

## RTP MAY 2023 COVERAGE IN BOOK

<b>RTP QUESTION</b>	<b>CHAPTER</b>	<b>QUESTION NO IN OUR BOOK</b>	<b>PAGE NO. OF OUR BOOK</b>
<b>1</b>	<b>4</b>	<b>NEW QUESTION</b>	<b>NOT IN BOOK</b>
<b>2</b>	<b>4</b>	<b>Q - 51</b>	<b>4.122</b>
<b>3</b>	<b>5</b>	<b>Q - 13</b>	<b>5.41</b>
<b>4</b>	<b>5</b>	<b>Q - 2</b>	<b>5.15</b>
<b>5</b>	<b>7</b>	<b>Q - 18</b>	<b>7.48</b>
<b>6</b>	<b>8</b>	<b>Q - 9 Similar to Question - 29</b>	<b>8.95</b>
<b>7</b>	<b>8</b>	<b>Q - 2 Similar to Question - 10</b>	<b>8.81</b>
<b>8</b>	<b>9</b>	<b>Q - 26</b>	<b>9.64</b>
<b>9</b>	<b>9</b>	<b>Q - 50</b>	<b>9.115</b>
<b>10</b>	<b>10</b>	<b>Q - 5 Similar to Question - 3</b>	<b>10.68</b>
<b>11</b>	<b>11</b>	<b>Q - 7</b>	<b>11.24</b>
<b>12</b>	<b>12</b>	<b>Q - 7</b>	<b>12.37</b>
<b>13</b>	<b>13</b>	<b>Q - 17</b>	<b>13.65</b>
<b>14</b>	<b>14</b>	<b>Q - 7</b>	<b>14.17</b>
<b>15</b>	<b>6</b>	<b>Q - 2</b>	<b>6.3</b>

**RTP MAY 2023**

<b>Security Valuation.</b>
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**Question 1: From the following information, compute the effective rate of interest per annum as well as the total cost of funds to Nirmal Ltd., which is planning a Commercial Paper (CP) issue:**

<b>Issue Price of CP</b>	<b>₹ 4,87,750</b>
<b>Face Value</b>	<b>₹ 5,00,000</b>
<b>Maturity Period</b>	<b>3 Months</b>
<b>Issue Expenses:</b>	
<b>Brokerage 0.15% for</b>	<b>3 months</b>
<b>Rating Charges</b>	<b>0.55% p.a.</b>
<b>Stamp Duty</b>	<b>0.20% for 3 months</b>

**Answer:**

$$\text{Nominal Interest or Bond Equivalent Yield} = \left[ \frac{F - P}{P} \right] \times \frac{12}{M} \times 100$$

Where

F= Face Value

P= Issue Price

$$\begin{aligned} &= \frac{5,00,000 - 4,87,750}{4,87,750} \times \frac{12}{3} \times 100 \\ &= 0.025115 \times 4 \times 100 \\ &= 10.046 \\ &= 10.05\% \text{ p.a.} \end{aligned}$$

$$\text{Effective interest rate} = \left[ 1 + \frac{0.1005}{4} \right]^4 - 1 = 10.435\% \text{ p.a.}$$

Cost of Funds to the Company

Effective Interest	10.435%
Brokerage (0.150 × 4)	0.60%
Rating Charge	0.55%
Stamp duty (0.20 × 4)	0.80%
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	12.385%



**Answer:**

**(i) Current Market Price of Bond**

$$\begin{aligned}
 &= ₹ 850 (\text{PVIAF } 10\%, 5) + ₹ 10,000 (\text{PVIF } 10\%, 5) \\
 &= ₹ 850 (3.79) + ₹ 10,000 (0.621) = ₹ 3,221.50 + ₹ 6,210 \\
 &= ₹ 9,431.5
 \end{aligned}$$

**(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**

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

$$C^* = \frac{v_+ + v_- - 2v_0}{2v_0(\Delta Y)^2}$$

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

**Portfolio Management.****Risk & Return of investment**

**Question 3: Ramesh has identified stocks of two companies A and B having good investment potential:**

**Following data is available for these stocks:**

<b>Year</b>	<b>A (Market Price per Share in ₹)</b>	<b>B (Market Price per Share in ₹)</b>
<b>2013</b>	<b>19.60</b>	<b>8.70</b>
<b>2014</b>	<b>18.75</b>	<b>12.80</b>
<b>2015</b>	<b>33.42</b>	<b>16.20</b>
<b>2016</b>	<b>42.64</b>	<b>18.25</b>
<b>2017</b>	<b>43.25</b>	<b>15.60</b>
<b>2018</b>	<b>44.60</b>	<b>13.25</b>
<b>2019</b>	<b>34.75</b>	<b>18.60</b>

**You are required to calculate:**

- (i) The Risk and Return by investing in Stock A and B**
- (ii) The Risk and Return by investing in a portfolio of these Stocks if he invests in Stock A and B in proportion of 6:4.**
- (iii) The better opportunity for investment**

**Answer:**

	<b>A</b>			
<b>Year</b>	<b>Market Price Per Share in ₹</b>	<b>Return (%)</b>	<b>Return - <math>\bar{A}</math></b>	<b>Squared</b>
2013	19.60			
2014	18.75	-4.34	-18.33	335.9889
2015	33.42	78.24	64.25	4128.0625
2016	42.64	27.59	13.60	184.9600
2017	43.25	1.43	-12.56	157.7536
2018	44.60	3.12	-10.87	118.1569
2019	34.75	-22.09	-36.08	1301.7664
Mean ( $\bar{A}$ )		83.95		6226.6883
		13.99	Variance	1037.7814

	<b>B</b>				
<b>Year</b>	<b>Market Price Per Share in ₹</b>	<b>Return (%)</b>	<b>Return - <math>\bar{B}</math></b>	<b>Squared</b>	<b>(Return - <math>\bar{A}</math>) × (Return - <math>\bar{B}</math>)</b>
2013	8.70				
2014	12.80	47.13	30.94	957.2836	-567.1302
2015	16.20	26.56	10.37	107.5369	666.2725
2016	18.25	12.65	-3.54	12.5316	-48.1440
2017	15.60	-14.52	-30.71	943.1041	385.7176
2018	13.25	-15.06	-31.25	976.5625	339.6875
2019	18.60	40.38	24.19	585.1561	-872.7752
Mean ( $\bar{B}$ )		97.14		3582.1748	-96.3718
		16.19	Variance	597.0291	Cov = -16.0620

(i) Return A = 13.99% and Risk (SD) =  $\sqrt{1037.7814} = 32.2146$  and  
Return B = 16.19% and Risk (SD) =  $\sqrt{597.0291} = 24.4342$

(ii) Return of Portfolio

$$\begin{aligned} &= 0.60 \times 13.99\% + 0.40 \times 16.19\% \\ &= 14.87\% \end{aligned}$$

Risk (Standard Deviation) of Portfolio

$$= [0.60^2 \times 1037.7814 + 0.40^2 \times 597.0291 + 2 \times 0.60 \times 0.40 \times (-16.0620)]^{1/2}$$

$$\begin{aligned} &= [373.6013 + 95.5247 - 7.7098]^{1/2} \\ &= 21.4806 \end{aligned}$$

(iii) On the basis of Return 'B' is preferable and on the basis of Risk 'Portfolio Investment' is preferable over the individual stocks.

**Expected Return & Variability (Standard deviation) for Buyback**

**Question 4: Following information is available in respect of expected dividend, market price and market condition after one year.**

<b>Market condition</b>	<b>Probability</b>	<b>Market Price</b>	<b>Dividend per share</b>
		<b>₹</b>	<b>₹</b>
<b>Good</b>	<b>0.25</b>	<b>115</b>	<b>9</b>
<b>Normal</b>	<b>0.50</b>	<b>107</b>	<b>5</b>
<b>Bad</b>	<b>0.25</b>	<b>97</b>	<b>3</b>

**The existing market price of an equity share is ₹ 106 (F.V. ₹ 1), which is cum 10% bonus debenture of ₹ 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 if buyback offer is accepted by the investor.**

**And also advise-Whether to accept buyback offer?**

**Answer:**

**The Expected Return of the equity share may be found as follows:**

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

$$\begin{aligned}
 \text{Expected Return} &= (24 \times 0.25) + (12 \times 0.50) + (0 \times 0.25) \\
 &= 12 \\
 &= \left( \frac{12}{100} \right) \times 100 = 12\%
 \end{aligned}$$

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

**VARIANCE OF SD**

$$\begin{aligned}
 &= 0.25 (24 - 12)^2 + 0.50 (12 - 12)^2 + 0.25 (0 - 12)^2 \\
 &= 0.25 (12)^2 + 0.50 (0)^2 + 0.25 (-12)^2 \\
 &= 36 + 0 + 36
 \end{aligned}$$

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

$$\text{SD} = 8.485 \text{ or say } 8.49$$

(\*) The present market price of the share is ₹ 106 cum bonus 10% debenture of ₹ 6 each; hence the net cost is ₹ 100.

M/s X Finance company has offered the buyback 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.

*CA Hema Chaudhary*

<b>Mutual Funds.</b>
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<b>Issue price for Dividend &amp; Bonus plan</b>
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**Question 5: 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**

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

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

*CA Hema Chaudhary*

**Answer:**

**(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 / Units purchased = ₹ 920000/20000 = ₹ 46

\* Let the units issued be X

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

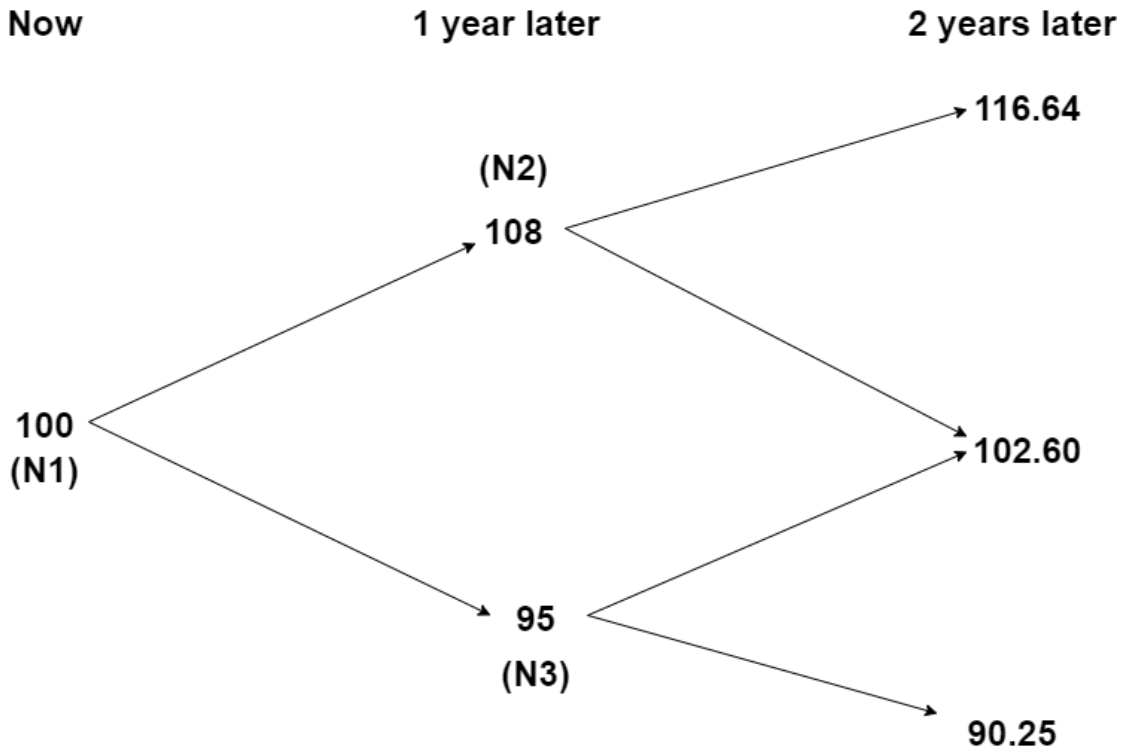
**(ii) Bonus Plan**

(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

## Derivatives Analysis & Valuation

### Probability of price up & down using Binomial Option model

**Question 6:** 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).

**Answer:**

- (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

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

**Profit/Loss on hedging through futures****Question 7:**

**Shyam buys 10,000 shares of X Ltd., @ ₹ 25 per share and obtains a complete hedge of shorting 400 Nifty at ₹ 1,100 each. He closes out his position at the closing price of the next day when the share of X Ltd., has fallen by 4% and Nifty Future has dropped by 2.5%. What is the overall profit or loss from this set of transaction?**

**Answer:**

Cash Outlay

$$\begin{aligned} &= 10000 \times ₹ 25 - 400 \times ₹ 1,100 \\ &= ₹ 2,50,000 - ₹ 4,40,000 = - ₹ 1,90,000 \end{aligned}$$

Cash Inflow at Close Out

$$\begin{aligned} &= 10000 \times ₹ 25 \times 0.96 - 400 \times ₹ 1,100 \times 0.975 \\ &= ₹ 2,40,000 - ₹ 4,29,000 = - ₹ 1,89,000 \end{aligned}$$

Gain/ Loss

$$= ₹ 1,90,000 - ₹ 1,89,000 = ₹ 1,000 \text{ (Gain)}$$

**Foreign Exchange Exposure & Risk Management.****Rupee requirement in forward, Advise on forward cover****Question 8:**

**XYZ has taken a six-month loan from its foreign collaborator for USD 2 millions. Interest is payable on maturity @ LIBOR plus 1%. The following information is available:**

<b>Spot Rate</b>	<b>INR/USD</b>	<b>68.5275</b>
<b>6 months Forward rate</b>	<b>INR/USD</b>	<b>68.4575</b>
<b>6 months LIBOR for USD</b>	<b>2%</b>	
<b>6 months LIBOR for INR</b>	<b>6%</b>	

**You are required to:**

- (i) Calculate Rupee requirements if forward cover is taken.**
- (ii) Advise the company on the forward cover.**

**What will be your opinion if spot rate of INR/USD is 68.4275 ?**

**Answer:**

(i)	Rupee requirement if forward cover is taken:	
	6 Month Forward rate	68.4575
	Interest amount $\left(20,00,000 \times 3\%^{*} \times \frac{6}{12}\right)$	US\$ 30,000
	Principal amount	US\$ 20,00,000
		<hr/>
		US\$ 20,30,000
		<hr/>

$$\begin{aligned}\text{Rupee Requirement} &= \text{INR } 68.4575 \times \text{US\$ } 20,30,000 \\ &= \text{INR } 13,89,68,725\end{aligned}$$

\* LIBOR + 1%

(ii) Forward Rate as per Interest Rate Parity after 6 months is expected to be:

$$= 68.5275 \times \frac{(1.03)}{(1.01)} = 69.8845/\text{US\$}$$

The company should take forward cover because as per Interest Rate Parity, the rate after 6 months is expected to be higher than forward rate.

However, if spot rate is 68.4275, the expected rate as per Interest Rate Parity shall be:

$$= 68.4275 \times \frac{(1.03)}{(1.01)} = 69.7825/\text{US}$$

Thus, still the company should take forward cover.

*CA Hema Chaudhary*

**Finance through Local Loan or Foreign currency Credit**

**Question 9: M/s. A Ltd. is planning to import an equipment from Japan at a cost of 3,400 lakh yens. The company may avail loans at 18% p.a. interest with quarterly rests with which it can import the said equipment. The company has also an offer from Osaka branch of an Indian bank extending credit of 180 days at 2% p.a. against opening of an irrevocable letter of credit (L/C).**

**Additional information:**

<b>Present exchange rate</b>	<b>₹ 100 = 340 yen</b>
<b>180 day's forward rate</b>	<b>₹ 100 = 345 yen</b>

**Commission charges for L/C at 2% per 12 months.**

**Advice whether the company should accept the offer.**

**Answer:**

**Option I (To finance the purchases by availing loan at 18% per annum):**

<b>Cost of equipment</b>	<b>₹ in lakhs</b>
3400 lakh yen at ₹100 = 340 yen	1,000.00
Add: Interest at 4.5% I Quarter	45.00
Add: Interest at 4.5% II Quarter (on ₹1045 lakhs)	<u>47.03</u>
Total outflow in Rupees	<u>1,092.03</u>
Alternatively, interest may also be calculated on compounded basis, i.e., $₹ 1000 \times [1.045]^2$	₹1092.03

**Option II (To accept the offer from foreign branch):**

<b>Cost of letter of credit</b>	
At 1 % on 3400 lakhs yen at ₹100 = 340 yen	₹ 10.00 lakhs
Add: Interest for 2 Quarters	₹ 0.90 lakhs
(A)	₹ 10.90 lakhs
Payment at the end of 180 days:	
Cost	3400.00 lakhs yen
Interest at 2% p.a. [ $3400 \times 2/100 \times 180/365$ ]	33.53 lakhs yen
	3433.53 lakhs yen
Conversion at ₹100 = 345 yen [ $3433.53 / 345 \times 100$ ] (B)	₹ 995.23 lakhs
Total Cost: (A) + (B)	₹ 1006.13 lakhs

**Advise:** Option 2 is cheaper by (1092.03 – 1006.13) lakh or ₹ 85.90 lakh. Hence, the offer may be accepted.

**International Financial Management.****NPV considering Opportunity Cost**

**Question 10: A US based company is planning to set up a subsidiary company in India (where so far it was exporting) in view of growing demand for its product and competition from other US based companies. The initial project cost consisting of plant and machinery including installation is estimated to be US\$ 490 million. The net working capital requirements are estimated at US\$ 60 million. The company follows straight line method of depreciation. Currently, the company is exporting two million units every year at a unit price of US\$ 90, its variable cost per unit being US\$ 50.**

**The CFO of the Company has estimated the following operating cost and other data in respect of proposed project:**

- (i) Variable operating cost will be US \$ 30 per unit of production;**
- (ii) Additional cash fixed cost will be US \$ 30 million p.a. and project's share of allocated fixed cost will be US \$ 3 million p.a. based on principle of ability to share;**
- (iii) Expected useful life of the proposed plant is five years with no salvage value;**
- (iv) Production capacity of the proposed project in India will be 5 million units;**
- (v) Existing working capital investment for production and sale of two million units through exports was US \$ 25 million;**

**(vi) Export of the product in the coming year will decrease to 1.5 million units, provided the company does not set up subsidiary company in India, in view of the presence of competing other US based companies that are in the process of setting up their subsidiaries in India;**

**(vii) Applicable Corporate Income Tax rate is 35%, and**

**(viii) Required rate of return for such project is 12%.**

**Assuming that there will be no variation in the exchange rate of two currencies and all profits will be repatriated as there will be no withholding tax, Estimate Net Present Value of the proposed project in India and give your advice. Present Value Interest Factors (PVIF) @ 12% for five years is as below:**

<b>Year</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>PVIF</b>	<b>0.8929</b>	<b>0.7972</b>	<b>0.7118</b>	<b>0.6355</b>	<b>0.5674</b>

**Answer:**

Financial Analysis whether to set up the manufacturing units in India or not may be carried using NPV technique as follows:

**I. Incremental Cash Outflows**

	<b>\$ Million</b>
Cost of Plant and Machinery	490.00
Working Capital	60.00
Saving of existing Working Capital employed in Export Business	(25.00)
	525.00

**II. Incremental Cash Inflow after Tax (CFAT)**

(1) Generated by investment in India for 5 years

	<b>\$ Million</b>
Sales Revenue (5 Million × \$ 90)	450.00
Less: Costs	
Variable Cost (5 Million × \$ 30)	150.00
Fixed Cost	30.00
Depreciation (\$ 490Million / 5)	98.00
EBIT	172.00
Taxes@35%	60.20
EAT	111.80
Add: Depreciation	98.00
CFAT (1-5 years)	209.80

(2) Cash flow at the end of the 5 years (Release of Working Capital)  
\$35.00 Million

### (3) Cash generation by exports

	<b>\$ Million</b>
Sales Revenue (1.5 Million × \$90)	135.00
Less: Variable Cost (1.5 Million × \$50)	75.00
Contribution before tax	60.00
Tax @ 35%	21.00
CFAT (1-5 years)	39.00

### (c) Additional CFAT attributable to Foreign Investment

	<b>\$ Million</b>
Through setting up subsidiary in India	209.80
Through Exports in India	39.00
CFAT (1-5 years)	170.80

### III. Determination of NPV

Year	CFAT (\$ Million)	PVF@12%	PV (\$ Million)
1-5	170.80	3.6048	615.6998
5	35	0.5674	19.8590
			635.5588
Less: Initial Outflow			525.0000
			110.5588

**Decision:** Since NPV is positive the proposal should be accepted

**Interest Rate Risk Management.**

**Semi Annual Fixed payment & Floating Rate Payment**

**Question 7: P Ltd., a dealer quotes 'All-in-cost' for a generic swap at 6% against six months LIBOR flat. If the Notional principal amount of swap is ₹ 8,00,000:**

- (i) Calculate semi-annual fixed payment.**
  
- (ii) Find the first floating rate payment for (i) above if the six month period from the effective date of swap to the settlement date comprises 181 days and that the corresponding LIBOR was 5% on the effective date of swap. (Consider up to three decimal places).**
  
- (iii) In question number (ii) above, if the settlement is on 'Net' basis, how much the fixed rate payer would pay to the floating rate payer?**

**Note: Generic swap is based on 30/360 days basis.**

**Answer:**

**(i) Semi-annual fixed payment**

$$= (N) (AIC) (\text{Period})$$

Where N = Notional Principal amount = ₹ 8,00,000

$$AIC = \text{All-in-cost} = 6\% = 0.06$$

$$= 8,00,000 \times 0.06 \left( \frac{180}{360} \right)$$

$$= 8,00,000 \times 0.06 (0.5)$$

$$= 8,00,000 \times 0.03$$

$$= ₹ 24,000$$

**(ii) Floating Rate Payment**

$$= N (\text{LIBOR}) \left( \frac{d_t}{360} \right)$$

$$= 8,00,000 \times 0.05 \times \left( \frac{181}{360} \right)$$

$$= 8,00,000 \times 0.05 (0.503) \text{ or } 8,00,000 \times 0.05 (0.503)$$

$$= 8,00,000 \times 0.02515$$

$$= ₹ 20,120$$

**(iii) Net Amount**

$$= (i) - (ii)$$

$$= ₹ 24,000 - ₹ 20,120 = ₹ 3,880$$

**Business value & Market price based on Future maintainable profits**

**Question 12:** Excellent Ltd., reported a profit of ₹154 lakhs after 30% tax for the financial year 2019-20. An analysis of the accounts revealed that there is an extraordinary loss of ₹ 20 lakhs and the income included extraordinary items of ₹ 16 lakhs. The existing operations, except for the extraordinary items, are expected to continue in the future. In addition, the results of the launch of a new product are expected to be as follows:

	₹ In lakhs
<b>Sales</b>	<b>140</b>
<b>Material costs</b>	<b>20</b>
<b>Labour costs</b>	<b>24</b>
<b>Fixed costs</b>	<b>20</b>

**You are required to:**

**(i) Calculate the value of the business, given that the capitalization rate is 14%.**

**(ii) Determine the market price per equity share, with Excellent Ltd.'s share capital being comprised of 2,00,000 at 13% preference shares of ₹ 100 each and 10,00,000 equity shares of ₹ 10 each and the P/E ratio being 12 times. (Ignoring Corporate Dividend Tax).**

**Answer:**

**(i) Computation of Business Value**

			(₹ Lakhs)
<b>Profit before tax</b>	$\frac{154}{1 - 0.30}$		<b>220</b>
Less: Extraordinary income			(16)
Add: Extraordinary losses			20
			<b>224</b>
<b>Profit from New Product</b>		<b>(₹ Lakhs)</b>	
Sales		140	
Less: Material costs	40		
Labour costs	24		
Fixed costs	<u>20</u>	<u>(84)</u>	<u>56</u>
			280.00
Less: Taxes @ 30%			84.00
Future Maintainable Profit after taxes			196.00
Relevant Capitalisation Factor			0.14
Value of Business (₹196/0.14)			1400

**(ii) Determination of Market Price of Equity Share**

Future maintainable profits (After Tax)	₹ 1,96,00,000
Less: Preference share dividends 2,00,000 shares of ₹ 100 @ 13%	<u>₹ 26,00,000</u>
Earnings available for Equity Shareholders	<u>₹ 1,70,00,000</u>
No. of Equity Shares	1,00,00,000
Earning Per Share = $\frac{₹ 1,70,00,000}{₹ 1,00,00,000} =$	₹ 1.70
PE ratio	12
Market price per share	₹ 20.40

*CA Hema Chaudhary*

**Mergers, Acquisitions & Corporate Restructuring.**

**Swap ratio, EPS, Market price per share, Market Capitalization, Promoters holding percentage, Free float market capitalization after acquisition**

**Question 13: The following information is provided relating to the acquiring company Efficient Ltd. and the target company Healthy Ltd.:**

<b>Particulars</b>	<b>Efficient Ltd.</b>	<b>Healthy Ltd.</b>
<b>No. of shares (F.V. ₹ 10 each)</b>	<b>20 lakhs</b>	<b>15 lakhs</b>
<b>Market capitalization</b>	<b>₹800 Lakhs</b>	<b>₹1,200 Lakhs</b>
<b>P/E ratio (times)</b>	<b>10</b>	<b>5</b>
<b>Reserves and Surplus</b>	<b>₹400 Lakhs</b>	<b>₹ 273 Lakhs</b>
<b>Promoter's Holding (No. of shares)</b>	<b>8.65 Lakhs</b>	<b>9 lakhs</b>

**Board of Directors of both the companies have decided to give a fair deal to the shareholders and accordingly for swap ratio the weights are decided as 45%, 20% and 35% respectively for Earning, Book Value and Market Price of share of each company.**

**Required:**

- (i) Calculate the swap ratio and also calculate Promoter's holding % after acquisition.**
- (ii) What is the EPS of Efficient Ltd. after acquisition of Healthy Ltd.?**

- (iii) What is the expected market price per share and market capitalization of Efficient Ltd. after acquisition, assuming P/E ratio of Efficient Ltd. remains unchanged?**
- (iv) Calculate free float market capitalization of the merged firm.**

**Answer:**

**Swap Ratio**

	<b>Efficient Ltd.</b>	<b>Healthy Ltd.</b>
Market capitalization	800 lakhs	1200 lakhs
No. of shares	20 lakhs	15 lakhs
Market Price per share	₹ 40	₹ 80
P/E ratio	10	5
EPS (MP/PE Ratio)	₹ 4	₹ 16
Profit (EPS × No. of Shares)	₹ 80 lakh	₹ 240 lakh
Share capital	₹ 200 lakh	₹ 150 lakh
Reserves and surplus	<u>₹ 400 lakh</u>	<u>₹ 273 lakh</u>
Total	<u>₹ 600 lakh</u>	<u>₹ 423 lakh</u>
Book Value per share (Total Capital/ No. of Shares)	₹ 30	₹ 28.20

**(i) Calculation of Swap Ratio**

EPS	$= \frac{16}{4}$	1: 4 i.e.	$4.0 \times 45\%$	1.80
Book value	$= \frac{28.2}{30}$	1: 0.94 i.e.	$0.94 \times 20\%$	0.188
Market price	$= \frac{80}{40}$	1: 2 i.e.	$2.0 \times 35\%$	<u>0.70</u>
			Total	<u>2.688</u>

Swap ratio is for every one share of Healthy Ltd., to issue 2.688 shares of Efficient Ltd.

Hence, total no. of shares to be issued  $15 \text{ lakh} \times 2.688 = 40.32 \text{ lakh}$  shares

Total no. of shares after merger =  $20 \text{ lakh} + 40.32$   
=  $60.32 \text{ lakh shares}$ .

Promoter's holding =  $8.65 \text{ lakh shares} + (9 \times 2.688 = 24.192 \text{ lakh shares}) = 32.842 \text{ lakh}$

i.e. Promoter's holding % is  $(32.842 \text{ lakh}/60.32 \text{ lakh}) \times 100 = 54.45\%$ .

Calculation of EPS, Market price, Market capitalization and free float market capitalization.

(ii) Total No. of shares  $20 \text{ lakh} + 40.32 \text{ lakh} = 60.32 \text{ lakh}$

$$\begin{aligned} \text{EPS} &= \frac{\text{Total Profit}}{\text{No. of Shares}} = \frac{80 \text{ Lakh} + 240 \text{ Lakh}}{60.32} \\ &= \frac{320}{60.32} \\ &= ₹ 5.305 \end{aligned}$$

(iii) Expected market price =  $\text{EPS} \times \text{P/E} = ₹ 5.305 \times ₹ 10 = ₹ 53.05$

Market capitalization =  $53.05 \text{ per share} \times 60.32 \text{ lakh shares}$   
=  $₹ 3,199.98 \text{ lakh}$

(iv) Free float of market capitalization  
=  $₹ 53.05 \text{ per share} \times (60.32 \text{ lakh} \times 45.55\%)$   
=  $₹ 1457.59 \text{ lakh}$

<b>Startup Finance</b>
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**14. Explain Indicative Risk Matrix of each stage of funding for Venture Capital Financing.**

**Answer: Risk in each stage is different. An indicative Risk matrix is given below:**

<b>Financial Stage</b>	<b>Period (Funds locked in years)</b>	<b>Risk Perception</b>	<b>Activity to be financed</b>
Seed Money	7-10	Extreme	For supporting a concept or idea or R&D for product development and involves low level of financing.
Start Up	5-9	Very High	Initializing prototypes operations or developing products and its marketing.
First Stage	3-7	High	Started commercials production and marketing.
Second Stage	3-5	Sufficiently high	Expanding market and growing working capital need though not earning profit.
Third Stage	1-3	Medium	Market expansion, acquisition & product development for profit making company. Also called Mezzanine Financing.
Fourth Stage	1-3	Low	Facilitating public issue i.e. going public. Also called Bridge Financing.

## Securitization

**Question 15: "The process of securitization can be viewed as process of creation of additional financial product of securities in the market backed by collaterals." What are the other features? Describe.**

**Answer:**

(i) Bundling and Unbundling – When all the assets are combined in one pool it is bundling and when these are broken into instruments of fixed denomination it is unbundling.

(ii) Tool of Risk Management – In case of assets are securitized on non-recourse basis, then securitization process acts as risk management as the risk of default is shifted.

(iii) Structured Finance – In the process of securitization, financial instruments are tailor structured to meet the risk return trade off profile of investor, and hence, these securitized instruments are considered as best examples of structured finance.

(iv) Trenching – Portfolio of different receivable or loan or asset are split into several parts based on risk and return they carry called ‘Trenche’. Each Trench carries a different level of risk and return.

(v) Homogeneity – Under each tranche the securities issued are of homogenous nature and even meant for small investors who can afford to invest in small amounts.