c}$$

V_c =   Market Price

D   =   Dividend per share

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R_a =   IRR

R_c =   Cost of Capital

E   =   Earnings per share

$$= \frac{₹\,3 + \dfrac{0.22}{0.18}(₹12 - ₹3)}{0.18}$$

$$= \frac{₹\,3 + ₹\,11}{0.18}$$

$$= ₹\,77.77$$

Alternative Solution- As per the data provided in the question the retention ratio comes out to be 75% (as computed below) though mentioned in the question as 40%

(i)   Gordons Formula

$$\text{Retention Ratio} = \frac{\text{EPS - Dividend Per Share}}{\text{EPS}} = \frac{₹12 - ₹3}{₹12} = 0.75 \text{ i.e. } 75\%$$

With the retention ratio of 75% market price per share using the Gordons Formula shall be as follows

P_0 = $\dfrac{E(1 - b)}{K - br}$

P_0 =   Present value of Market price per share

E   =   Earnings per share

K   =   Cost of Capital

b   =   Retention Ratio (%)

r   =   IRR

br   =   Growth Rate

P_0 = $\dfrac{12(1 - 0.75)}{0.18 - (0.75 \times 0.22)}$

$$= \frac{3}{0.18 - 0.165} = ₹\,200$$

(ii)   Walter Formula

$$V_c = \frac{D + \dfrac{R_a}{R_c}(E - D)}{R_c}$$

V_c = Market Price

D = Dividend per share

R_a = IRR

R_c = Cost of Capital

E = Earnings per share

$$= \frac{₹\,3 + \dfrac{0.22}{0.18}(₹\,12 - ₹\,3)}{0.18}$$

$$= \frac{₹\,3 + ₹\,11}{0.18}$$

$$= ₹\,77.77$$

(b) (i) Functions of Stock Exchange are as follows:

1. Liquidity and marketability of securities- Investors can sell their securities whenever they require liquidity.

2. Fair price determination-The exchange assures that no investor will have an excessive advantage over other market participants

3. Source for long term funds-The Stock Exchange provides companies with the facility to raise capital for expansion through selling shares to the investing public.

4. Helps in Capital formation- Accumulation of saving and its utilization into productive use creates helps in capital formation.

5. Creating investment opportunity of small investor- Provides a market for the trading of securities to individuals seeking to invest their saving or excess funds through the purchase of securities.

6. Transparency- Investor makes informed and intelligent decision about the particular stock based on information. Listed companies must disclose information in timely, complete and accurate manner to the Exchange and the public on a regular basis.

(ii) Some of the techniques used for economic analysis are:

(a) **Anticipatory Surveys**: They help investors to form an opinion about the future state of the economy. It incorporates expert opinion on construction activities, expenditure on plant and machinery, levels of inventory – all having a definite bearing on economic activities. Also future spending habits of consumers are taken into account.

(b) **Barometer/Indicator Approach:** Various indicators are used to find out how the economy shall perform in the future. The indicators have been classified as under:

(1) Leading Indicators: They lead the economic activity in terms of their outcome. They relate to the time series data of the variables that reach high/low points in advance of economic activity.

(2) Roughly Coincidental Indicators: They reach their peaks and troughs at approximately the same in the economy.

(3) Lagging Indicators: They are time series data of variables that lag behind in their consequences vis-a- vis the economy. They reach their turning points after the economy has reached its own already.

All these approaches suggest direction of change in the aggregate economic activity but nothing about its magnitude.

(c) **Economic Model Building Approach:** In this approach, a precise and clear relationship between dependent and independent variables is determined. GNP model building or sectoral analysis is used in practice through the use of national accounting framework.

Question 7

*Answer any **four** from the following:*

(a) Explain the significance of LIBOR in international financial transactions.

(b) Discuss how the risk associated with securities is effected by Government policy.

(c) What is the meaning of:

(i) Interest Rate Parity and

(ii) Purchasing Power Parity?

(d) What is the significance of an underlying in relation to a derivative instrument?

(e) What are the steps for simulation analysis?   *(4 x 4=16 Marks)*

Answer

(a) LIBOR stands for London Inter Bank Offered Rate. Other features of LIBOR are as follows:

· It is the base rate of exchange with respect to which most international financial transactions are priced.

· It is used as the base rate for a large number of financial products such as options and swaps.

· Banks also use the LIBOR as the base rate when setting the interest rate on loans, savings and mortgages.

· It is monitored by a large number of professionals and private individuals world-wide.

(b) The risk from Government policy to securities can be impacted by any of the following factors.

(i) Licensing Policy

(ii) Restrictions on commodity and stock trading in exchanges

(iii) Changes in FDI and FII rules.

(iv) Export and import restrictions

(v) Restrictions on shareholding in different industry sectors

(vi) Changes in tax laws and corporate and Securities laws.

(c) Interest Rate Parity (IRP)

Interest rate parity is a theory which states that 'the size of the forward premium (or discount) should be equal to the interest rate differential between the two countries of concern". When interest rate parity exists, covered interest arbitrage (means foreign exchange risk is covered) is not feasible, because any interest rate advantage in the foreign country will be offset by the discount on the forward rate. Thus, the act of covered interest arbitrage would generate a return that is no higher than what would be generated by a domestic investment.

The Covered Interest Rate Parity equation is given by:

$$(1 + r_D) = \frac{F}{S}(1 + r_F)$$

Where $(1 + r_D)$ = Amount that an investor would get after a unit period by investing a rupee in the domestic market at r_D rate of interest and $(1 + r_F)$ F/S = is the amount that an investor by investing in the foreign market at r_F that the investment of one rupee yield same return in the domestic as well as in the foreign market.

Thus IRP is a theory which states that the size of the forward premium or discount on a currency should be equal to the interest rate differential between the two countries of concern.

Purchasing Power Parity (PPP)

Purchasing Power Parity theory focuses on the 'inflation – exchange rate' relationship. There are two forms of PPP theory:-

The ABSOLUTE FORM, also called the 'Law of One Price' suggests that "prices of similar products of two different countries should be equal when measured in a common currency". If a discrepancy in prices as measured by a common currency exists, the demand should shift so that these prices should converge.

The RELATIVE FORM is an alternative version that accounts for the possibility of market imperfections such as transportation costs, tariffs, and quotas. It suggests that 'because of

these market imperfections, prices of similar products of different countries will not necessarily be the same when measured in a common currency.' However, it states that the rate of change in the prices of products should be somewhat similar when measured in a common currency, as long as the transportation costs and trade barriers are unchanged.

The formula for computing the forward rate using the inflation rates in domestic and foreign countries is as follows:

$$F = S \frac{(1+i_D)}{(1+i_F)}$$

Where F= Forward Rate of Foreign Currency and S= Spot Rate

i_D = Domestic Inflation Rate and i_F= Inflation Rate in foreign country

Thus PPP theory states that the exchange rate between two countries reflects the relative purchasing power of the two countries i.e. the price at which a basket of goods can be bought in the two countries.

(d) The underlying may be a share, a commodity or any other asset which has a marketable value which is subject to market risks. The importance of underlying in derivative instruments is as follows:

- All derivative instruments are dependent on an underlying to have value.

- The change in value in a forward contract is broadly equal to the change in value in the underlying.

- In the absence of a valuable underlying asset the derivative instrument will have no value.

- On maturity, the position of profit/loss is determined by the price of underlying instruments. If the price of the underlying is higher than the contract price the buyer makes a profit. If the price is lower, the buyer suffers a loss.

(e) Steps for simulation analysis.

1. Modelling the project- The model shows the relationship of N.P.V. with parameters and exogenous variables. (Parameters are input variables specified by decision maker and held constant over all simulation runs. Exogenous variables are input variables, which are stochastic in nature and outside the control of the decision maker).

2. Specify values of parameters and probability distributions of exogenous variables.

3. Select a value at random from probability distribution of each of the exogenous variables.

4. Determine N.P.V. corresponding to the randomly generated value of exogenous variables and pre-specified parameter variables.

5. Repeat steps (3) & (4) a large number of times to get a large number of simulated N.P.V.s.

6. Plot frequency distribution of N.P.V.