# RTP Discussion - CA Final SFM [Old Course]

Q1

## # Determination of Annual Cash Inflow from the existing asset

| Particulars | ₹ |
|---|---|
| Annual Revenue | 25,00,000 |
| (-) Annual Cash Outflow | (18,00,000) |
| **Gross Revenue** | 7,00,000 |
| (-) Depreciation per annum | (1,50,000) |
| ∴ Profit before tax | 5,50,000 |
| (-) Tax Expense @ 34% | (1,87,000) |
| ∴ Profit after tax [PAT] | 3,63,000 |
| (+) Depreciation | 1,50,000 |
| ∴ Cash flows after tax | 5,13,000 |

## # Determination of the Annual Incremental Cash Inflows [New Asset]

| Particulars | Year 1 | Year 2 | Year 3 | Year 4 |
|---|---|---|---|---|
| Annual Revenue | 30,00,000 | 30,00,000 | 30,00,000 | 30,00,000 |
| (-) Annual Cash Outflow | (28,00,000) | (28,00,000) | (28,00,000) | (28,00,000) |
| ∴ EBIDAT | 42,00,000 | 42,00,000 | 42,00,000 | 42,00,000 |
| (-) Depreciation Expenditure | (8,00,000) | (7,00,000) | (6,00,000) | (6,00,000) |
| ∴ EBIT/EBT | 34,00,000 | 35,00,000 | 36,00,000 | 36,00,000 |
| (-) Tax Expense @ 34% | (11,56,000) | (11,90,000) | (12,24,000) | (12,24,000) |
| ∴ Profit after tax [PAT] | 22,44,000 | 23,10,000 | 23,76,000 | 23,76,000 |
| (-) Depreciation Expenditure | 8,00,000 | 7,00,000 | 6,00,000 | 6,00,000 |
| ∴ Cash flows after tax | 30,44,000 | 30,10,000 | 29,76,000 | 29,76,000 |
| (-) Inflows from the existing asset | (5,13,000) | (5,13,000) | (5,13,000) | (5,13,000) |
| ∴ Annual Net Incremental Cash flows | 25,31,000 | 24,97,000 | 24,63,000 | 24,63,000 |

## * Determination of Terminal Cash Inflows

Cash flows of the Terminal (ie. last year) [Total]

Cash flows on the Termination of the Asset / Project at the end of the project.

| Particulars | | ₹ |
|---|---|---|
| Salvage Value of the Asset | [A] | 8,00,000 |
| (-) Book Value of Asset [27L + 3L - 8L - 7L - 6L - 6L] | | (3,00,000) |
| Gain on Sale | | 5,00,000 |
| (-) Tax on Capital Gains @ 34% | [B] | (1,70,000) |
| ∴ Net Cash Inflow [8,00,000 (-) 1,70,000] | [A - B] | 6,30,000 |
| (+) Working Capital Released | | 5,00,000 |
| → Terminal Cash Inflows (from Asset & WC) | | 11,30,000 |
| (+) Cash flow of the last year (Year 4) | | 24,63,000 |
| → Terminal Cash Inflow. | | 35,93,000 |

Q2

Investment Opportunity = ₹1,00,000

Available Alternatives
- Alternative 1: Start TODAY
- Alternative 2: Start AFTER one year
- Alternative 3: Start after Two years.

Required Rate of Return = Cost of Capital = 10%

# Determination of NPV for each of the above alternatives.


| Particulars | When to start | | |
|---|---|---|---|
| | Today | After 1 year | After 2 years |
| Demand [units] | 6000 | 8000 | 5000 |
| Sales @ ₹10, ₹11 and ₹9/unit | 60,000 | 88,000 | 45000 |
| (-) VC @ ₹6, 5 and ₹7.50/unit | (36,000) | (40,000) | (37,500) |
| ∴ Contribution | 24,000 | 48,000 | 7,500 |
| (-) Fixed Cost | (-) | (-) | (-) |
| ∴ Profit | 24,000 | 48,000 | 7,500 |
| (-) Req$^{d}$ Cost of Capital ($k_e$) | 10% | 10% | 10% |
| Inflows (Perpetual) | 2,40,000 | 4,80,000 | 75,000 |
| (-) Investment Required | (1,00,000) | (1,00,000) | (1,00,000) |
| ∴ Net Inflow/(Outflow) | 1,40,000 | 3,80,000 | (25,000) |
| (x) PVIF (10%, Today, 1$^{st}$ Yr, 2$^{nd}$ Yr) | 1.000 | 0.909 | 0.826 |
| ∴ Net Present Value | 1,40,000 | 3,45,455 | (18,783) |

Conclusion: Start the project after one year, and do not defer it to 2 years.

Q3

# Lease Evaluation from the Lessee's point of view.

Leasing Alternative | Borrow and Buy Alternative

⇒ Discounting Rate for the lessee → Always $k_d$ = $i(1-t)$ = $0.20(1-0.35)$

= 13%

## Alternative I : Leasing Alternative

↳ Lease Rentals = ₹ 12,00,000 p.a.

↳ Payable at → Year End.


- Lease Rentals ✓
- Tax shield on LR. ✓

∴ Directly calculate the Post Tax Lease Rentals ✓

∴ Post Tax Lease Rentals = ₹ 12,00,000 p.a. × $(1-t)$ = 12,00,000 × $(1-0.35)$

= ₹ 7,80,000 p.a.

∴ Total Cost of leasing = Post Tax Lease Rentals (×) PVIFA (13%, 5 yrs)

= ₹ 7,80,000 × 3.5172

= ₹ 27,43,440

## Alternative 2 : Borrow and Buy Option

↳ Amount of Loan = Asset Cost = ₹ 40,00,000

↳ Nature of Loan = Repayment in Equal Annual Instalments.

↳ Interest Rate = 20%.

$$\therefore \text{Annual Instalment} = \frac{\text{Amount of Loan}}{\text{PVIFA}(i, 5\text{years})} = \frac{₹40,00,000}{\text{PVIFA}(20\%, 5)} = \frac{₹40,00,000}{2.990612}$$

$$= ₹13,37,519$$

### i) Determination of Interest Tax Shield [ITS]

| Year | Op o/s Principal | Interest (20%) | Princ. Repayt | Total Instalment | Cl. o/s Principal | ITS @ 35% |
|---|---|---|---|---|---|---|
| 1 | 40,00,000 | 8,00,000 | 5,37,519 | 13,37,519 | 34,62,481 | 2,80,000 |
| 2 | 34,62,481 | 6,92,496 | 6,45,023 | 13,37,519 | 28,17,458 | 2,42,374 |
| 3 | 28,17,458 | 5,63,492 | 7,74,027 | 13,37,519 | 20,43,431 | 1,97,222 |
| 4 | 20,43,431 | 4,08,686 | 9,28,833 | 13,37,519 | 11,14,598 | 1,43,040 |
| 5 | 11,14,598 | 2,22,919 | 11,14,598 | 13,37,519 | - | 78,022 |

### ii) Determination of Depreciation Tax Shield (DTS)

↳ Method of Depreciation → WDV

↳ Rate of Depreciation → 25%.

| Year | Opening WDV | Depreciation at 25% | Closing WDV | DTS @ 35% |
|---|---|---|---|---|
| 1 | 40,00,000 | 10,00,000 | 30,00,000 | 3,50,000 |
| 2 | 30,00,000 | 7,50,000 | 22,50,000 | 2,62,500 |
| 3 | 22,50,000 | 5,62,500 | 16,87,500 | 1,96,875 |
| 4 | 16,87,500 | 4,21,875 | 12,65,625 | 1,47,656 |
| 5 | 12,65,625 | 3,16,406 | 9,49,219 | 1,10,742 |

iii) Determination of the PV of Post Tax Salvage Value

Post Tax Salvage Value = Salvage Value (-) Tax on Profit (+) Tax on loss

= 8,00,000 (-) NIL (+) 52,227

= ₹ 8,52,227

∴ PV of Post Tax Salvage Value = 8,52,227 × PVIF (13%, 5th Year)

= ₹ 4,62,555

* Gain / loss on sale of the asset

| | |
|---|---|
| Salvage Value | 8,00,000 |
| (-) Book Value at the end of Year 5 | (9,49,219) |
| ∴ Profit / (Loss) | (1,49,219) |
| (x) Applicable Tax Rate | 35% |
| ∴ Tax Saving on loss | 52,227 |

∴ Net Cost under the Borrow and Buy Option shall be :

| Year | Instalment (1) | NTS (2) | DTS (3) | Net Outflow (1-2-3) | PVF @ 13% | PV of CF |
|---|---|---|---|---|---|---|
| 1 | 12,37,519 | 2,80,000 | 3,50,000 | 7,07,519 | 0.8850 | 6,26,123 |
| 2 | 12,37,519 | 3,42,344 | 2,62,500 | 8,32,675 | 0.7831 | 6,52,083 |
| 3 | 12,37,519 | 1,97,221 | 1,96,875 | 9,43,422 | 0.6931 | 6,53,839 |
| 4 | 12,37,519 | 1,43,040 | 1,47,656 | 10,46,823 | 0.6133 | 6,42,036 |
| 5 | 12,37,519 | 78,032 | 1,10,742 | 11,48,755 | 0.5428 | 6,23,498 |
| | | | | | | 31,97,579 |
| (-) PV of Post Tax Salvage Value | | | | | | (4,62,555) |
| ∴ Net Cost of Borrowing. | | | | | | 27,35,024 |

Conclusion : Go ahead with the Borrow & Buy Alternative, as it results in a lower Net Cost, as compared to the leasing alternative

# Lease Evaluation from the Lessor point of view

NPV = (-) Equipment Cost + PV of LR (-) PV of Tax on LR + PV of DTS + PV of PT Salvage Value

↳ Equipment Cost = ₹ 40,00,000

↳ Lease Rentals = ₹ 12,00,000 [Year end]

(-) Tax on LR @ 35% = ₹ 4,20,000

∴ Post Tax LR. = ₹ 7,80,000

↳ Depreciation Tax shield → Same as Lessee

↳ Post Tax Salvage Value → Same as Lessee

## # Calculation of NPV

↳ For Lessor → discounting rate → always $k_c$ → (14%)

| Particulars | Year 0 | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| Equipment Cost | (40,00,000) | - | - | - | - | - |
| Post Tax lease Rentals | - | 7,80,000 | 7,80,000 | 7,80,000 | 7,80,000 | 7,80,000 |
| Depreciation Tax shield | - | 3,50,000 | 2,62,500 | 1,96,875 | 1,47,656 | 1,10,742 |
| Post Tax Salvage Value | - | - | - | - | - | 8,57,227 |
| Total | (40,00,000) | 11,30,000 | 10,42,500 | 9,76,875 | 9,27,656 | 17,47,969 |
| (x) PVF @ 14% | 1.00 | 0.8772 | 0.7695 | 0.6750 | 0.5921 | 0.5194 |
| ∴ Present Value | (40,00,000) | 9,91,228 | 8,02,170 | 6,59,313 | 5,49,247 | 9,08,248 |

∴ Net Present Value = (92,749)

Conclusion: The proposal is NOT financially viable for the lessor at 14% Cost of Capital.

Q4

# Calculation of the Expected Price per share

a) Stage 1 : Explicit Stage

↳ Earnings Growth → 25%

↳ Dividend Growth → 25%

| Year | EPS | | DPS | | PVF @ 15% | PV of DPS @ 15% |
|---|---|---|---|---|---|---|
| 2015 | 12.00 | [9.6×1.25] | 4.80 | [3.84×1.25] | 0.8696 | 4.1739 |
| 2016 | 15.00 | [12×1.25] | 6.00 | [4.80×1.25] | 0.7561 | 4.5369 |
| | | | | | | 8.7108 |

b) Stage 2 : Horizon Stage

↳ Earnings Growth = 10%.

$\therefore EPS_{2017} = EPS_{2016} \times (1+g) = 15.00 \times [1+0.10] = ₹16.50$

↳ $Dividend_{2017} = EPS_{2017} \times 50\% = ₹16.50 \times 50\%$

$= ₹8.25$

$\therefore P_{2016} = \frac{D_{2017}}{k_e - g} = \frac{8.25}{0.15 - 0.10} = ₹165 \text{ / share}$

$\therefore P_{2014} = \frac{P_{2016}}{(1+k_e)^2} = \frac{165/sh}{(1+0.15)^2} = ₹124.9637/sh$

$\therefore$ Price of the share = Stage 1 + Stage 2

$= ₹8.7108 + ₹124.9637/sh$

(Exp. Price of share) = ₹133.4745 / share → 2014

# Calculation of the PE Ratio

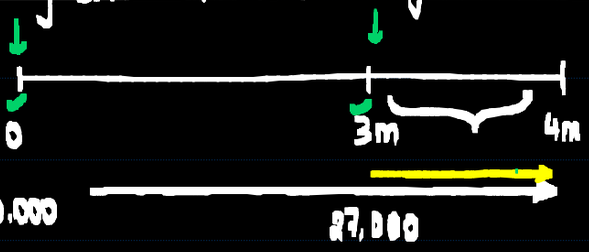
Price Earnings Ratio = $\frac{MPS}{EPS}$

$\therefore$ PE Ratio (2014) = $\frac{MPS\ (2014)}{EPS\ (2014)}$ = $\frac{133.4345}{9.60}$

= 13.9036 times

Q5

# Determination of Current Future Price of the Index




| | | |
|---|---|---|
| BSE | 30,000 | 27,000 |
| $R_f$ | 9% p.a. | |
| Div Yield | 6% p.a. | |

Maturity of the future contract = 4 months

$$\therefore \text{Price of Futures Index} = 30,000 + \left[30,000 \times (9\% - 6\%) \times \frac{4m}{12m}\right]$$

$$= \underline{30,300}$$

∴ Price of the futures contract = Price of the futures index (x) Multiplier.

= 30,300 x 50 times

= ₹15,15,000

# Determination of Gain on F: if after 3 months, futures index = 27,000

$$\text{No. of future Contracts Hedged} = \frac{\text{Value}_{\text{portfolio}}}{\text{Contract Size}} \times \beta$$

$$= \frac{₹60,60,000}{₹15,15,000/\text{cont}} \times 1.5 = \underline{6F}$$

Future Price after 3 months from today, if index turns out to be 27,000, shall be:

$$= 27000 + \left[27000 \times (9\% - 6\%) \times \frac{1m}{12m}\right] = \underline{27,067.50}$$

∴ Gain from shorting futures = Δ in Futures Price (x) Multiplier

= [30,300 - 27,069.50] (x) 50

= ₹1,61,625 / contract

∴ Total Gain = Gain per contract x No. of Contracts

= ₹1,61,625/cont x 6 contracts

= ₹ 9,69,750

Q6

* Determination of $FRA_{2\times3}$ Rate

$$FRA_{Rate} = \left[\frac{(\text{Rate for Higher Period})^{\text{High Period}}}{(\text{Rate for Lower Period})^{\text{Low Period}}}\right]^{\frac{1}{\text{diff in Period}}} \quad (-)\ 1$$

$$\therefore FRA_{2\times3}\ [XYZ\ Ltd] = \left[\frac{(1+0.0448)^3}{(1+0.0420)^2}\right]^{\frac{1}{3-2}} \quad (-)\ 1$$

$$= \underline{5.0423\%\ p.a.}$$

$$\therefore FRA_{2\times3}\ [ABC\ Ltd] = \left[\frac{(1+0.0578)^3}{(1+0.0548)^2}\right]^{\frac{1}{3-2}} \quad (-)\ 1$$

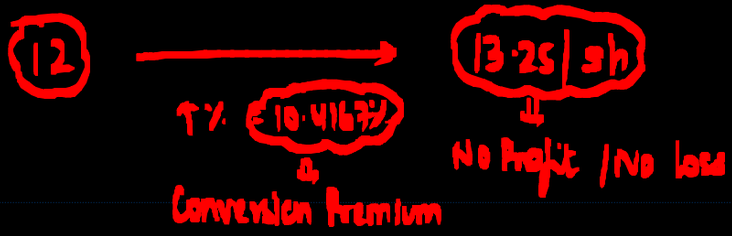
$$= \underline{6.3826\%\ p.a.}$$

* Option Analysis and Interest Payable [XYZ Ltd.]

↳ Option Premium = 0.1% of loan amt = 0.1% of ₹100 crores

= ₹10,00,000

| Particulars | Int Rate is 4.50% | Int Rate is 5.50% |
|---|---|---|
| Option Premium | 10,00,000 | 10,00,000 |
| Interest [₹100 Crs × 4.50%, 5.0423%] | 4,50,00,000 | 5,04,22,592 |
| **Total Interest Payable** | **4,60,00,000** | **5,14,22,592** |




**Q7**

1) Stock Value of the bond = Market Price per share × Conversion Ratio

= ₹12/share (×) 20 shares

= ₹240

2) % of Downside Risk = $\frac{\text{Market Price (bond)} - \text{Straight Value (bond)}}{\text{Straight Value (bond)}} \times 100$

= $\frac{₹265 \text{ (-) } ₹235}{₹235} \times 100$ = 12.7660%

OR →

$\frac{\text{Market Price bond)} - \text{Straight Value (bond)}}{\text{Market Price (bond)}} \times 100$

= $\frac{₹265 \text{ (-) } ₹235}{₹265} \times 100$ = 11·3208%

This indicates the % price decline experienced by the bond. if the stock becomes worthless.

3) Conversion Premium = $\frac{\text{Market Price of the Bond (-) Stock Value}}{\text{Stock Value}} \times 100$

= $\frac{₹265 \text{ (-) } ₹240}{₹240} \times 100$

= 10.4167%

4) Conversion Parity Price = $\frac{\text{Market Price of the Bond}}{\text{Conversion Ratio}}$

= $\frac{₹265/\text{bond}}{20 \text{ sh/bond}}$ = ₹13·25 per share

Q1

# Calculation of the IV and Duration of the Convertible Bond

↳ Face Value of the Bond = ₹100

↳ Coupon Rate = 14% p.a.

↳ Coupon Amount = ₹100 × 14% = ₹14 p.a.

↳ Redemption → at PAR = ₹100

↳ Yield of Similar Credit Rating Bond = 8%

↳ Tenor of the Bond = 5 years

IV of the Bond = ₹ 124.002 / bond

Duration of the Bond = 4.0293 years

| Year (x) | CF | PVF @ 8% | PV of CF @ 8% (w) | W·x. | |
|---|---|---|---|---|---|
| 1 | 14 | 0.926 | 12.964 | 12.964 | Note: Use the PV factors of the q'tn at 8%, and DO NOT use the factor arrived on the calculator. |
| 2 | 14 | 0.857 | 11.998 | 23.996 | |
| 3 | 14 | 0.794 | 11.116 | 33.354 | |
| 4 | 14 | 0.735 | 10.290 | 41.160 | |
| 5 | 14 | 0.681 | 9.534 | 47.670 | |
| 5 | 100 | 0.681 | 68.100 | 340.500 | |
| | | | 124.002 | 494.644 | |

∴ IV of the Bond = ₹124.002 per bond

∴ Duration of the Bond = $\frac{\Sigma Wx}{\Sigma W} = \frac{494.644}{124.002} = 4.0293$ years

# Minimum Market Price of Equity shares at which the bondholders should exercise the option

$= \frac{\text{IV of the Bond}}{\text{Conversion Ratio}} = \frac{₹124.002 / \text{bond}}{20 \text{ sh} / \text{bond}} = ₹ 6.2001$ per share

Q9

a) Calculation of Beta of both the stocks

Sensitivity = Δ in Stock Return / Δ in Market Return

∴ β for Aggressive stock = (40% - 4%) / (25% - 7%) = 2.00

∴ β for Defensive stock = (18% (-) 9%) / (25% - 7%) = 0.50

b) Calculation of the Expected Return of Both Stocks

↳ Likely Market Return → 50% chance of 7%.
→ 50% chance of 25%.

∴ Expected Return of the

i) Aggressive Stock = 50% of 4% + 50% of 40% = 22%
ii) Defensive Stock = 50% of 9% + 50% of 18% = 13.50%

c) Expected Return as per SML

Return (SML) = $R_f + \beta(R_m - R_f)$

↳ Expected Market Return ($R_m$) = 50% of 7% + 50% of 25%
= 16%

∴ SML = $R_f + \beta(R_m - R_f)$ = 7.50% + β(16 (-) 7.50%)
= 7.50% + 8.50% β

a) Alpha of Both the stocks

We know that: $R_e = \alpha + \beta(R_m)$

$\therefore \alpha = R_e - \beta(R_m)$

∴ Alpha of Aggressive stock : 22% (-) 2·00 (16%) : (-)10%

∴ Alpha of Defensive stock : 13·50% (-) 0·50 (16%) : +5·50%

Q10

↳ Risk free Rate ($R_f$) = 6%

Sharpe Ratio = $\frac{R_p - R_f}{\sigma_p}$ Treynor Ratio = $\frac{R_p - R_f}{\beta_p}$

# Calculation of Sharpe Ratio & Treynor Ratio and ranking of the portfolios

| MF | $R_p$ | $R_p - R_f$ [$R_p$ - 6%] | $\sigma_p$ | $\beta_p$ | Sharpe | | Treynor | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Ratio | Rank | Ratio | Rank |
| A | 15% | 9% | 7 | 1.25 | 1.2857 | II | 7.2000 | II |
| B | 18% | 12% | 10 | 0.75 | 1.2000 | III | 16.0000 | I |
| C | 14% | 8% | 5 | 1.40 | 1.6000 | I | 5.7143 | V |
| D | 12% | 6% | 6 | 0.98 | 1.0000 | V | 6.1224 | IV |
| E | 16% | 10% | 9 | 1.50 | 1.1111 | IV | 6.6667 | III |

Concl: Best fund to invest → As per Sharpe Ratio = MF C

→ As per Treynor's Ratio = MF B

Q11

↳ Current Credit Period = $\frac{\text{Receivables}}{\text{Credit Sales}} \times 365 = \frac{₹\ 69,00,000}{₹5,61,00,000} \times 365$

= 44.8930 days

↳ Proposed Credit Period = 30 days.

# Evaluation of the viability of the Factoring Proposal

| Particulars | Without Factoring | With Factoring |
|---|---|---|
| Sales | 5,61,00,000 | 5,61,00,000 |
| (-) Bad Debts | (1,50,000) | - |
| (-) Administration Cost | (5,25,000) | - |
| (-) Factor Commission [1.25% of Sales] | - | (7,01,250) |
| (-) Interest Cost (WN1) | (3,45,000) | (3,04,324) |
| Net Cash Inflows | 5,50,80,000 | 5,50,94,426 |

Conclusion: DEF Ltd. should go ahead with the option of Factoring, as it results in an additional inflow of ₹ 14,426 [5,50,94,426 over the No Factoring proposal (-) 5,50,80,000]

WN1: Calculation of Interest Cost

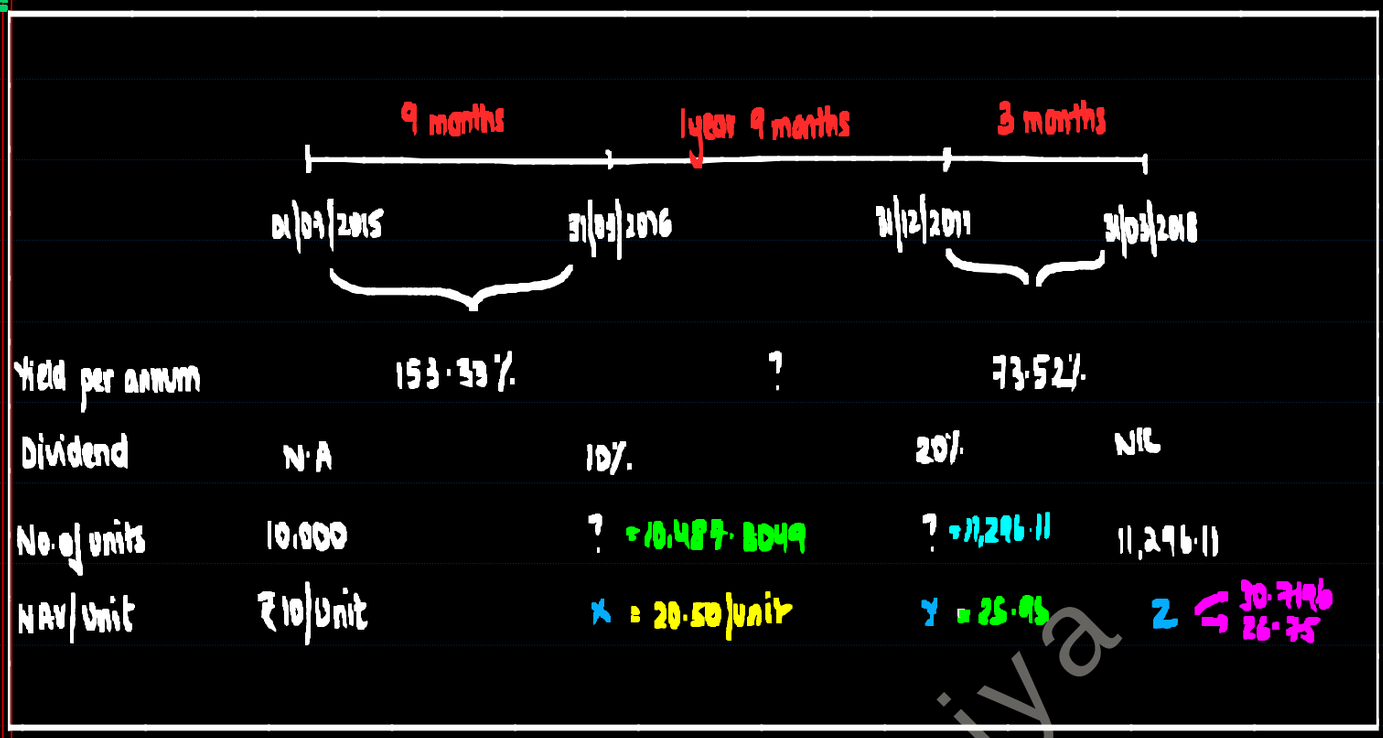
i) Without Factoring = ₹ 5,61,00,000 × $^{44.8930}/_{365}$ × 5%

= ₹ 3,45,000

ii) With Factoring

| | | |
|---|---|---|
| ↳ Advance (80%) | = ₹5,61,00,000 × 80% × $^{30}/_{365}$ × 3% | 2,58,214 |
| ↳ Balance (20%) | = ₹5,61,00,000 × 20% × $^{30}/_{365}$ × 5% | 46,110 |
| | | ₹3,04,324 |

Q12




# Determination of the Type of MF Plan

↳ The Investor has invested in 10,000 units of the MF Scheme.

↳ The Investor has received periodic dividends and no other income, and no purchases.

↳ There has been an increase in the no. of units from 10,000 to 11,296.11

∴ It is logical to conclude that the said MF Plan is a **DIVIDEND REINVESTMENT PLAN.**

# Calculations for the first 9 months

Yield → Annualised → 153.33% → 12m

∴ Holding Period Return → 9m → 153.33% × 9/12 = 115%

$$\therefore \text{Return} = \frac{\text{Dividend} + \text{Cap Inc} + \Delta \text{in NAV}}{\text{Opening NAV}} \times 100$$

$$\therefore 115 = \frac{[₹10/\text{unit} \times 10\%] + \text{NIL} + [\text{NAV}_{end} - 10]}{10} \times 100$$

∴ $\text{NAV}_{end}$ [31/03/2016] = ₹ 20.50/Unit

* Closing Units on 31/03/2016

Dividend per unit = ₹10/unit × 10% = ₹1/unit

Total Dividend = No. of units × Dividend per unit

= 10,000 units @ ₹1/unit

= ₹10,000

∴ No. of units rec'd = $\frac{\text{Dividend Amt}}{\text{NAV at Re-Investment}} = \frac{₹10,000}{₹20.50/\text{Unit}}$

= 487.8049 units

∴ Units on 31/03/2016 = 10,000 units + 487.8049 units

= 10,487.8049 units

# Calculations for 1 year 9 months

↳ No Dividend → 31/12/2017 to 31/03/2018

↳ No Additional Purchase → 31/12/2017 to 31/03/2018

∴ Units on 31/12/2017 = Units on 31/03/2018

= 11,296.11 units

∴ No of Units recd as Dividend = 11,296.11 (-) 10,487.8049
[31/03/2016 to 31/12/2017]

= 808.3051 units

Amount of Dividend Recd [31/3/16 to 31/12/17] shall be:

↳ 10,487.4089 units @ [₹10/unit x 20%]

= ₹ 20,975.61

∴ NAV on Re-Investment = ₹ 20,975.61 / 808.3051 units = ₹25.95/unit

(ie. 31/12/2017)

# Calculations for the last 3 months

## a) Annualised Yield

↳ Yield = 73.52% p.a.

∴ 3m → 18.38%

$$18.38\% = \frac{NIL + NIL + [NAV_{end} - 25.95]}{25.95} \times 100$$

∴ $NAV_{end}$ [31/03/2018] → ₹ 30.7196 / unit

## b) Holding Period Yield

↳ Yield = 73.52% p.a. → Annualised Yield of 33 months

$$Inflows = Outflows\,(1+r)^n$$

$$\therefore 11,296.11 \times NAV = 10,000 \times 10 \times \underbrace{\left[1 + (73.52\% \times 33/12)\right]}_{2.0218}$$

∴ $NAV_{end}$ [31/03/2018] = ₹ 26.75 / Unit

Q13

# Determination of Income Available for distribution


| | | | |
|---|---|---|---|
| No. of Units | 300L | 306L | 303L |
| NAV/Unit | ₹ 18.75 | | |
| Income | | | |

| Particulars | Units (lakhs) | Per Unit | Total ₹ (lakhs) |
|---|---|---|---|
| Income for the month of April | 300 | 0.0765 | 22.95 |
| (+) Units issued at the end of April | 6 | 0.0765 | 0.459 |
| | 306 | 0.0765 | 23.409 |
| (+) Income for the month of May | 306 | 0.1125 | 34.425 |
| | 306 | 0.1890 | 57.834 |
| (-) Units Redeemed | (3) | 0.1890 | (0.567) |
| | 303 | 0.1890 | 57.267 |
| (+) Income for the month of June | 303 | 0.1590 | 45.450 |
| | 303 | 0.3390 | 102.717 |
| (-) Dividend paid / Income Distributed | 303 | (0.2373) | (71.9019) |
| | 303 | 0.1017 | 30.8151 |

# Calculation of Issue Price at the end of April / May

| Particulars | April | May |
|---|---|---|
| Opening NAV | 18.750 | 18.750 |
| + Entry Load @ 2% / (-) Exit Load @ 2% on Opening NAV | 0.375 | (0.375) |
| + Dividend Equalisation paid on Issue Price | 0.0765 | 0.1890 |
| ∴ Issue Price | 19.2015 per unit | 18.5640 per unit |

# Determination of closing NAV

| Particulars | ₹ (lakhs) | ₹ (lakhs) |
|---|---|---|
| Opening NAV [₹18·75/unit for 300L] | | 5,625·00 |
| (+) Portfolio Appreciation | | 425·47 |
| (+) Income from April to June [28·95 + 34·425 + 45·45] | | 108·825 |
| (+) Issue of New Units at April end at ₹ 19·2015/unit | | 115·209 |
| | | 6,268·504 |
| (-) Redemption of Units at May end at ₹ 18·5640/unit | | (55·692) |
| (-) Income Distributed | | (31·9019) |
| ∴ Net Asset Value (Position) | | 6,180·9101 |
| (÷) No. of Units o/s [300L + 6L - 3L] | | 303·00 |
| ∴ NAV/unit at the end of June | | ₹ 20·2670/unit |

Q14

# Calculation of the share price of Implant Inc., post details of placement are announced.

In a Semi-Strong form of Stock Market, the share price should accurately reflect new relevant information when it is made available in the public domain. In the given instance, all information w.r.t. the proposed issue of funds is not made available to the public as of now, but shall be available once the proposition is made public, the market should be in a position to absorb this information, to reflect the correct share price, incorporating this information.

Accordingly, the expected share price of the company shall be computed as follows:

| Particulars | $ | $ |
|---|---|---|
| Existing Share Capital [7,000,000 sh @ $ 2/sh] | | 14,000,000 |
| NPV from the New Project | | 2,200,000 |
| Proceeds from Issue of New shares → Gross | 15,000,000 | |
| (-) Floatation Cost @4% of Gross Proceeds [15 million x4%] | (600,000) | 14,400,000 |
| **Present value of Benefit from Early Redemption of Bonds** | | |
| - PV of Interest Cost [$6,000,000 x15% x PVIFA (10%, 5 yrs)] | 3,411,708·09 | |
| - PV of Repayment at the end of 5th Yr. [$6m x PVIF(10%,5)] | 3,725,523·94 | |
| | 7,137,263·03 | |
| (-) Redemption Today | (6,000,000) | |
| (-) Penalty Charges | (1,50,000) | 787,236·03 |
| ∴ Expected Total Market Value | | 31,387,236·03 |
| (÷) Total no. of shares [old + new] [ie. 7000000 + 30,000,000*] | | 37,000,000 |
| ∴ Expected Price per share of Implant Inc. | | $ 0·8483/sh |

* Implant Inc has obtained an approval for the issue of shares worth $15 million at $ 0·50/ share. Accordingly, the no. of shares to be issued by Implant Inc for this placement of shares = $\frac{\$\ 15,000,000}{\$\ 0·5\ /\text{share}}$ = 30,000,000 shares

Q15

XYZ Bank → Amsterdam → Home Currency → Euro [€]

London → GBP → £/₹ → Directly ⊗ → Foreign Currency → ₹, $, £

Cross Rate

XYZ Bank wants to purchase ₹ 25 million against £ for funding their NOSTRO a/c

Applicable Rate → £/₹ rate → ₹ rate

Available Rates:

| | | |
|---|---|---|
| ₹/$ | 61.3625 | 61.3700 |
| $/£ | 1.5260 | 1.5270 |
| | Sell | Buy |

₹/£ = ₹/$ × $/£

∴ Implied ₹/£ Rate → ₹/$ 61.3625 × $/£ 1.5260 / ₹/$ 61.3700 × $/£ 1.5270

= ₹/£ 93.639175 / 93.711990 → £ Rate

Sell / Buy

Buy ₹ = Selling £

∴ Amount of £ req$^{d}$ = ₹ 25,000,000 (x) £/₹ 1/93.639175

= £ 2,66,982.2753

Q4

Available quotes in the:

↳ Spot Market = ₹1 $ 46.00 / 46.25 → $ rate

↳ 2 m forward Market = ₹1 $ 47.00 / 47.50 → $ rate

# Determination of $ to be sold to get ₹ 25,00,000 after 2 months

Relevant Rate = 2 month forward rate

= ₹1 $ 47.00 / 47.50 → This is a $ Rate

Sell Buy

Buy ₹ = Sell $

∴ Amount of $ to be sold = ₹ 25,00,000 × $/₹ 1/47.00

= $ 53,191.49

# Determination of ₹ to be paid to get $2,00,000 in the spot market

Relevant Rate = Spot Rate

= ₹1 $ 46.00 / 46.25 → This is a $ Rate

Sell Buy

∴ Amount of ₹ to be paid = $ 2,00,000 × ₹/$ 46.25

= ₹ 92,50,000

# Analysis between Encashment Today & Encashment after 2 months

Rate of Return = India → ₹ = 10% p.a. = 1.6667% (for 2 months)

Amount Receivable in $ on

↳ Encashment Today
↳ Encashment after 2 months } ⇒ $69,000 } ∵ the a/c is a Current a/c → ie. No Interest

Equivalent Amount Receivable in ₹

a) Encashment Today

i) Amt Recd on Conversion based on ₹/$ Spot Rate

= $69,000 × ₹/$ 46.00

= ₹ 31,74,000

ii) Amount Invested at 10% p.a. for 2 months & thus receivable after 2m

= ₹31,74,000 × [1 + (0.10 × 2/12)]

= ₹ 32,26,900

b) Encashment after 2 months

Amount Receivable based on ₹/$ 2m forward rate (Sell) = $69000 × ₹/$ 47.00

= ₹ 32,43,000

Advise: The firm should encash the amount of $ 69,000 after 2 months, due to favourable ₹/$ exchange rate, thereby yielding higher proceeds over encashing today and investing at 10% p.a. for 2m.

Q17

# The following swap arrangements can be entered by Drilldip Inc:

i) Swap a US $ loan today at an agreed rate with any party, to obtain ₹ to make an initial investment.

ii) After 1 year, swap back the ₹ with US $ at an agreed rate. In such a case, Drilldip is only facing the exposure on the Profit of the project

# Analysis of the above 2 alternatives.

1) Without the Swap HC = $ FC = ₹

| Particulars | $ (millions) Year 0 | Year 1 |
|---|---|---|
| Buy ₹ 500 crores today [Spot : ₹1 = $ 50] | (100.00) | - |
| Sell ₹ 740 crores after 1 year [Spot : ₹1 = $ 54] | - | 137.037 |
| Interest on $ 100 million borrowing at 8% p.a. | - | (8.00) |
| | (100.00) | 129.037 |

Net = $ 29.037 million

2) With the Swap

| Particulars | $ (millions) Year 0 | Year 1 |
|---|---|---|
| Buy ₹ 500 million today [Spot : ₹1 = $ 50] | (100.00) | - |
| Sell ₹ 500 million after 1 year at AGREED Rate [₹1 = $ 50] | - | 100.00 |
| Sell ₹ 240 million at ₹1 = $ 54.00 | - | 44.44 |
| Interest on $ 100 million borrowing at 8% p.a. | - | (8.00) |
| | (100.00) | 136.44 |

Net = 36.44 million

Conclusion: Drilldip Inc should enter into the Swap Agreement as net receipts are higher

Q11

* Determination of the Value of the Business

↳ Capitalisation Rate = 14%

| Particulars | | ₹ (lakhs) | ₹ (lakhs) |
|---|---|---|---|
| Profit after tax | [70%] | | 77·00 |
| + Tax Expense at 30% of PBT | [30%] | | 33·00 |
| ∴ Profit before Tax | [100%] | | 110·00 |
| (-) Extraordinary Income | | (8·00) | |
| (+) Extraordinary loss | | 10·00 | 2·00 |
| | | | 112·00 |
| (+) Profit from the New Product | | | |
| Sales | | 70·00 | |
| (-) Material Cost | | (20·00) | |
| (-) Labour Cost | | (12·00) | |
| (-) Fixed Cost | | (10·00) | 28·00 |
| ∴ Future Maintainable Profits | | | 140·00 |
| (-) Tax Expense at 30% | | | (42·00) |
| ∴ Future Maintainable Profits (after tax) | | | 98·00 |
| (÷) Capitalisation Rate | | | 14% |
| ∴ Business Value | | | 700·00 |

* Determination of Market Price per share

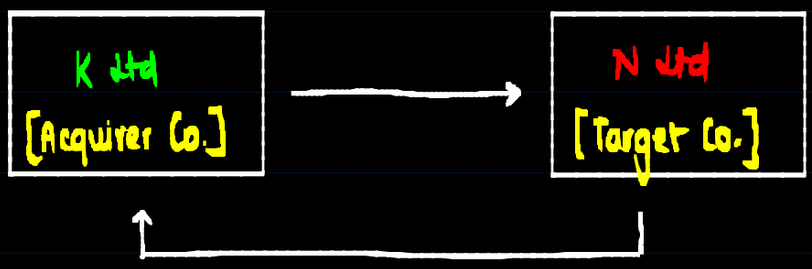
| Particulars | ₹ (lakhs) |
|---|---|
| Future Maintainable Profits (after tax) | 98·00 |
| (-) Preference Dividend [13% of (1,00,000 sh @ ₹100/sh)] | (13·00) |
| ∴ Net Profit Attributable to Equity shareholders | 85·00 |
| (÷) No. of Equity shares o/s | 50·00 |
| ∴ Earnings per share | ₹1·70/sh. |

Market Price per share = Earnings per share × PE Ratio

= ₹1·90/sh (x) 10 times

= ₹19·00/share

Q19




# Calculation of Post Merger EPS, where Swap Ratio is based on Market Price per share

↳ Parameter on which Swap is based : Market Price per share

↳ Nature of Parameter → Positive

$$\therefore \text{Swap Ratio} = \frac{\text{Target Co MPS}}{\text{Acquiren Co. MPS}} = \frac{₹160.00}{₹200.00} = 0.80$$

This implies that K Ltd. shall issue 0.80 shares in K Ltd for every one share held in N Ltd.

∴ No. of shares issued = 0.80 × 2,50,000 shares

= 2,00,000

# Total Earnings of the Merged Entity

The question has specified that there is NO SYNERGY Benefit available on Merger.

∴ Post Merger Earnings = Earnings of K Ltd + Earnings of N Ltd.

= ₹50,00,000 + ₹15,00,000

= ₹65,00,000

# Total No. of Shares of the Merged Entity

= Existing shares of K Ltd + Additional shares issued.

= 10,00,000 shares + 2,00,000 shares

= 12,00,000 shares

∴ EPS (merged entity) = $\frac{\text{Earnings (post merger)}}{\text{No. of shares (post merger)}}$

$= \frac{₹\ 65,00,000}{13,00,000 \text{ shares}} = ₹\ 5.4167/\text{share}$

# Swap Ratio for the shareholders of N Ltd. to not be at a loss.

For the shareholders of N Ltd. to not suffer a loss, the swap ratio should be based on EPS.

In such case, the swap ratio would be:

↳ $\frac{\text{Target Co. EPS}}{\text{Acquirer Co. EPS}} = \frac{₹6/\text{sh}}{₹5/\text{sh}} = 1.20$

This implies that K Ltd. shall issue 1.20 shares in K Ltd for every one share held in N Ltd.

∴ No. of shares issued = 1.20 × 2,50,000 shares

= 3,00,000

## Determination of EPS (pre Merger) and PE Ratio

| Particulars | K Ltd (Acquirer) | N Ltd (Target) |
|---|---|---|
| Earnings after tax | 50,00,000 | 15,00,000 |
| (÷) No. of shares o/s | 10,00,000 | 2,50,000 |
| ∴ Earnings per share [EPS] | ₹5/share | ₹6/share |
| Market Price per share [MPS] | ₹200/sh | ₹160/sh |
| ∴ PE Ratio = MPS/EPS | 40 times | 26.67 times |

# Total Earnings of the Merged Entity

The question has specified that there is NO SYNERGY Benefit available on Merger.

∴ Post Merger Earnings = Earnings of K Ltd + Earnings of N Ltd.

= ₹ 65,00,000

# Total No. of shares of the Merged Entity

= Existing shares of K Ltd + Additional shares issued.

= 10,00,000 sh + 3,00,000 sh

= 13,00,000 sh

∴ EPS (post merger) = $\frac{\text{Earnings (post merger)}}{\text{No. of shares (post merger)}} = \frac{₹ 65,00,000}{13,00,000 \text{ sh}}$

= ₹ 5/share

Earnings per share for shareholders of K Ltd = ₹ 5/share

Equivalent Earnings per share for shareholders of N Ltd = ₹ 5/sh × 1·20

= ₹ 6/share

= Pre Merger EPS of N Ltd.