

PAPER – 2 : MANAGEMENT ACCOUNTING AND FINANCIAL ANALYSIS

Question No. 1 is compulsory. Answer any **four** questions from the rest.

Figures in the margin indicate marks allotted to each question.

Working notes should form part of the answer.

Question 1

- (a) Engineers Ltd. is in the business of manufacturing nut bolts. Some more product lines are being planned to be added to the existing system. The machinery required may be bought or may be taken on lease. The cost of machine is Rs. 20,00,000 having a useful life of 5 years with the salvage value of Rs. 4,00,000 (consider short term capital loss/gain for the Income tax). The full purchase value of machine can be financed by bank loan at the rate of 20% interest repayable in five equal instalments falling due at the end of each year. Alternatively, the machine can be procured on a 5 years lease, year-end lease rentals being Rs. 6,00,000 per annum. The Company follows the written down value method of depreciation at the rate of 25 per cent. Company's tax rate is 35 per cent and cost of capital is 14 per cent.

- (i) Advise the company which option it should choose – lease or borrow.
(ii) Assess the proposal from the lessor's point of view examining whether leasing the machine is financially viable at 14 per cent cost of capital.

Detailed working notes should be given.

- (b) Determine the risk adjusted net present value of the following projects:

	X	Y	Z
Net cash outlays (Rs.)	2,10,000	1,20,000	1,00,000
Project life	5 years	5 years	5 years
Annual Cash inflow (Rs.)	70,000	42,000	30,000
Coefficient of variation	1.2	0.8	0.4

The Company selects the risk-adjusted rate of discount on the basis of the coefficient of variation:

Coefficient of Variation	Risk-Adjusted Rate of Return	P.V. Factor 1 to 5 years At risk adjusted rate of discount
0.0	10%	3.791
0.4	12%	3.605
0.8	14%	3.433
1.2	16%	3.274
1.6	18%	3.127
2.0	22%	2.864
More than 2.0	25%	2.689

(14 + 6 = 20 Marks)

Answer**(a) Discounting Factor:**

Cost of finance 20% - Tax 35% = 13%.

(i) PV of cash outflows under leasing alternative

<i>Year-end</i>	<i>Lease rent after taxes P.A.</i>	<i>PVIFA at 13%</i>	<i>Total P.V.</i>
1 – 5	Rs. 3,90,000	3.517	Rs. 13,71,630

PV of cash outflows under buying alternative

<i>Year end</i>	<i>Loan Instalment</i>	<i>Tax advantage on Interest</i>	<i>Tax advantage on Depreciation</i>	<i>Net Cash Outflow</i>	<i>PVIF at 13%</i>	<i>Total PV</i>
1	6,68,673	1,40,000	1,75,000	3,53,673	0.885	3,13,001
2	6,68,673	1,21,193	1,31,250	4,16,230	0.783	3,25,908
3	6,68,673	98,624	98,438	4,71,611	0.693	3,26,826
4	6,68,673	71,542	73,828	5,23,303	0.613	3,20,785
5	6,68,673	38,819	55,371	5,74,483	0.543	<u>3,11,944</u>
Total PV outflows						15,98,464
Less: PV of Salvage Value (Rs. 4,00,000 * 0.543)						<u>2,17,200</u>
						13,81,264
Less: PV of tax saving on short term capital loss (4,74,609 – 4,00,000) * 35% * .543						14,179
NPV of Cash outflow						13,67,085

Working Notes:**(1) Schedule of Debt Payment**

<i>Year-end</i>	<i>Opening balance</i>	<i>Interest @ 20%</i>	<i>Repayment</i>	<i>Closing Balance</i>	<i>Principal Amount</i>
1	20,00,000	4,00,000	6,68,673	17,31,327	2,68,673
2	17,31,327	3,46,265	6,68,673	14,08,919	3,22,408
3	14,08,919	2,81,784	6,68,673	10,22,030	3,86,889
4	10,22,030	2,04,406	6,68,673	5,57,763	4,64,267
5	5,57,763	1,10,910*	6,68,673	0	5,57,763

*Balancing Figure

(2) Schedule of Depreciation

Year	Opening WDV	Depreciation	Closing WDV
1	20,00,000	5,00,000	15,00,000
2	15,00,000	3,75,000	11,25,000
3	11,25,000	2,81,250	8,43,750
4	8,43,750	2,10,938	6,32,812
5	6,32,812	1,58,203	4,74,609

(3) $EMI = Rs.20,00,000 / \text{Annuity for 5 years @ } 20\% = \text{i.e. } Rs.20,00,000 / 2.991$
 $= Rs. 6,68,673.$

Advice: Company is advised to borrow and buy not to go for leasing as NPV of cash outflows is lower in case of buying alternative.

Note: Students may note that the cost of capital of the company given in the question is 14% at which cash flows may also be discounted, the question is however, silent whether this cost of capital is pre-tax or post tax. If it is assumed that this is after tax cost and the cash flows are discounted at this rate there is no change in the advice to the company i.e. borrow and buy. However, if it is assumed that the cost of capital is pre-tax and the same is adjusted with the tax rate to discount the cash flows, the advice to the company changes to leasing.

(ii) Evaluation from Lessor's Point of View

	(1)	(2)	(3)	(4)	(5)
Lease Rent	6,00,000	6,00,000	6,00,000	6,00,000	6,00,000
Less: Depreciation	5,00,000	3,75,000	2,81,250	2,10,938	1,58,203
EBT	1,00,000	2,25,000	3,18,750	3,89,062	4,41,797
Less: Tax @ 35%	35,000	78,750	1,11,563	1,36,172	1,54,629
EAT	65,000	1,46,250	2,07,187	2,52,890	2,87,168
Add: Depreciation	5,00,000	3,75,000	2,81,250	2,10,938	1,58,203
Cash Inflows	5,65,000	5,21,250	4,88,437	4,63,828	4,45,371
PV factor @ 14%	0.877	0.769	0.675	0.592	0.519
PV of inflows	4,95,505	4,00,841	3,29,695	2,74,586	2,31,148

Evaluation:

Aggregate PV of cash inflows	17,31,775
Add: PV of salvage value $(4,00,000 \times 0.519)$	2,07,600
Add: Tax shelter on short-term capital loss $(4,74,609 - 4,00,000) \times 0.35 \times 0.519$	<u>13,553</u>

PV of all cash inflows	19,52,928
Cost of the machine	20,00,000
NPV	−47,072

Hence, leasing at this rate is not feasible.

Working Note: Depreciation @ 25% WDV.

Cost = Rs. 20,00,000

				(Amount in Rs.)
			Depreciation	Balance
1	20,00,000		5,00,000	15,00,000
2	15,00,000		3,75,000	11,25,000
3	11,25,000		2,81,250	8,43,750
4	8,43,750		2,10,938	6,32,812
5	6,32,812		1,58,203	4,74,609

(b) Statement showing the determination of the risk adjusted net present value

Projects	Net cash outlays	Coefficient of variation	Risk adjusted discount rate	Annual cash inflow	PV factor 1-5 years	Discounted cash inflow	Net present value
	Rs.			Rs.		Rs.	Rs.
(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii) = (v) × (vi)	(viii) = (vii) – (ii)
X	2,10,000	1.20	16%	70,000	3.274	2,29,180	19,180
Y	1,20,000	0.80	14%	42,000	3.433	1,44,186	24,186
Z	1,00,000	0.40	12%	30,000	3.605	1,08,150	8,150

Question 2

- (a) Sun Moon Mutual Fund (Approved Mutual Fund) sponsored open-ended equity oriented scheme "Chanakya Opportunity Fund". There were three plans viz. 'A' – Dividend Re-investment Plan, 'B' – Bonus Plan & 'C' – Growth Plan.

At the time of Initial Public Offer on 1.4.1995, Mr. Anand, Mr. Bacchan & Mrs. Charu, three investors invested Rs. 1,00,000 each & chosen 'B', 'C' & 'A' Plan respectively.

The History of the Fund is as follows:

Date	Dividend %	Bonus Ratio	Net Asset Value per Unit (F.V. Rs. 10)		
			Plan A	Plan B	Plan C
28.07.1999	20		30.70	31.40	33.42
31.03.2000	70	5 : 4	58.42	31.05	70.05
31.10.2003	40		42.18	25.02	56.15
15.03.2004	25		46.45	29.10	64.28
31.03.2004		1 : 3	42.18	20.05	60.12
24.03.2005	40	1 : 4	48.10	19.95	72.40
31.07.2005			53.75	22.98	82.07

On 31st July all three investors redeemed all the balance units.

Calculate annual rate of return to each of the investors.

Consider:

1. Long-term Capital Gain is exempt from Income tax.
 2. Short-term Capital Gain is subject to 10% Income tax.
 3. Security Transaction Tax 0.2 per cent only on sale/redemption of units.
 4. Ignore Education Cess.
- (b) Following information is available in respect of dividend, market price and market condition after one year.

Market condition	Probability	Market Price	Dividend per share
		Rs.	Rs.
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 (F.V. Re. 1), which is cum 10% bonus debenture of Rs. 6 each, per share. M/s. X Finance Company Ltd. had 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 buy back after?

(12 + 8 = 20 Marks)

Answer

(a)	Mrs. Charu	Plan A Dividend Reinvestment		
				(Amount in Rs.)
Date	Investment	Rate	Units	Balance
01.04.1995	1,00,000.00	10.00	10,000.00	10,000.00
28.07.1999	20,000.00	30.70	651.47	10,651.47
31.03.2000	74,560.29	58.42	1,276.28	11,927.75
30.10.2003	47,711.00	42.18	1,131.13	13,058.88
15.03.2004	32,647.20	46.45	702.85	13,761.73
31.03.2004	N.A.	N.A.	N.A.	13,761.73
24.03.2005	55,046.92	48.10	1,144.43	14,906.16
Redemption value $14,906.16 \times 53.75$				8,01,206.10
Less: Security Transaction Tax (S.T.T) is .2%				<u>1,602.41</u>
Net amount received				7,99,603.69
Less: Short term capital gain tax @ 10%				
1,144.43 (53.64 – 48.10)		6,340		
i.e. $53.75 - \text{S.T.T. } .2\%$				<u>634</u>
Net of tax				7,98,969.69
Less: Investment				<u>1,00,000.00</u>
				<u>6,98,969.69</u>

$$\text{Annual average return (\%)} = \frac{6,98,969}{1,00,000} \times \frac{12}{124} \times 100 = 67.64$$

Mr. Anand**Plan B – Bonus**

<i>(Amount in Rs.)</i>			
<i>Date</i>	<i>Units</i>	<i>Balance</i>	<i>NAV per unit</i>
01.04.1995	10,000	10,000	10
31.03.2000	12,500	22,500	31.05
31.03.2004	7,500	30,000	20.05
24.03.2005	7,500	37,500	19.95

Redemption value $37,500 \times 22.98$	8,61,750.00
Less: Security Transaction Tax (S.T.T) is .2%	<u>1,723.50</u>
Net amount received	8,60,026.50
Less: Short term capital gain tax @ 10%	
$7,500 \times (22.93 - 19.95)$	22,350
i.e. $22.98 - \text{S.T.T. } .2\%$	<u>2,235.00</u>
Net of tax	8,57,791.50
Less: Investment	<u>1,00,000.00</u>
Net gain	<u>7,57,791.50</u>

$$\text{Annual average return (\%)} = \frac{7,57,791}{1,00,000} \times \frac{12}{124} \times 100 = 73.33$$

Mr. Bacchan**Plan C – Growth***(Amount in Rs.)*

Redemption value $10,000 \times 82.07$	8,20,700.00
Less: Security Transaction Tax (S.T.T) is .2%	<u>1,641.40</u>
Net amount received	8,19,058.60
Less: Short term capital gain tax @ 10%	<u>0.00</u>
Net of tax	8,19,058.60
Less: Investment	<u>1,00,000.00</u>
Net gain	<u>7,19,058.60</u>

$$\text{Annual average return (\%)} = \frac{7,19,058}{1,00,000} \times \frac{12}{124} \times 100 = 69.59$$

(b) The Expected Return of the equity share may be found as follows:

Market Condition	Probability	Total Return	Cost (*)	Net Return
Good	0.25	Rs. 124	Rs. 100	Rs. 24
Normal	0.50	Rs. 112	Rs. 100	Rs. 12
Bad	0.25	Rs. 100	Rs. 100	Rs. 0

$$\text{Expected Return} = (24 \times 0.25) + (12 \times 0.50) + (0 \times 0.25)$$

$$= \left(\frac{12}{100} \right) \times 100 = 12\%$$

The variability of return can be calculated in terms of standard deviation.

$$\begin{aligned}
 V SD &= 0.25 (24 - 12)^2 + 0.50 (12 - 12)^2 + 0.25 (0 - 12)^2 \\
 &= 0.25 (12)^2 + 0.50 (0)^2 + 0.25 (-12)^2 \\
 &= 36 + 0 + 36 \\
 SD &= \sqrt{72} \\
 SD &= 8.485 \text{ or say } 8.49
 \end{aligned}$$

(*) The present market price of the share is Rs. 106 cum bonus 10% debenture of Rs. 6 each; hence the net cost is Rs. 100 (There is no cash loss or any waiting for refund of debenture amount).

M/s X Finance company has offered the buy back of debenture at face value. There is reasonable 10% rate of interest compared to expected return 12% from the market. Considering the dividend rate and market price the creditworthiness of the company seems to be very good. 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 up to 1 year better to wait otherwise to opt buy back option.

Question 3

- (a) (i) What is interest rate risk, reinvestment risk & default risk & what are the types of risk involved in investments in G-Sec.?
- (ii) What is a Repo and a Reverse Repo?
- (b) You as a dealer in foreign exchange have the following position in Swiss Francs on 31st October, 2004:

	Swiss Francs
Balance in the Nostro A/c Credit	1,00,000
Opening Position Overbought	50,000
Purchased a bill on Zurich	80,000
Sold forward TT	60,000
Forward purchase contract cancelled	30,000
Remitted by TT	75,000
Draft on Zurich cancelled	30,000

What steps would you take, if you are required to maintain a credit Balance of Swiss Francs 30,000 in the Nostro A/c and keep as overbought position on Swiss Francs 10,000?

- (c) The following information is relating to Fortune India Ltd. having two division, viz. Pharma Division and Fast Moving Consumer Goods Division (FMCG Division). Paid up

share capital of Fortune India Ltd. is consisting of 3,000 Lakhs equity shares of Re. 1 each. Fortune India Ltd. decided to de-merge Pharma Division as Fortune Pharma Ltd. w.e.f. 1.4.2005. Details of Fortune India Ltd. as on 31.3.2005 and of Fortune Pharma Ltd. as on 1.4.2005 are given below:

Particulars	Fortune Pharma Ltd. Rs.	Fortune India Ltd. Rs.
Outside Liabilities		
Secured Loans	400 lakh	3,000 lakh
Unsecured Loans	2,400 lakh	800 lakh
Current Liabilities & Provisions	1,300 lakh	21,200 lakh
Assets		
Fixed Assets	7,740 lakh	20,400 lakh
Investments	7,600 lakh	12,300 lakh
Current Assets	8,800 lakh	30,200 lakh
Loans & Advances	900 lakh	7,300 lakh
Deferred tax/Misc. Expenses	60 lakh	(200) lakh

Board of Directors of the Company have decided to issue necessary equity shares of Fortune Pharma Ltd. of Re. 1 each, without any consideration to the shareholders of Fortune India Ltd. For that purpose following points are to be considered:

1. Transfer of Liabilities & Assets at Book value.
2. Estimated Profit for the year 2005-06 is Rs. 11,400 Lakh for Fortune India Ltd. & Rs. 1,470 lakhs for Fortune Pharma Ltd.
3. Estimated Market Price of Fortune Pharma Ltd. is Rs. 24.50 per share.
4. Average P/E Ratio of FMCG sector is 42 & Pharma sector is 25, which is to be expected for both the companies.

Calculate:

1. The Ratio in which shares of Fortune Pharma are to be issued to the shareholders of Fortune India Ltd.
2. Expected Market price of Fortune India Ltd.
3. Book Value per share of both the Companies immediately after Demerger.

(5 + 7 + 8 = 20 Marks)

Answer

- (a) (i) **Interest Rate Risk:** Interest Rate Risk, market risk or price risk are essentially one and the same. These are typical of any fixed coupon security with a fixed period to

maturity. This is on account of inverse relation of price and interest. As the interest rate rises the price of a security will fall. However, this risk can be completely eliminated in case an investor's investment horizon identically matches the term of security.

Re-investment Risk: This risk is again akin to all those securities, which generate intermittent cash flows in the form of periodic coupons. The most prevalent tool deployed to measure returns over a period of time is the yield-to-maturity (YTM) method. The YTM calculation assumes that the cash flows generated during the life of a security is reinvested at the rate of YTM. The risk here is that the rate at which the interim cash flows are reinvested may fall thereby affecting the returns.

Default Risk: This type of risk in the context of a Government security is always zero. However, these securities suffer from a small variant of default risk i.e. maturity risk. Maturity risk is the risk associated with the likelihood of government issuing a new security in place of redeeming the existing security. In case of Corporate Securities it is referred to as credit risk.

G. Secs are usually referred to as risk free securities. However, these securities are subject to only one type of risk i.e. interest rate risk. Subject to changes in the overall interest rate scenario, the price of these securities may appreciate or depreciate.

- (ii) A Repo deal is one where eligible parties enter into a contract another to borrow money at a predetermined rate against the collateral of eligible security for a specified period of time. The legal title of the security does changes. The motive of the deal is to fund a position. Though the mechanics essentially remains the same and the contract virtually remains the same, in case of reverse Repo deal the underlying motive of the deal is to meet the security/instrument specific needs or to lend the money. Indian Repo market is governed by Reserve Bank of India. At present Repo is permitted between 64 players against Central and State Government Securities (including T-Bills) at Mumbai.

(b) Exchange Position/Currency Position:

<i>Particulars</i>	<i>Purchase Sw. Fcs.</i>	<i>Sale Sw. Fcs.</i>
Opening Balance Overbought	50,000	
Bill on Zurich	80,000	
Forward Sales – TT		60,000
Cancellation of Forward Contract		30,000
TT Sales		75,000
Draft on Zurich cancelled	<u>30,000</u>	
	1,60,000	1,65,000
Closing Balance Oversold	<u>5,000</u>	
	<u>1,65,000</u>	<u>1,65,000</u>

Cash Position (Nostro A/c)

	Credit	Debit
Opening balance credit	1,00,000	
TT sales	<u>1,00,000</u>	<u>75,000</u>
	1,00,000	75,000
Closing balance (credit)	<u>1,00,000</u>	<u>25,000</u>
	<u>1,00,000</u>	<u>1,00,000</u>

The Bank has to buy spot TT Sw. Fcs. 5,000 to increase the balance in Nostro account to Sw. Fcs. 30,000.

This would bring down the oversold position on Sw. Fcs. As Nil.

Since the bank requires an overbought position of Sw. Fcs. 10,000, it has to buy forward Sw. Fcs. 10,000.

(c) Share holders' funds

<i>Particulars</i>	<i>Fortune India Ltd.</i>	<i>Fortune Pharma Ltd.</i>	<i>Fortune India (FMCG) Ltd.</i>
Assets	70,000	25,100	44,900
Outside liabilities	<u>25,000</u>	<u>4,100</u>	<u>20,900</u>
Net worth	<u>45,000</u>	<u>21,000</u>	<u>24,000</u>

1. Calculation of Shares of Fortune Pharma Ltd. are to be issued to shareholders of Fortune India Ltd.

	<i>Fortune Pharma Ltd.</i>
Estimated Profit (Rs. in lakhs)	1,470
Estimated market price (Rs.)	24.5
Estimated P/E	25
Estimated EPS (Rs.)	0.98
No. of shares lakhs	1,500

Hence, Ratio is 1 share of Fortune Pharma Ltd. for 2 shares of Fortune India Ltd.

2. Expected market price of Fortune India Ltd.

	<i>Fortune India (FMCG) Ltd.</i>
Estimated Profit (Rs. in lakhs)	11,400
No. of equity shares (Rs. in lakhs)	3,000

Estimated EPS (Rs.)	3.8
Estimated P/E	42
Estimated market price (Rs.)	159.6

3. Book value per share

	<i>Fortune Pharma Ltd.</i>	<i>Fortune India (FMCG) Ltd.</i>
Net worth (Rs.in lakhs)	21,000	24,000
No. of shares (Rs. in lakhs)	1,500	3,000
Book value of shares	Rs. 14	Rs. 8

Question 4

- (a) What are the investors' rights & obligations under the Mutual Fund Regulations? Explain different methods for evaluating the performance of Mutual Fund.
- (b) The Investment portfolio of a bank is as follows:

<i>Government Bond</i>	<i>Coupon Rate</i>	<i>Purchase rate (F.V. Rs. 100 per Bond)</i>	<i>Duration (Years)</i>
<i>G.O.I. 2006</i>	<i>11.68</i>	<i>106.50</i>	<i>3.50</i>
<i>G.O.I. 2010</i>	<i>7.55</i>	<i>105.00</i>	<i>6.50</i>
<i>G.O.I. 2015</i>	<i>7.38</i>	<i>105.00</i>	<i>7.50</i>
<i>G.O.I. 2022</i>	<i>8.35</i>	<i>110.00</i>	<i>8.75</i>
<i>G.O.I. 2032</i>	<i>7.95</i>	<i>101.00</i>	<i>13.00</i>

Face value of total Investment is Rs. 5 crores in each Government Bond.

Calculate actual Investment in portfolio.

What is a suitable action to churn out investment portfolio in the following scenario?

- Interest rates are expected to lower by 25 basis points.
- Interest rates are expected to raise by 75 basis points.

Also calculate the revised duration of investment portfolio in each scenario.

- (c) You sold Hong Kong Dollar 1,00,00,000 value spot to your customer at Rs. 5.70 & covered yourself in London market on the same day, when the exchange rates were

US\$ 1 = H.K.\$ 7.5880 7.5920

Local inter bank market rates for US\$ were

Spot US\$ 1 = Rs. 42.70 42.85

Calculate cover rate & ascertain the profit or loss in the transaction ignore brokerage.

(8 + 8 + 4 = 20 Marks)

Answer**(a) Investors' rights and obligations under the Mutual Fund Regulations:**

Important aspect of the mutual fund regulations and operations is the investors' protection and disclosure norms. It serves the very purpose of mutual fund guidelines. Due to these norms it is very necessary for the investor to remain vigilant. Investor should continuously evaluate the performance of mutual fund.

Following are the steps taken for improvement and compliance of standards of mutual fund:

1. All mutual funds should disclose full portfolio of their schemes in the annual report within one month of the close of each financial year. Mutual fund should either send it to each unit holder or publish it by way of an advertisement in one English daily and one in regional language.
2. The Asset Management Company must prepare a compliance manual and design internal audit systems including audit systems before the launch of any schemes. The trustees are also required to constitute an audit committee of the trustees which will review the internal audit systems and the recommendation of the internal and statutory audit reports and ensure their rectification.
3. The AMC shall constitute an in-house valuation committee consisting of senior executives including personnel from accounts, fund management and compliance departments. The committee would on a regular basis review the system practice of valuation of securities.
4. The trustees shall review all transactions of the mutual fund with the associates on a regular basis.

Investors' Rights:

1. Unit holder have proportionate right in the beneficial ownership of the schemes assets as well as any dividend or income declared under the scheme.
2. Receive dividend warrant within 42 days.
3. AMC can be terminated by 75% of the unit holders.
4. Right to inspect major documents i.e. material contracts, Memorandum of Association and Articles of Association (M.A. & A.A) of the AMC, Offer document etc.
5. 75% of the unit holders have the right to approve any changes in the close ended scheme.
6. Every unit holder have right to receive copy of the annual statement.

Legal limitations to investors' rights:

1. Unit holders cannot sue the trust but they can initiate proceedings against the trustees, if they feel that they are being cheated.

2. Except in certain circumstances AMC cannot assure a specified level of return to the investors. AMC cannot be sued to make good any shortfall in such schemes.

Investors' Obligations:

1. An investor should carefully study the risk factors and other information provided in the offer document. Failure to study will not entitle him for any rights thereafter.
2. It is the responsibility of the investor to monitor his schemes by studying the reports and other financial statements of the funds.

The criteria for evaluating the performance is as follows:

1. Sharpe Ratio

The excess return earned over the risk free return on portfolio to the portfolio's total risk measured by the standard deviation. This formula uses the volatility of portfolio return.

$$S = \frac{\text{Return of portfolio} - \text{Return of risk free investment}}{\text{Standard Deviation of Portfolio}}$$

2. Treynor Ratio

This ratio is similar to the Sharpe Ratio except it uses Beta of portfolio instead of standard deviation.

$$T = \frac{\text{Return of portfolio} - \text{Return of risk free investment}}{\text{Beta of Portfolio}}$$

3. Jensen's Alpha

The comparison of actual return of the fund with benchmark portfolio with the same risk. Normally, for the comparison of portfolios of mutual funds this ratio is applied and compared with market return. It shows the comparative risk and reward from the said portfolio. Alpha is the excess of actual return compared with expected return.

(b) Calculation of Actual investment of Portfolio

<i>Security</i>	<i>Purchase price</i>	<i>Investment (Rs. in lakhs)</i>
GOI 2006	106.50	532.50*
GOI 2010	105.00	525.00
GOI 2015	105.00	525.00
GOI 2022	110.00	550.00
GOI 2032	101.00	505.00
	Total	<u>2,637.50</u>

$$* \frac{\text{Rs. 5 crores}}{\text{Rs. 100} \times 1,00,000} \times \text{Rs. 106.50}$$

$$\text{Average Duration} = \frac{3.5 + 6.5 + 7.5 + 8.75 + 13.00}{5}$$

$$= \frac{39.25}{5} = 7.85$$

Suitable action to churn out investment portfolio in following scenario.

To reduce risk and to maximize profit or minimize losses.

- (1) Interest rates are expected to be lower by 25 basis points in such case increase the average duration by purchasing GOI 2032 and Disposing of GOI 2006.

$$\begin{aligned} \text{Revised average duration shall be} &= \frac{39.25 - 3.5 + 13}{5} \\ &= \frac{48.75}{5} = 9.75 \text{ years} \end{aligned}$$

- (2) Interest rates are expected to rise by 75 basis points in such case reduce the average duration by (*) Purchasing GOI 2010 and disposing of GOI 2032.

$$\begin{aligned} \text{Revised average duration shall be} &= \frac{39.25 - 13 + 6.5}{5} \\ &= \frac{32.75}{5} = 6.55 \text{ years} \end{aligned}$$

(*) Purchasing of GOI 2006 is not beneficial as maturity period is very short and 75 basis points is comparatively higher change.

- (c) The bank (Dealer) covers itself by buying from the market at market selling rate.

Rupee – Dollar selling rate	= Rs. 42.85
Dollar – Hong Kong Dollar	= HK \$ 7.5880
Rupee – Hong Kong cross rate	= Rs. 42.85 / 7.5880
	= Rs. 5.6471

Profit / Loss to the Bank

Amount received from customer (1 crore × 5.70)	Rs. 5,70,00,000
Amount paid on cover deal (1 crore × 5.6471)	<u>Rs. 5,64,71,000</u>
Profit to Bank	<u>Rs. 5,29,000</u>

Question 5

- (a) The following data are available for a bond

Face value	Rs. 1,000
Coupon Rate	16%
Years to Maturity	6
Redemption value	Rs. 1,000
Yield to maturity	17%

What is the current market price, duration and volatility of this bond? Calculate the expected market price, if increase in required yield is by 75 basis points.

- (b) Explain the terms ESOS and ESPS with reference to the SEBI guidelines for The Employees Stock Option Plans (ESOPs).
- (c) Your client is holding the following securities:

Particulars of Securities	Cost Rs.	Dividends/Interest Rs.	Market price Rs.	Beta
<i>Equity Shares:</i>				
Gold Ltd.	10,000	1,725	9,800	0.6
Silver Ltd.	15,000	1,000	16,200	0.8
Bronze Ltd.	14,000	700	20,000	0.6
GOI Bonds	36,000	3,600	34,500	1.0

Average return of the portfolio is 15.7%, calculate:

- (i) Expected rate of return in each, using the Capital Asset Pricing Model (CAPM).
- (ii) Risk free rate of return. (8 + 4 + 8 = 20 Marks)

Answer

(a) 1. Calculation of Market price:

$$YTM = \frac{\text{Coupon interest} + \left(\frac{\text{Discount or premium}}{\text{Years left}} \right)}{\frac{\text{Face Value} + \text{Market value}}{2}}$$

Discount or premium – YTM is more than coupon rate, market price is less than Face Value i.e. at discount.

Let x be the market price

$$0.17 = \frac{160 + \left\{ \frac{(1,000 - x)}{6} \right\}}{\frac{1,000 + x}{2}}$$

$$x = \text{Rs. } 960.26$$

Alternatively, the candidate may attempt by

$$\begin{aligned} & 160 (\text{PVIFA } 17, 6) + 1,000 (\text{PVIFA } 17, 6) \\ &= 160 (3.589) + 1,000 (.390) \\ &= 574.24 + 390 \\ &= 964.24 \end{aligned}$$

2. Duration

Year	Cash flow	P.V. @ 17%	Proportion of bond value	Proportion of bond value x time (years)
1	160	.855	136.8	0.142
2	160	.731	116.96	0.122
3	160	.624	99.94	0.104
4	160	.534	85.44	0.089
5	160	.456	72.96	0.076
6	1160	.390	<u>452.4</u>	<u>0.467</u>
			<u>964.4</u>	<u>4.236</u>

Duration of the Bond is 4.236 years

3. Volatility

$$\text{Volatility of the bonds} = \frac{\text{Duration}}{(1 + \text{yields})} = \frac{4.236}{1.17}$$

$$= 3.62$$

4. The expected market price if increase in required yield is by 75 basis points.

$$= \text{Rs. } 960.26 \times .75 (3.62/100)$$

$$= \text{Rs. } 26.071$$

Hence expected market price is Rs. 960.26 – Rs. 26.071 = Rs. 934.189

Hence, the market price will decrease

This portion can also be alternatively done as follows

$$= \text{Rs. } 964.4 \times .75 (3.62/100)$$

$$= \text{Rs. } 26.18$$

then the market price will be

$$= \text{Rs. } 964.4 - 26.18 = \text{Rs. } 938.22$$

(b) ESOS and ESPS**ESOS****1. Meaning**

Employee Stock Option Scheme means a scheme under which the company grants option to employees.

ESPS

Employee Stock Purchase Scheme means a scheme under which the company offers shares to employees as a part of public issue.

2. Auditors' Certificate

Auditors' Certificate to be placed at each AGM stating that the scheme has been implemented as per the guidelines and in accordance with the special resolution passed.

No such Certificate is required.

3. Transferability

It is not transferable.

It is transferable after lock in period.

4. Consequences of failure

The amount payable may be forfeited. If the option are not vested due to non-fulfillment of condition relating to vesting of option then the amount may be refunded to the employees.

Not applicable.

5. Lock in period

Minimum period of 1 year shall be there between the grant and vesting of options. Company is free to specify the lock in period for the shares issued pursuant to exercise of option.

One year from the date of allotment. If the ESPS is part of public issue and the shares are issued to employees at the same price as in the public issue, the shares issued to employees pursuant to ESPS shall not be subject to any lock in.

(c) Particulars of Securities	Cost Rs.	Dividend	Capital gain
Gold Ltd.	10,000	1,725	–200
Silver Ltd.	15,000	1,000	1,200
Bronz Ltd.	14,000	700	6,000
GOI Bonds	36,000	3,600	–1,500
Total	75,000	7,025	5,500

Expected rate of return on market portfolio

$$\frac{\text{Dividend Earned} + \text{Capital appreciation} \times 100}{\text{Initial investment}}$$

$$= \frac{\text{Rs. 7,025} + \text{Rs. 5,500} \times 100}{75,000}$$

$$= 16.7\%$$

Risk free return

$$\text{Average of Betas} = \frac{0.6 + 0.8 + 0.6 + 1.0}{4}$$

Average of Betas = 0.75

Average return = Risk free return + Average Betas (Expected return – Risk free return)

15.7 = Risk free return + 0.75 (16.7 – Risk free return)

Risk free return = 12.7%

Expected Rate of Return for each security is

Rate of Return = $R_f + B (R_m - R_f)$

Gold Ltd. = $12.7 + .6 (16.7 - 12.7)$ = 15.10%

Silver Ltd. = $12.7 + .8 (16.7 - 12.7)$ = 15.90%

Bronz Ltd. = $12.7 + .6 (16.7 - 12.7)$ = 15.10%

GOI Bonds = $12.7 + 1.0 (16.7 - 12.7)$ = 16.70%

Question 6

- (a) What is securitisation? What are its various instruments?
- (b) *M/s Transindia Ltd. is contemplating calling Rs. 3 crores of 30 year's, Rs. 1,000 bond issued 5 years ago with a coupon interest rate of 14 per cent. The bonds have a call price of Rs. 1,140 and had initially collected proceeds of Rs. 2.91 crores due to a discount of Rs. 30 per bond. The initial floating cost was Rs. 3,60,000. The Company intends to sell Rs. 3 crores of 12 per cent coupon rate, 25 years bonds to raise funds for retiring the old bonds. It proposes to sell the new bonds at their par value of Rs. 1,000. The estimated floatation cost is Rs. 4,00,000. The company is paying 40% tax and its after cost of debt is 8 per cent. As the new bonds must first be sold and their proceeds, then used to retire old bonds, the company expects a two months period of overlapping interest during which interest must be paid on both the old and new bonds. What is the feasibility of refunding bonds?*
- (c) Write a brief note on external Commercial borrowings. (5 + 10 + 5 = 20Marks)

Answer

- (a) Securitisation is a process of pooling and repackaging homogeneous illiquid financial assets into marketable securities that can be sold to investors. The process leads to the creation of financial instruments that represents ownership interest in or are secured by a segregated income producing asset or a pool of assets. The pool of assets collateralizes securities. These assets are generally secured by personal or real property.

Process: Assets are originated through receivables, leases, housing loans, or any other form of debt.

Once a suitably large portfolio of assets has been originated, the assets are analysed as a portfolio and then sold or assigned to a third party known as SPV formed for the specific purpose of funding the asset.

The administration of the asset is sub-contracted back to the originator by the SPV.

The SPV issues securities to fund the purchase of assets. Performance of these securities is directly linked to the performance of assets.

Parties: Parties to the securitisation are originator, SPV, investors, obligors, rating agencies, administrator, agent and trustee, structures.

Instruments of securitisation includes Pass Through Certificate (PTC), Pay Through Securities (PTS) and Stripped securities. Securities may be asset backed and mortgaged back.

(b) NPV for bond refunding

	<i>Rs.</i>
PV of annual cash flow savings (W.N. 2)	
$(3,49,600 \times \text{PV/FA } 8.25) \text{ i.e. } 10.675$	37,31,980
Less: Initial investment (W.N. 1)	<u>29,20,000</u>
NPV	8,11,980

Recommendation: Refunding of bonds is recommended as NPV is positive.

Working Notes:

(1) Initial investment:

(a) Call premium

Before tax $(1,140 - 1,000) \times 30,000$	42,00,000
Less tax @ 40%	<u>16,80,000</u>
After tax cost of call prem.	25,20,000

(b) Floatation cost 4,00,000

(c) Overlapping interest

Before tax $(.14 \times 2/12 \times 3 \text{ crores})$	7,00,000
Less tax @ 40%	<u>2,80,000</u> 4,20,000

(d) Tax saving on unamortised discount on old bond $25/30 \times 9,00,000 \times .4$
(3,00,000)

(e) Tax savings from unamortised floatation

Cost of old bond $25/30 \times 3,60,000 \times .4$	<u>(1,20,000)</u>
	<u>29,20,000</u>

(2) Annual cash flow savings:

(a) Old bond

(i) Interest cost $(.14 \times 3 \text{ crores})$	42,00,000
Less tax @ 40%	<u>16,80,000</u> 25,20,000

- | | | | |
|-------|---|--|----------------|
| (ii) | Tax savings from amortisation of discount | | |
| | $9,00,000/30 \times .4$ | | (12,000) |
| (iii) | Tax savings from amortisation of floatation | | |
| | cost $3,60,000/30 \times .4$ | | <u>(4,800)</u> |
| | Annual after cost payment of Debt (A) | | 25,03,200 |
-
- | | | | |
|------|---|------------------|------------------|
| (b) | New bond | | |
| (i) | Interest cost before tax ($.12 \times 3$ crores) | 36,00,000 | |
| | Less tax @ 40% | <u>14,40,000</u> | |
| | After tax interest | 21,60,000 | |
| (ii) | Tax savings from amortisation of floatation | | |
| | cost ($.4 \times 4,00,000/25$) | <u>(6,400)</u> | <u>21,53,600</u> |
| | Annual after tax payment | | <u>3,49,600</u> |
- (c) ECB include bank loans, supplier credit, securitised instruments, credit from export credit agencies and borrowings from multilateral financial institutions. These securitised instruments may be FRNs, FRBs etc. Indian corporate sector is permitted to raise finance through ECBs within the framework of the policies and procedures prescribed by the Central Government. Multilateral financial institutions like IFC, ADB, AFIC, CDC are providing such facilities while the ECB policy provides flexibility in borrowing consistent with maintenance of prudential limits for total external borrowings, its guiding principles are to keep borrowing maturities long, costs low and encourage infrastructure/core and export sector financing which are crucial for overall growth of the economy. The government of India, from time to time changes the guidelines and limits for which the ECB alternative as a source of finance is pursued by the corporate sector. During past decade the government has streamlined the ECB policy and procedure to enable the Indian companies to have their better access to the international financial markets.
- The government permits the ECB route for variety of purposes namely expansion of existing capacity as well as for fresh investment. But ECB can be raised through internationally recognized sources. There are caps and ceilings on ECBs so that macro economy goals are better achieved. Units in SEZ are permitted to use ECBs under a special window.