

PAPER – 2 : STRATEGIC FINANCIAL MANAGEMENT (NEW COURSE)

Question No.1 is compulsory.

Candidates are required to answer any **four** out of the remaining **five** questions.

Working notes should form part of the respective answer.

Question 1

- (a) ZX Ltd. has made purchases worth USD 80,000 on 1st May 2020 for which it has to make a payment on 1st November 2020. The present exchange rate is INR/USD 75. The company can purchase forward dollars at INR/USD 74. The company will have to make an upfront premium @ 1 per cent of the forward amount purchased. The cost of funds to ZX Ltd. is 10 per cent per annum.

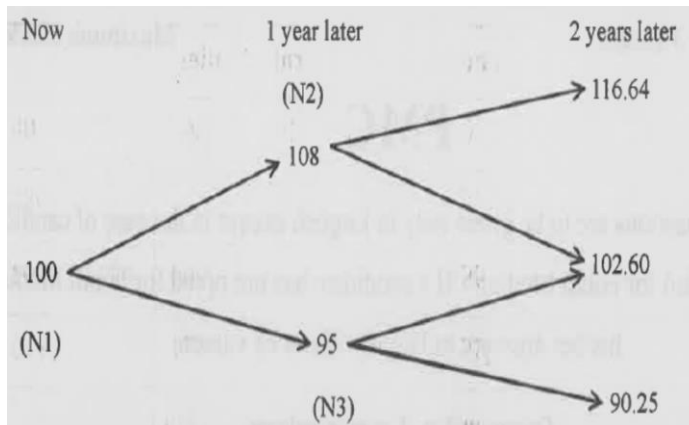
The company can hedge its position with the following expected rate of USD in foreign exchange market on 1st May 2020:

	Exchange Rate	Probability
(i)	INR/USD 77	0.15
(ii)	INR/USD 71	0.25
(iii)	INR/USD 79	0.20
(iv)	INR/USD 74	0.40

You are required to advise the company for a suitable cover for risk.

(8 Marks)

- (b) A two year tree for a share of stock in ABC Ltd., is as follows:



Consider a two years American call option on the stock of ABC Ltd., with a strike price of ₹ 98. The current price of the stock is ₹ 100. Risk free return is 5 per cent per annum with a continuous compounding and $e^{0.05} = 1.05127$.

Assume two time periods of one year each.

Using the Binomial Model, calculate:

- (i) The probability of price moving up and down;
- (ii) Expected pay offs at each nodes i.e. N1, N2 and N3 (round off upto 2 decimal points). **(8 Marks)**
- (c) On Tuesday morning (before opening of the capital market) an investor, while going through his bank statement, has observed that an amount of ₹7 lakhs is lying in his bank account. This amount is available for use from Tuesday till Friday. The Bank requires a minimum balance of ₹ 1000 all the time. The investor desires to make a maximum possible investment where Value at Risk (VaR) should not exceed the balance lying in his bank account. The standard deviation of market price of the security is 1.5 per cent per day. The required confidence level is 99 per cent.

Given

Standard Normal Probabilities										
z	0.00	.01	.02	.03	0.04	.05	.06	.07	.08	.09
2.2	.9861	.9864	.9868	.9871	.9875	.9878	.9881	.9884	.9887	.9890
2.3	.9893	.9896	.9898	.9901	.9904	.9906	.9909	.9911	.9913	.9916
2.4	.9918	.9920	.9922	.9923	.9925	.9929	.9931	.9932	.9934	.9936

You are required to determine the maximum possible investment.

(4 Marks)

Answer

- (a) (i) **If ZX Ltd. does not take forward (Unhedged Position):**

$$\begin{aligned} \text{Expected Rate} &= ₹ 77 \times 0.15 + ₹ 71 \times 0.25 + ₹ 79 \times 0.20 + ₹ 74 \times 0.40 \\ &= ₹ 11.55 + ₹ 17.75 + ₹ 15.80 + ₹ 29.60 = ₹ 74.70 \end{aligned}$$

$$\text{Expected Amount Payable} = \text{USD } 80,000 \times ₹ 74.70 = ₹ 59,76,000$$

- (ii) **If the ZX Ltd. hedge its position in the forward market:**

Particulars	Amount (₹)
If company purchases US\$ 80,000 forward premium is (80000 × 74 × 1%)	59,200
Interest on ₹ 59,200 for 6 months at 10%	<u>2,960</u>
Total hedging cost (a)	<u>62,160</u>
Amount to be paid for US\$ 80,000 @ ₹ 74.00 (b)	59,20,000
Total Cost (a) + (b)	59,82,160

Advise: Since cashflow is less in case of unhedged position company should opt for the same.

(b) (i) Using the single period model, the probability of price moving up is

$$P = \frac{R - d}{u - d} = \frac{1.05127 - \frac{95}{100}}{\frac{108}{100} - \frac{95}{100}} = \frac{0.10127}{0.13} = 0.779 \text{ say } 0.78 \text{ i.e. } 78\%$$

Therefore, the probability of price moving down = 1 - 0.78 = 0.22 i.e. 22%

(ii) Expected pay-off at

Node N2

$$\frac{0.78 \times 18.64 + 0.22 \times 4.60}{1.05127} = \frac{15.55}{1.05127} = ₹ 14.79$$

Node N3

$$\frac{0.78 \times 4.60 + 0.22 \times 0}{1.05127} = \frac{3.588}{1.05127} = ₹ 3.41$$

Node N1

$$\frac{0.78 \times 14.79 + 0.22 \times 3.41}{1.05127} = \frac{12.286}{1.05127} = ₹ 11.69$$

(c)

Particulars	Amount (₹)
Amount available in bank account	7,00,000
Minimum balance to be kept	1,000
Available amount which can be used for potential investment for 4 days	6,99,000
Maximum Loss for 4 days at 99% level	6,99,000
Maximum Loss for 1 day at 99 % level = Maximum Loss for 4 days / $\sqrt{\text{No. of days}}$ = 699000/ $\sqrt{4}$	3,49,500
Z Score at 99% Level	2.33
Volatility in terms of Rupees (Maximum Loss/ Z Score at 99% level) = 349500/ 2.33	1,50,000
Maximum Possible Investment (Volatility in Rupees/Std Deviation) = 150000/.015	1,00,00,000

Question 2

- (a) AB Industries has Equity Capital of ₹ 12 Lakhs, total Debt of ₹ 8 Lakhs, and annual sales of ₹ 30 Lakhs. Two mutually exclusive proposals are under consideration for the next year. The details of the proposals are as under:

Particulars	Proposal no. 1	Proposal no. 2
Target Assets to Sales Ratio	0.65	0.62
Target Net Profit Margin (%)	4	5
Target Debt Equity Ratio (DER)	2:3	4:1
Target Retention Ratio (of Earnings) (%)	75	-
Annual Dividend (₹ In Lakhs)	-	0.30
New Equity Raised (₹ in Lakhs)	-	1

You are required to calculate sustainable growth rate for both the proposals. **(8 Marks)**

- (b) IB an Indian firm has its subsidiary in Japan and Zaki a Japanese firm has its subsidiary in India and face the following interest rates:

Company	IB	Zaki
INR floating rate	BPLR + 0.50%	BPLR + 2.50%
JPY (Fixed rate)	2%	2.25%

Zaki wishes to borrow Rupee Loan at a floating rate and IB wishes to borrow JPY at a fixed rate. The amount of loan required by both the firms is same at the current exchange rate. A financial institution may arrange a swap and requires 25 basis points as its commission. Gain, if any, is to be shared by the firms equally.

You are required to find out:

- (i) Whether a swap can be arranged which may be beneficial to both the firms?
 (ii) What rate of interest will the firms end up paying? **(8 Marks)**
 (c) Peer – to – Peer Lending and Crowd funding are same and traditional methods of funding. Do you agree? Justify your stand. **(4 Marks)**

Answer

- (a) Sustainable Growth Rate under Proposal 1

Sales (Given)		₹ 30 Lakhs
Total Assets	₹ 30 Lakhs x 0.65	₹ 19.50 Lakhs
Net Profit	₹ 30 Lakhs x 4%	₹ 1.20 Lakhs

Equity Multiplier	$\frac{\text{Equity}}{\text{Equity} + \text{Debt}} = \frac{12 \text{ Lakhs}}{12 \text{ Lakhs} + 8 \text{ Lakhs}}$	0.6
ROE	$\frac{1.20 \text{ Lakhs}}{19.50 \text{ Lakhs}} \times 0.60 \times 100$	3.69%
Sustainable Growth Rate	= ROE x Retention Ratio = 3.69% x 0.75 = 2.77%	

Sustainable Growth Rate under Proposal 2

New Equity = ₹ 12 Lakhs + ₹ 1 Lakh = ₹ 13 Lakhs

New Debt = ₹ 13 Lakhs x 4 = ₹ 52 Lakhs

Total Assets = ₹ 13 Lakhs + ₹ 52 Lakhs = ₹ 65 Lakhs

Target Assets to Sales Ratio (Given)		0.62
Sales	₹ 65 Lakhs / 0.62	₹ 104.84 Lakhs
Net Profit	₹ 104.84 Lakhs x 5%	₹ 5.242 Lakhs
Equity Multiplier	$\frac{\text{Equity}}{\text{Equity} + \text{Debt}} = \frac{13 \text{ Lakhs}}{13 \text{ Lakhs} + 52 \text{ Lakhs}}$	0.2
ROE =	$\frac{5.242 \text{ Lakhs}}{65 \text{ Lakhs}} \times 0.20 \times 100$	1.613%
Retention Ratio	$\frac{5.242 \text{ Lakhs} - 0.30 \text{ Lakhs}}{5.242 \text{ Lakhs}}$	0.943
Sustainable Growth Rate	= ROE x Retention Ratio = 1.613% x 0.943 = 1.52%	

- (b) Though Company IB has an advantage in both the markets but it has comparative more advantage in the INR floating-rate market. Company Zaki has a comparative advantage in the JPY fixed interest rate market.

However, company IB wants to borrow in the JPY fixed interest rate market and company Zaki wants to borrow in the INR floating-rate market. This gives rise to the swap opportunity.

IB raises INR floating rate at BPLR + 0.50% and Zaki raises JPY at 2.25%

Total Potential Gain = (INR interest differential) - (Yen rate differential)

= (BPLR + 2.50% - BPLR + 0.50%) + (2% - 2.25%) = 1.75%

Less Banker's commission (To be shared equally) = 0.25%

Net gain (To be shared equally: 0.75% each) = 1.50%

(i) Yes, a beneficial swap can be arranged

(ii) Effective cost of borrowing = pays to lenders + pays to other party -receives from other party + banker's commission

$$IB = BPLR + 0.50\% + 1.125\%* - (BPLR + 0.50\%) + 0.125\% = 1.25\%$$

(* has been arrived as 2% - 0.75% - 0.125%)

$$Zaki = 2.25\% + BPLR + 0.50\% - 1.125\% + 0.125\% = BPLR + 1.75\%$$

Note: Candidates can also present the above Swap arrangement in a different manner. In such case they should be awarded due marks provided solution be ended up in correct answer.

- (c) No, I do not agree with the given statement because while peer-to-peer lending is in existence for many years the crowd funding is contemporary source of finance for Startup finance.

Further in peer-to-peer lending a group of people come together and lend money to each other. Many small and ethnic business groups having similar faith or interest generally support each other in their start up endeavors.

On the other hand, Crowdfunding is the use of small amounts of capital from a large number of individuals to finance a new business initiative. Crowdfunding makes use of the easy accessibility of vast networks of people through social media and crowdfunding websites to bring investors and entrepreneurs together.

Question 3

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

Face Value ₹ 10,000 to be redeemed at par on maturity

Coupon rate 8.5 per cent per annum

Years to Maturity 5 years

Yield to Maturity (YTM) 10 per cent

You are required to calculate:

- (i) *Current market price of the Bond,*
 (ii) *Macaulay's Duration,*
 (iii) *Volatility of the Bond,*
 (iv) *Convexity of the Bond,*
 (v) *Expected market price, if there is a decrease in the YTM by 200 basis points*
 (a) *By Macaulay's Duration based estimate*
 (b) *By Intrinsic Value Method.*

Given

Years	1	2	3	4	5
PVIF (10%, n)	0.909	0.826	0.751	0.683	0.621
PVIF (8%, n)	0.926	0.857	0.794	0.735	0.681

(7 Marks)

- (b) M/S. Corpus an AMC, on 1.04.2015 has floated two schemes viz. Dividend Plan and Bonus Plan. Mr. X, an investor has invested in both the schemes. The following details (except the issue price) are available:

Date	Dividend (%)	Bonus Ratio	NAV	
			Dividend Plan	Bonus Plan
1.04.2015			?	?
31.12.2016		1 : 4 (One unit on 4 units held)	47	40
31.03.2017	12		48	42
31.03.2018	10		50	39
31.12.2018		1 : 5 (One unit on 5 units held)	46	43
31.03.2019	15		45	42
31.03.2020	-	-	49	44

Additional details

Investment (₹)	₹9,20,000	₹10,00,000
Average Profit (₹)	₹27,748.60	
Average Yield (%)		6.40

You are required to calculate the issue price of both the schemes as on 1.04.2015.

(10 Marks)

- (c) An individual attempts to found and build a company from personal finances or from the operating revenues of the new company. What this method is called? Discuss any two methods.

(3 Marks)

Answer

- (a) (i) Current Market Price of Bond

$$= ₹ 850 (PVIAF 10\%, 5) + ₹ 10,000 (PVIF 10\%, 5)$$

$$= ₹ 850 (3.79) + ₹ 10,000 (0.621) = ₹ 3,221.50 + ₹ 6,210 = ₹ 9,431.5$$

(ii) Macaulay's Duration

Year	Cash flow	P.V. @ 10%		Proportion of bond value	Proportion of bond value x time (years)
1	850	0.909	772.65	0.082	0.082
2	850	0.826	702.10	0.074	0.148
3	850	0.751	638.35	0.068	0.204
4	850	0.683	580.55	0.062	0.248
5	10,850	0.621	<u>6,737.85</u>	<u>0.714</u>	<u>3.57</u>
			<u>9431.50</u>	<u>1.000</u>	<u>4.252</u>

Duration of the Bond is 4.252 years

(iii) Volatility of Bond

$$\text{Volatility of Bonds} = \frac{\text{Duration}}{(1 + \text{YTM})} = \frac{4.252}{1.10} = 3.865$$

(iv) Convexity of Bond

$$C^* \times (\Delta Y)^2 \times 100$$

$$C^* = V_+ + V_- - 2V_0$$

$$2V_0 (\Delta Y)^2$$

Year	Cash flow	P.V. @ 8%		P.V @12%	
1	850	0.926	787.10	0.892	758.20
2	850	0.857	728.45	0.797	677.45
3	850	0.794	674.90	0.712	605.20
4	850	0.735	624.75	0.636	540.60
5	10,850	0.681	<u>7388.85</u>	0.567	<u>6,151.95</u>
			<u>10204.05</u>		<u>8,733.40</u>

$$C^* = \frac{10,204.05 + 8,733.40 - 2 \times 9,431.50}{2 \times 9,431.50 \times (0.02)^2}$$

$$= \frac{74.45}{7.5452}$$

$$= 9.867$$

$$\text{Convexity of Bond} = 9.867 \times (0.02)^2 \times 100 = 0.395\%$$

(v) The expected market price if decrease in YTM by 200 basis points.

(A) By Macaulay's duration-based estimate

$$= ₹ 9431.50 \times 2 (3.865/100) = ₹ 729.05$$

Hence expected market price is ₹ 9431.50 + ₹ 729.05 = ₹ 10,160.55

Hence, the market price will increase.

(B) By Intrinsic Value method

Intrinsic Value at YTM of 10%	₹ 9,431.50
Intrinsic Value at YTM of 8%	₹ 10,204.05
Price increased by	₹ 772.55

Hence, expected market price is ₹ 10,204.05

(b) (i) Dividend Plan

(a) Average Annual gain over a period of 5 Years	27748.60
(b) Total gain over a period of 5 years (a*5)	138743
(c) Initial Investment	920000
(d) Total value of investment (b+c)	1058743
(e) NAV as on 31.3.2020	49
(f) Number of units at the end of the period as on 31.03.2019 (d/e)	21607

	1	2	3	4 = (2*3)	5	6 = 1/ (4+5)*4	7
Period	Units held	Rate	Unit value	Dividend	NAV	New Units*	Balance Units Pre Dividend
31.03.2019	21607	0.15	10	1.5	45	697	20910
31.03.2018	20910	0.1	10	1	50	410	20500
31.03.2017	20500	0.12	10	1.2	48	500	20000

Issue Price as on 01.04.2015 Investment 920000/ Units purchased 20000 (c/i) = ₹ 46

* Let the units issued be X

$$X = (\text{Closing Units}/\text{NAV} + \text{Dividend}) \times \text{Dividend}$$

(ii) Bonus Plan

(a) Average Yield	0.064
(b) Investment	1000000
(c) Gain over a period of 5 years (a*b*5)	320000

(d) Market Value as on 31.03.2019 (b + c)	1320000
(e) NAV as on 31.03.2020	44
(f) Total units as on 31.03.2020 (d/e)	30000
(g) No of units as on 31.03.2018 Pre bonus = $30000 \times 5 / (5 + 1)$	25000
(h) No of units as on 31.12.2016 Pre bonus = $25000 \times 4 / (4 + 1)$	20000
(i) Issue Price as on 01.04.2015 Investment 1000000/ Units purchased 20000 (b/h)	50

- (c) When an individual attempts to found and build a company from personal finances or from the operating revenues of the new company, it is called Boot Strapping.

A common mistake made by most founders is that they make unnecessary expenses towards marketing, offices and equipment they cannot really afford. So, it is true that more money at the inception of a business leads to complacency and wasteful expenditure. On the other hand, investment by startups from their own savings leads to cautious approach. It curbs wasteful expenditures and enable the promoter to be on their toes all the time.

Here are some of the methods in which a startup firm can bootstrap:

- (a) *Trade Credit:* When a person is starting his business, suppliers are reluctant to give trade credit. They will insist on payment of their goods supplied either by cash or by credit card. However, a way out in this situation is to prepare a well-crafted financial plan. The next step is to pay a visit to the supplier's office. If the business organization is small, the owner can be directly contacted. On the other hand, if it is a big firm, the Chief Financial Officer can be contacted and convinced about the financial plan.

The owner or financial officer may give half the order on credit, with the balance due upon delivery. Of course, the trick here is to get the goods shipped, and sell them before one has to pay for them. One could borrow money to pay for the inventory, but you have to pay interest on that money. So, trade credit is one of the most important ways to reduce the amount of working capital one needs. This is especially true in retail operations.

- (b) *Factoring:* This is a financing method where accounts receivable of a business organization is sold to a commercial finance company to raise capital. The factor then got hold of the accounts receivable of a business organization and assumes the task of collecting the receivables as well as doing what would've been the paperwork. It can reduce costs associated with maintaining accounts receivable such as bookkeeping, collections and credit verifications.

In addition to reducing internal costs of a business, factoring also frees up money that would otherwise be tied to receivables. This money can be used to generate

profit through other avenues of the company. Thus, factoring can be a very useful tool for raising money and keeping cash flowing in a startup.

- (c) *Leasing*: Another popular method of bootstrapping is to take the equipment on lease rather than purchasing it. It will reduce the capital cost and also help lessee (person who take the asset on lease) to claim tax benefit in the form of lease rentals paid by him. So, it is better to take a photocopy machine, an automobile or a van on lease to avoid paying out lump sum money which is not at all feasible for a startup organization. The lessee benefits by making smaller payments and retain the ability to walk away from the equipment at the end of the lease term.

Question 4

- (a) *ICL is proposing to take over SVL with an objective to diversify. ICL's profit after tax (PAT) has grown @ 18 per cent per annum and SVL's PAT is grown @ 15 per cent per annum. Both the companies pay dividend regularly. The summarised Profit & Loss Account of both the companies are as follows:*

₹ in Crores

Particulars	ICL	SVL
Net Sales	4,545	1,500
PBIT	2,980	720
Interest	750	25
Provision for Tax	1,440	445
PAT	790	250
Dividends	235	125

	ICL		SVL	
Fixed Assets				
Land & Building (Net)	720		190	
Plant & Machinery (Net)	900		350	
Furniture & Fixtures (Net)	30	1,650	10	550
Current Assets		775		580
Less: Current Liabilities				
Creditors	230		130	
Overdrafts	35		10	
Provision for Tax	145		50	
Provision for dividends	60	470	50	240
Net Assets		1,955		890

<i>Paid up Share Capital (₹ 10 per share)</i>	250		125	
<i>Reserves and Surplus</i>	1,050	1,300	660	785
<i>Borrowing</i>		655		105
<i>Capital Employed</i>		1,955		890

<i>Market Price Share (₹)</i>	52	75
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ICL's Land & Buildings are stated at current prices. SVL's Land & Buildings are revalued three years ago. There has been an increase of 30 per cent per year in the value of Land & Buildings.

SVL is expected to grow @ 18 per cent each year, after merger.

ICL's Management wants to determine the premium on the shares over the current market price which can be paid on the acquisition of SVL.

You are required to determine the premium using:

- Net Worth adjusted for the current value of Land & Buildings plus the estimated average profit after tax (PAT) for the next five years.
- The dividend growth formula.
- ICL will push forward which method during the course of negotiations?

Period (t)	1	2	3	4	5
FVIF (30%, t)	1.300	1.690	2.197	2.856	3.713
FVIF (15%, t)	1.15	2.4725	3.9938	5.7424	7.7537

(12 Marks)

- (b) USD 10,000 is lying idle in your Bank Account. You are able to get the following quotes from the dealers:

Dealer	Quote	
A	EUR/USD	1.1539
B	EUR/GBP	0.9094
C	GBP/USD	1.2752

Is there an opportunity of gain from these quotes?

(4 Marks)

- (c) Side Pocketing enhances the value of the Mutual Fund. Do you agree? Briefly explain the process of side pocketing.

(4 Marks)

Answer

(a) (i) Computation of Premium (Net Worth Formula): Amount ₹ in Crores

Total Assets (Fixed assets + Current Assets) = (550 + 580)	1130
Less: Liabilities (Current Liabilities + Borrowings) = (240 + 105)	345
Net Assets Value	785
Current Value of Land after growing for three years @ 30% = 190 X 2.197	417.43
Less: Book Value	190.00
Increase in the Value of land	227.43
Adjusted NAV (785 + 227.43)	1012.43
Current Profit after Tax (@15 % for 5 years i.e. 250 X 7.7537	1938.43
Average Profit for 1 year = 1938.43/5	387.69
Total Value of Firm (1012.43 + 387.69)	1400.12
Total Market Value = No of shares X MPS = 12.50 X 75	937.50
Premium (Total Value – Market Value)	462.62
Premium (%) = 462.62/937.50 * 100	49.35%

(ii) Computation of Premium (Dividend Growth Formula):

Existing Growth Rate	0.15
DPS= 125/12.50	10
MPS	75
Cost of Equity (D1/MP + g) = [(10 X 1.15/75) + 0.15]	0.3033
Expected growth rate after merger	0.18
Expected Market Price = 10 X [1.18 / (0.3033 - 0.18)]	95.70
Premium over current market price (95.70 - 75)/ 75 X 100	27.60%

Alternatively, if given figure of dividend is considered as D₁ then Premium over Current Market Price shall be computed as follows:

Cost of Equity $\left(\frac{D_1}{P} + g \right)$	$\left[\frac{10}{75} + 0.15 \right]$	0.2833
Expected Growth Rate after Merger		0.18
Expected Market Price $10.00 / (0.2833 - 0.18)$		96.81
Premium over Current Market Price (96.81 - 75)/ 75 x 100		29.08%

(iii) During the course of negotiations, ICL will push forward valuation based on Growth Rate Method as it will lead to least cash outflow.

(b) The arbitrageur can proceed as stated below to realize arbitrage gains.

- (i) Buy € from US\$ 10,000 from Dealer A ($10,000 / 1.1539$) € 8,666.26
 (ii) Convert these € to £ by selling to Dealer B ($€ 8,666.26 \times 0.9094$) £ 7,881.09
 (iii) Convert £ to US\$ by selling to Dealer C ($£ 7,881.09 \times 1.2752$) US\$ 10,049.97

There is net gain of US\$ 10,049.97 less US\$ 10,000 i.e. US\$ 49.97 or US\$ 50.00.

(c) *Side Pocketing*: Yes, Side Pocketing enhances the value of a mutual fund. In simple words, a side pocketing in mutual fund leads to separation of risky assets from other investments and cash holdings. The purpose is to make sure that money invested in a mutual fund, which is linked to stressed assets, gets locked, until the fund recovers the money from the company or could avoid distress selling of illiquid securities.

Process of Side Pocketing: The modus operandi is simple. Whenever, the rating of a mutual fund decreases, the fund shifts the illiquid assets into a side pocket so that current shareholders can be benefitted from the liquid assets. Consequently, the Net Asset Value (NAV) of the fund will then reflect the actual value of the liquid assets. Therefore, the process of side pocketing ensures that liquidity is not the problem even in the circumstances of frequent allotments and redemptions.

Thus, from the above it can be said that Side Pocketing helps to enhance the value of fund for the investors to some extent.

Question 5

(a) ICL an Indian MNC is executing a plant in Sri Lanka. It has raised ₹ 400 billion. Half of the amount will be required after six months' time. ICL is looking an opportunity to invest this amount on 1st April, 2020 for a period of six months. It is considering two underlying proposals:

Market	Japan	US
Nature of Investment	Index Fund (JPY)	Treasury Bills (USD)
Dividend (in billions)	25	-
Income from stock lending (in billions)	11.9276	-
Discount on initial investment at the end	2%	-
Interest	-	5 per cent per annum
Exchange Rate (1 st April, 2020)	JPY/INR 1.58	USD/INR 0.014
Exchange Rate (30 th September, 2020)	JPY/INR 1.57	USD/INR 0.013

You, as an Investment Manager, is required to suggest the best course of option.

(8 Marks)

(b) The following are the details of three mutual funds of MFL:

	Growth Fund	Balanced Fund	Regular Fund	Market
Average Return (%)	7	6	5	9
Variance	92.16	54.76	40.96	57.76
Coefficient of Determination	0.3025	0.6561	0.9604	

The yield on 182 days Treasury Bill is 9 per cent per annum.

You are required to:

- (i) Rank the funds as per Sharpe's measure.
 - (ii) Rank the funds as per Treynor's measure.
 - (iii) Compare the performance with the market. **(8 Marks)**
- (c) In an efficient market, technical analysis may not work perfectly. However, with imperfections, inefficiencies and irrationalities, which characterises the real world, technical analysis may be helpful.

Critically analyse the statement.

(4 Marks)

Answer

(a) Investment in JPY

(in billions)

Particulars	Currency INR	ER	Currency JPY
Available amount	200	1.58	<u>316</u>
Dividend Income			25
Stock Lending Income			11.9276
Investment value at the end after discount @ 2%			<u>309.68</u>
Amount available at the end			<u>346.6076</u>
Conversion as on 30-09-2020		1.57	₹ 220.7692
Gain			₹ 20.7692

Investment in USD

(in billions)

Particulars	Currency INR	ER	Currency USD
Available amount	200	0.014	2.80
Interest for 6 months @ 5% p.a.			<u>0.07</u>
Amount available at the end			<u>2.87</u>

Conversion as on 30-09-2020 0.013 ₹ 220.7692

Gain ₹ 20.7692

The equivalent amount is same in both the options so ICL is indifferent.

However, USD is more stable, and Treasury Bills are risk free, so investment in Treasury Bills (USD) is suggested.

(b)

	Growth Fund	Balanced Fund	Regular Fund	Market
Average Return (%)	7	6	5	9
Variance	92.16	54.76	40.96	57.76
Std. Deviation	9.60	7.40	6.40	7.60
Coefficient of Determination	0.3025	0.6561	0.9604	
Coefficient of Correlation	0.55	0.81	0.98	
Beta (β)	$\frac{9.60}{7.60} \times 0.55$ = 0.695	$\frac{7.40}{7.60} \times 0.81$ = 0.789	$\frac{6.40}{7.60} \times 0.98$ = 0.825	

(i) Ranking of Funds as per Sharpe Ratio

$$\text{Sharpe Ratio} = \frac{\text{Expected Return} - \text{Risk Free Rate of Return}}{\text{Standard Deviation}}$$

	Growth Fund	Balanced Fund	Regular Fund
Sharpe Ratio	$\frac{7 - 9}{9.60} = -0.208$	$\frac{6 - 9}{7.40} = -0.405$	$\frac{5 - 9}{6.40} = -0.625$
Ranking	1	2	3

(ii) Ranking of Funds as per Treynor Ratio

$$\text{Treynor Ratio} = \frac{\text{Expected Return} - \text{Risk Free Rate of Return}}{\text{Beta}}$$

	Growth Fund	Balanced Fund	Regular Fund
Treynor Ratio	$\frac{7 - 9}{0.695} = -2.878$	$\frac{6 - 9}{0.789} = -3.802$	$\frac{5 - 9}{0.825} = -4.84$
Ranking	1	2	3

(iii) Comparison of performance with the Market

Sharpe Ratio	$\frac{9 - 9}{7.60} = 0$
Treynor Ratio	$\frac{9 - 9}{1} = 0$

Thus, the performance of funds is very poor since all values are negative as compared to market performance.

(c) **Yes, this statement is correct.**

Arguments for technical analysis:

- (a) Under influence of crowd psychology trend persists for some time. Technical analysis helps in identifying these trends early which is helping decision making.
- (b) Shift in demand and supply is gradual rather than instantaneous. Technical analysis helps in detecting this shift rather early
- (c) Fundamental information about a company is observed and assimilated by the market over a period of time. Hence price movements tend to more or less in same direction till the information is fully assimilated in the price of the stock.

Arguments against technical analysis:

- (a) Technical are not able to offer a convincing explanation for tools employed by them.
- (b) Empirical evidence in support of random walk hypothesis cast its shadow on it
- (c) By the time trends are signaled by technical analysis, trends have already taken place.

Question 6

(a) An investor is considering to purchase the equity shares of LX Ltd., whose current market price (CMP) is ₹ 112. The company is proposing a dividend of ₹ 4 for the next year. LX Ltd. is expected to grow @ 20 per cent per annum for the next four years. The growth will decline linearly to 16 per cent per annum after first four years. Thereafter, it will stabilise at 16 per cent per annum infinitely. The investor requires a return of 20 per cent per annum.

You are required

- (i) To calculate the intrinsic value of the share of LX Ltd.
- (ii) Whether it is worth to purchase the share at this price.

Period	1	2	3	4	5	6	7
PVIF (20%, n)	0.833	0.694	0.579	0.482	0.402	0.335	0.279

(8 Marks)

- (b) *The Management of a multinational company TL Ltd. is engaged in construction of Infrastructure Project. A proposal to construct a Toll Road in Nepal is under consideration of the Management.*

The following information is available:

The initial investment will be in purchase of equipment costing USD 250 lakhs. The economic life of the equipment is 10 years. The depreciation on the equipment will be charged on straight line method.

EBIDTA to be collected from the Toll Road is projected to be USD 33 lakhs per annum for a period of 20 years.

To encourage investment Nepalese government is offering a 15 year term loan of USD 150 lakhs at an interest rate of 6 per cent per annum. The interest is to be paid annually. The loan will be repaid at the end of 15 year in one tranche.

The required rate of return for the project under all equity financing is 12 per cent per annum.

Post tax cost of debt is 5.6 per cent per annum.

Corporate Tax Rate is 30 per cent.

All cash Flows will be in USD.

Ignore inflation.

You are required to advise the management on the viability of the proposal by using Adjusted Net Present Value method.

Given

*PVIFA (12%, 10) = 5.650, PVIFA (12%, 20) = 7.469, PVIFA (8%, 15) = 8.559, PVIF (8%, 15) = 0.315. **(8 Marks)***

- (c) *Distinguish between Pass Through Certificates (PTC) and Pay Through Securities (PTS).*

OR

Differentiate between Economic Value Added (EVA) and Market Value Added (MVA)

(4 Marks)

Answer

(a) $D_1 = ₹ 4$

$D_2 = ₹ 4 (1.20) = ₹ 4.80$

$D_3 = ₹ 4 (1.20)^2 = ₹ 5.76$

$D_4 = ₹ 4 (1.20)^3 = ₹ 6.91$

$$D_5 = ₹ 6.91 (1.19) = ₹ 8.22$$

$$D_6 = ₹ 6.91 (1.19) (1.18) = ₹ 9.70$$

$$D_7 = ₹ 6.91 (1.19) (1.18) (1.17) = ₹ 11.35$$

$$D_8 = ₹ 6.91 (1.19) (1.18) (1.17) (1.16) = ₹ 13.17$$

$$P = \frac{D_1}{(1+k_e)} + \frac{D_2}{(1+k_e)^2} + \frac{D_3}{(1+k_e)^3} + \frac{D_4}{(1+k_e)^4} + \frac{D_5}{(1+k_e)^5} + \frac{D_6}{(1+k_e)^6} + \frac{D_7}{(1+k_e)^7} + \frac{TV}{(1+k_e)^7}$$

$$TV = \frac{D_8}{k_e - g} = \frac{13.17}{0.20 - 0.16} = ₹ 329.25$$

$$P = \frac{4.00}{(1+0.20)} + \frac{4.80}{(1+0.20)^2} + \frac{5.76}{(1+0.20)^3} + \frac{6.91}{(1+0.20)^4} + \frac{8.22}{(1+0.20)^5} + \frac{9.70}{(1+0.20)^6} + \frac{11.35}{(1+0.20)^7} + \frac{329.25}{(1+0.20)^7}$$

$$= 4.00 \times 0.833 + 4.80 \times 0.694 + 5.76 \times 0.579 + 6.91 \times 0.482 + 8.22 \times 0.402 + 9.70 \times 0.335 + 11.35 \times 0.279 + 329.25 \times 0.279$$

(i) Intrinsic Value = ₹ 114.91

(ii) As Intrinsic Value of the share is higher than its selling price of ₹ 112, it is under-priced and can be acquired. However, other factors need to be taken into consideration since difference is only slightly higher.

(b) (i) Net Present Value (All Equity Financed) – Base NPV

Particulars	Period	USD Lakhs	PVF @ 12%	PV (USD Lakhs)
Initial Investment	0	(250.00)	1.000	(250.000)
EBIDTA	1 to 20	33.00	7.469	246.477
Tax	1 to 20	(9.90)	7.469	(73.943)
Depreciation	1 to 10	(25.00)		
Tax Saving on Dep	1 to 10	7.50	5.650	42.375
NPV				(35.091)

(ii) Present Value of Impact of Financing by Debt

Particulars	Period	USD Lakhs	PVF @ 8%	PV (USD Lakhs)
Loan	0	150.00	1.000	150.000
Interest	1 to 15	(9.00)	8.559	(77.031)
Tax Saving on Interest	1 to 15	2.70	8.559	23.109
Repayment of Principal	15	(150.00)	0.315	(47.250)
NPV				48.828

Adjusted Present Value of the Project
 = Base NPV + PV of Impact of Financing
 = - US\$ 35.091 + US \$ 48.828 lakh
 = US\$ 13.737 lakh

Advise: Since APV is positive, TL Ltd. should accept the project.

Alternatively, if instead of PV of overall impact of Financing the PV of impact of tax shield on Interest is considered then APV shall be computed as follows:

= Base NPV + PV of Tax Shield on Interest
 = - US\$ 35.091 + US \$ 23.109 lakh
 = - US\$ 11.982 lakh

Advise: Since APV is negative, TL Ltd. should not accept the project.

- (c) *Pass Through Certificates (PTC)* - In case of PTCs, the originator transfers the entire receipt of cash in the form of interest or principal repayment from the asset sold. Thus, PTC represent a direct claim of the investors on all assets securitized. Investors carry a proportional benefit. Skewness of cash flow occurs at an early stage in case of prepayment of principals.

Pay Through Securities (PTS) – In PTS, SPV debt securities are backed by the assets and hence it can restructure different tranches from varying maturities of receivables. PTS also permits the SPV to reinvest surplus funds for short term as per there requirement.

OR

Economic Value Added (EVA) – EVA is a holistic method of evaluating a company's financial performance in terms of its contribution to the society at large. The core concept behind EVA is that a company generates 'value' only if there is a creation of wealth in terms of returns in excess of its cost of capital. The formula is as below-

$EVA = NOPAT - (Invested\ Capital * WACC)$

Or

$NOPAT - Capital\ Charge$

Market Value Added (MVA) – MVA means Current Market Value of the firm minus Invested Capital. It is an alternative way to gauge performance efficiencies of an enterprise, albeit from a market capitalization point of view, the logic being that the market will discount the efforts taken by the management fairly. Hence, MVA is the true value added that is perceived by the market while EVA is a derived value added that is for the more discerning investor.