The Best CA Final

AFM

WITH PRACTICAL STOCK MARKET KNOWLEDGE

CHALISA

Only For May 2025

By Aaditya Jain

Target 100% Marks & Crore Plus Salary In Finance

Try To Complete This Booklet In 2 Hours..INSTANT SUCCESS IN 2 Hours

संकट का अंधकार अगर गहरा हो तो
भीतर के प्रकाश की सहायता लेनी चाहिए

CA Aaditya Jain

With Sunrise You Rise

CA,MBA(FINANCE), NCFM/NISM, B.COM, M.COM
AWARDED AS NSE CERTIFIED MARKET PROFESSIONAL
AND MASTER OF FINANCIAL ANALYSIS, POST GRADUATE DIPLOMA IN FINANCIAL MARKET, CFA (ICFAI)

TIME VALUE OF MONEY

FUTURE VALUE OF A SINGLE CASH FLOW / COMPOUNDING TECHNIQUE

➦Future Value = Present Value x $(1 + r)^n$

PRESENT VALUE OF A SINGLE CASH FLOW / DISCOUNTING TECHNIQUE: ➦Present Value = $\frac{\text{Future Value}}{(1+r)^n}$

PRESENT VALUE OF EQUAL CASH FLOW UPTO PERPETUITY/INFINITY/FOREVER-WITHOUT GROWTH

➦Present Value = $\frac{\text{Annual Cash Flow}}{\text{Discount Rate}}$

PRESENT VALUE OF CASH FLOW UPTO PERPETUITY/INFINITY / FOREVER-WITH GROWTH

➦Present Value = $\frac{\text{Cash Flows Arising At Year End 1}}{\text{Discount Rate} - \text{Growth Rate}} = \frac{CF_1}{\text{Discount Rate} - \text{Growth Rate}}$

INTERNAL RATE OF RETURN : ➦Lower Rate + $\frac{\text{Lower Rate NPV}}{\text{Lower Rate NPV} - \text{Higher Rate NPV}}$ x (Higher Rate - Lower Rate)

VALUATION OF SECURITY : EQUITY

EARNING PER SHARE (EPS): ➦Earning Per Share (EPS) = $\frac{\text{Total Earnings Available for Equity Shareholders}}{\text{Total Numbers of Equity Shares}}$

DIVIDEND PER SHARE (DPS): ➦Dividend Per Share (DPS) = $\frac{\text{Total Dividend Paid To Equity Shareholder}}{\text{Total Number of Equity Shares}}$

MARKET PRICE PER SHARE: ➦MPS = $\frac{\text{Total Market Value / Market Capitalization / Market Cap}}{\text{Total Number of Equity Shares}}$

DIVIDEND PAYOUT RATIO (D/P RATIO): ➦Dividend Payout Ratio = $\frac{\text{Dividend Per Share}}{\text{Earning Per Share}} \times 100$

RETENTION RATIO

➦Retention Ratio = $\left[\frac{\text{EPS - DPS}}{\text{EPS}}\right] \times 100$ or (1 - Dividend Payout Ratio) or $\left[\frac{\text{Retained Earning Per Share}}{\text{EPS}}\right] \times 100$

RELATIONSHIP BETWEEN RETENTION RATIO & PAYOUT RATIO

➦Dividend Payout Ratio = 1 - Retention Ratio or Retention Ratio = 1 - Dividend Payout Ratio

➦**Note**: Retention Ratio + Dividend Payout Ratio = 1 or 100%

RETAINED EARNING PER SHARE: ➦Retained Earning Per Share = EPS - DPS **OR** $\frac{\text{Total Retained Earnings}}{\text{Total No. Of Equity Shares}}$

DIVIDEND RATE: ➦Dividend Rate = $\frac{\text{Dividend Per Share}}{\text{Face Value}} \times 100$

➦**Note**: Dividend is always paid on face value of share and not market price .

GORDON'S MODEL / DIVIDEND GROWTH VALUATION MODEL / GORDON GROWTH'S MODEL / DIVIDEND DISCOUNT MODEL / CONSTANT GROWTH RATE MODEL

➦$P_0 = \frac{DPS_1}{K_e - g}$ or $P_0 = \frac{DPS_0(1+g)}{K_e - g}$

DPS_1 = DPS next year / Dividend to be paid / Expected Dividend /Dividend not yet paid
DPS_0 = DPS of current year / Dividend just paid / DPS as on today/Dividend Per Share of previous year / Dividend Recently Paid / Last year dividend
Ke = Cost of Equity / Investor's Expectation / Capitalization Rate / Expected Return / Discount Rate / Opportunity Cost for shareholders
P_0 = Current Market Price Per Share Ex-Dividends, Theoretical Market Price Per Share, Intrinsic Value Per Share or Equilibrium Price Per Share ,Present Value Market Price , Market Price Per Share as on today
g = Growth rate of dividend = b x r
b = Retention Ratio (%) and **(1 - b) =** Dividend Payout Ratio
r = Rate of Return / Internal Rate of Return (IRR) / Return on Equity / Return on Investment(ROI)

OPTIMUM DIVIDEND PAYOUT OR OPTIMUM RETENTION RATIO AS PER GROWTH MODEL (ALL OR NOTHING APPROACH)

		Optimum	
Nature of Firm	Relation	Dividend Payout	Retention Ratio
Growth Company	Ke < r	0%	100%
Declining Company	Ke > r	100%	0 %
Normal Company	Ke = r	Indifferent	Indifferent

UNEQUAL GROWTH RATE/VARIABLE GROWTH RATE CONCEPT ➦P_0 [Assuming Dividend is growing constantly from year 4 onwards] $= \frac{D_1}{(1+Ke)^1} + \frac{D_2}{(1+Ke)^2} + \frac{D_3}{(1+Ke)^3} + \frac{D_4}{(1+Ke)^4} + \frac{D_5}{Ke-g} \times \frac{1}{(1+Ke)^4}$

PRICE EARNING RATIO: ➦Price Earning Ratio = $\frac{MPS}{EPS}$

RETURN ON EQUITY (ROE): ➦$r = \frac{\text{Total Earnings Available For Equity Shareholder}}{\text{Total Equity Shareholder's Fund}} \times 100$

BOOK VALUE PER SHARE (BVPS): ➦Book Value Per Share (BVPS) = $\frac{\text{Total Equity Shareholder's Fund}}{\text{Total Number Of Equity Share}}$

RELATIONSHIP BETWEEN EPS, BVPS & ROE: ➦EPS = Book Value Per Share x Return on Equity.

RELATIONSHIP BETWEEN GROWTH RATE (g), RETENTION RATIO (b) & RETURN ON EQUITY (r); ➦g = b x r

OVERVALUED & UNDERVALUED CONCEPT

Case	Valuation	Decision
If Current Market Price > Present Value Market Price	Overvalued	Sell
If Current Market Price < Present Value Market Price	Undervalued	Buy
If Current Market Price = Present Value Market Price	Correctly Valued	Hold

CAPM (CAPITAL ASSET PRICING MODEL)

➦Ke = Rf + β (Rm - Rf) Where, Rf = Risk Free Return; Rm = Market Returns; (Rm - Rf) = Market Risk Premium

HOLDING PERIOD RETURN

➦Holding Period Return or Total Yield = $\frac{D_1 + (P_1 - P_0)}{P_0} = \frac{D_1}{P_0} + \frac{P_1 - P_0}{P_0}$ = Dividend Yield + Capital Gain Yield

CAPITAL GAIN YIELD: ➦Capital Gain Yield = $\frac{P_1 - P_0}{P_0} \times 100$

DIVIDEND YIELD (RETURN): ➦Dividend Yield (Return) = $\frac{\text{Dividend Per Share } (D_1)}{\text{Market Price Per Share } (P_0)} \times 100$

NEGATIVE GROWTH RATE MODEL: ➦$P_0 = \frac{D_0(1-g)}{K_e + g}$

VARIOUS METHODS OF Ke CALCULATION : • **Dividend Price Approach**: Ke = $\frac{D_1}{P_0}$

• **Dividend Price + Growth Approach**: Ke = $\frac{D_1}{P_0} + g$; • **Earning Price Approach**: Ke = $\frac{EPS_1}{P_0}$

RELATIONSHIP BETWEEN KE & PE RATIO: Ke = $\frac{1}{\text{P/E Ratio}}$

CALCULATION OF OPERATING COST WHEN OPERATING PROFIT MARGIN IS GIVEN

➦Operating Cost = 1 - Operating Profit Margin

ASSET TURNOVER RATIO (ATR): ➦Asset Turnover Ratio = $\frac{\text{Net Sales}}{\text{Total Asset}}$ ➦**Decision**: Higher the better

PRESENTATION OF INCOME STATEMENT

Sales	xxx
-Operating Cost	xxx
EBIT	xxx
-Interest	xxx
EBT	xxx
-Tax	xxx
EAT	xxx
-Pref. Dividend	xxx
EFE	xxx
-Equity Dividend	xxx
Retained Earnings	xxx

DECISION WHEN INVESTOR IS ALREADY HOLDING SHARES

Actual Po > Fair Po - Overvalued Sell ; **Actual Po < Fair Po** - Undervalued Hold

CALCULATION OF NPV DUE TO INVESTMENT IN A PROJECT

➦Net Present Value = Present Value Of Cash Inflows - Present Value Of Cash Outflows

➦**Decision:**

If NPV is positive: Accept the Project; **If NPV is negative**: Reject the Project; **If NPV is zero:** Indifferent Position

DUPONT ANALYSIS FOR RETURN ON EQUITY:

➦ROE = Net Profit margin x Total Assets Turnover ratio x Equity Multiplier

$$\left[\frac{\text{Net Profit}}{\text{Sales}}\right] x \left[\frac{\text{Sales}}{\text{Total Assets}}\right] x \left[\frac{\text{Equity}}{\text{Equity + Debt}}\right]$$

WALTER'S MODEL-PO CALCULATION ➦**Symbolically** : $Po = \frac{DPS}{K_e} + \frac{\frac{r}{K_e}(EPS - DPS)}{K_e}$

CALCULATION OF TOTAL ASSETSUSING DEBT AND EQUITY

If question is silent: Total Assets=Equity + Debt

TYPES OF MARKET IN CASE OF UNDERVALUED SHARE

➦Such type of market is known as "Weak form of market"as per EMH(Efficient Market Hypothetis"theory.

➦This is because market is not able to discount all the information.(Cash inflow)

BONDS

VALUE OF STRAIGHT COUPON BOND OR EQUAL COUPON BOND (REDEEMABLE BOND)

➦Value Of Bond(B_0) = $\frac{\text{Interest}}{(1+\text{Yield})^1} + \frac{\text{Interest}}{(1+\text{Yield})^2} + \ldots\ldots\ldots\ldots + \frac{\text{Interest}}{(1+\text{Yield})^n} + \frac{\text{Maturity Value}}{(1+\text{Yield})^n}$

= Interest x PVAF (Yield %, n years) + Maturity Value x PVF (Yield %, n years)

Where n = Number of Years to Maturity

VALUE OF PERPETUAL BOND OR IRREDEEMABLE BOND: ➦Value Of Bond(B_0) = $\frac{\text{Annual Interest}}{\text{Yield}}$

VALUE OF ZERO COUPON BOND OR DEEP DISCOUNT BOND: ➦Value Of Bond(B_0) = $\frac{\text{Maturity Value}}{(1+\text{Yield})^n}$

HOLDING PERIOD RETURN (HPR): ➦Holding Period Return (R) or Total Return

= $\frac{I_1 + (B_1 - B_0)}{B_0}$ or $\frac{I_1}{B_0} + \frac{(B_1 - B_0)}{B_0}$ or Current Interest Yield + Capital Gain Yield

Where B_0 is the Price of bond as on today, and B_1 is the price of the bond at the end of the holding period.

CAPITAL GAIN YIELD: ➦Capital Gain Yield = $\frac{(B_1 - B_0)}{B_0} \times 100$

INTEREST YIELD OR CURRENT YIELD: ➦Current Yield = $\frac{I_1}{B_O}$ Where I_1= Interest To Be Paid at Year End 1

OVERVALUED AND UNDERVALUED BONDS

Case	Valuation	Decision
If Current Market Price > Present Value Market Price	Overvalued	Sell
If Current Market Price < Present Value Market Price	Undervalued	Buy
If Current Market Price = Present Value Market Price	Correctly Valued	Hold

VALUE OF BOND WHEN INVESTOR IS ALREADY HOLDING BOND

Case	Valuation	Decision
If Current Market Price > Present Value Market Price	Overvalued	Sell
If Current Market Price < Present Value Market Price	Undervalued	Hold

COST OF DEBT (Kd) / YIELD TO MATURITY (YTM) / REDEMPTION YIELD / INTERNAL RATE OF RETURN / MARKET RATE OF INTEREST / PROMISED YTM / OPPORTUNITY COST OF DEBT

➦**Symbolically : It can be calculated by using two method :**

• **IRR METHOD :** Kd = Lower Rate + $\frac{\text{Lower Rate NPV}}{\text{Lower Rate NPV} - \text{Higher Rate NPV}}$ x Difference in Rates

• **APPROXIMATION METHOD:** Kd p.a= $\frac{\text{Interest p.a} + \left(\frac{\text{Maturity Value} - \text{Bo}}{\text{n}}\right)}{\frac{\text{Maturity Value} + \text{Issue Value}}{2}}$ Where Bo is current value of bond

in case of existing bond or issue price or net proceeds in case of new issue of bond i.e we will take Bo net of flotation cost ➦Whenever, interest tax rate is given in question, we must take Interest amount net of tax i.e Interest Amount × (1-tax)➦Whenever capital gain tax rate is given,we must always take maturity value net of Capital Gain Tax amount.

KD OF PERPETUAL BOND: ➦Yield or Kd = $\frac{\text{Annual Interest}}{\text{Bo}}$

DIRTY PRICE AND CLEAN PRICE: ➦Dirty Price = Clean Price + Accrued Interest

TYPES OF BOND ON THE BASIS OF VALUE

➦**There can be three types of Bond On the basis of Current Value**:-

1. Discount Bond B_0 < Face Value; **2. Face value Bond** B_0 = Face Value; **3. Premium Bond** B_0 > Face Value

BASIS POINT: ➦1 % = 100 basis points

INTEREST COVERAGE RATIO: ➦Interest Coverage Ratio = $\frac{\text{EBIT}}{\text{Interest}}$

CALCULATION OF Kd OF HALF YEARLY COUPON BOND

➦Kd Of 6 Month = $\frac{\text{Interest Per 6 Months} + \left(\frac{\text{Maturity Value} - \text{Bo}}{\text{n x 2}}\right)}{\frac{\text{Maturity Value} + \text{Bo}}{2}}$; Now Kd p.a = Kd for 6 month x 2

FAIR CONVERSION VALUE AS ON TODAY [STOCK VALUE OF BOND]

➦Fair Conversion Value or Stock Value Of Bond

= Number Of Equity Shares Received on Conversion x Market Price Per Share prevailing at the time of conversion

DECISION WHETHER TO CONVERT OR NOT

SITUATION	DECISION
• If value of Bond > Conversion Value	Do not Convert
• If value of Bond < Conversion Value	Convert

DOWNSIDE RISK [OR PREMIUM OVER STRAIGHT VALUE OF DEBENTURE]

➦Downside Risk

= Market Value Of Convertible Bond - Market Value Of Non Convertible Bond or Straight Coupon Bond

➦It should be further divided by Market Value Of Convertible Bond to calculate answer in %.

PREMIUM IN CASE OF CONVERTIBLE BOND

➦**Main Equation: In Amount:** Actual Market Value of Convertible Bond - Fair conversion value of Bond

In %: $\frac{\text{Actual Market Value of Convertible Bond - Fair conversion value of Bond}}{\text{Fair conversion value of Bond}}$

CONVERSION PARITY (EQUALITY) PRICE OF EQUITY SHARE

➦Conversion Parity Price = $\frac{\text{Actual Market Value Of Convertible Bond}}{\text{Conversion Ratio}}$

CONVERSION PARITY PRICE (PREMIUM) OF EQUITY SHARE

➦**IN (₹):** [Also Known As Conversion Premium Per Share]=Conversion Parity Price of Equity-Actual Market Price of Equity ➦**IN %:** [Also Known As Ratio Of Conversion Premium]

= $\frac{\text{Conversion Parity Price of Equity - Actual Market Price of Equity}}{\text{Actual Market Price of Equity}}$

FAVOURABLE INCOME DIFFERENCE PER SHARE

= $\frac{\text{Coupon Interest From 1 Debenture - Conversion Ratio} \times \text{Dividend Per Share}}{\text{Conversion Ratio}}$

PREMIUM PAYBACK PERIOD: = $\frac{\text{Extra Initial Investment}}{\text{Extra Annual Cash Inflow}}$ OR $\frac{\text{Conversion premium per share}}{\text{Favourable Income Differential per Share}}$

FREDRICK MACAULAY 'S DURATION OF NORMAL COUPON BOND

➦**Symbolically:** Duration = $\frac{1}{B_o}$ [1 x $\frac{\text{Interest}}{(1+\text{Kd})^1}$ + 2 x $\frac{\text{Interest}}{(1+\text{Kd})^2}$ + ...n x $\frac{\text{Interest}}{(1+\text{Kd})^n}$ + n x $\frac{\text{Maturity Value}}{(1+\text{Kd})^n}$]

➦**Short Cut Formula**: Duration = $\frac{1+YTM}{YTM} \times \frac{(1+YTM)+n(\text{Coupon Rate}-YTM)}{\text{Coupon Rate}[(1+YTM)^n-1]+YTM}$

DURATION OF A ZERO COUPON BOND

➦For a zero coupon bond, the duration is simply equal to the maturity of the bond.

MODIFIED DURATION / SENSITIVITY / VOLATILITY

➦Volatility or Modified Duration or Sensitivity [%] = $\left[\frac{\text{Duration Of Bond}}{1+Kd}\right]$

➦**Note:** % Change in B_0 = - Modified Duration x Change In Kd

CALCULATION OF EXPECTED VALUE OF BOND USING BETA: ➦Expected B_0 = Fair B_0 x Beta

CALCULATION OF BOND VALUE WHEN ENTIRE INTEREST & PRINCIPAL AMOUNT IS RECEIVED AT THE END OF BOND LIFE:➦ In such case our equation is: $B_0 = \frac{\text{Face Value}(1+\text{Coupon Rate})^n}{(1+YTM)^n}$

WHEN CF RECEIVED IS NOT RE-INVESTED OR WHEN NPV ASSUMPTION IS NOT FOLLOWED

➦In such case our equation will be: $B_0 = \frac{(\text{Coupon Amount} \times n)+\text{Face Value or Maturity Value}}{(1+Kd)^n}$

WHEN CONVERSION IS OPTED AFTER FEW YEARS

➦Value of bond if converted = $\frac{\text{Intt.}}{(1+Kd)^1}+\frac{\text{Intt.}}{(1+Kd)^2}+\ldots\ldots\ldots\ldots\ldots+\frac{\text{Intt.}}{(1+Kd)^n}+\frac{\text{Conversion Value}}{(1+Kd)^n}$

Where :- $\text{Conversion Value}_n = \text{MPS}_n \times$ No. of ES

DURATION OF PERPETUAL BOND: ➦Duration of Bond(DOB) = $\frac{1+Kd}{Kd}$

MODIFIED DURATION IN CASE OF HALF YEARLY BOND

➦Modified Duration = $\frac{\text{Duration of Bond}}{1+\frac{kd}{n}}$; Where n = Frequency of coupon payment.

CONVEXITY ➦**Convexity** = Approximate modified convexity x $(\Delta YTM)^2$ x 100

➦**Approximate modified convexity**: $\frac{B_+ + B_- - 2B_0}{2 \times B_0(\Delta y)^2}$

B_0 = Bond price; B- = Bond price when interest rate is incremented; B+ = Bond price when interest rate is decremented; Δ y = change in yield to maturity

➦**% change in B_0** = (- Volatility x Δ Y) + (Approximate Modified Convexity x $(\Delta Y)^2$

➦**Yield Curve**

➦A **Normal Yield curve** is one in which longer maturity bonds have a higher yield compared to shorter-term bonds due to the risks associated with time. Generally, this reflects the fact that most traders expect the economy

to grow in the future.

➦An **Inverted Yield curve** is one in which the shorter-term yields are higher than the longer-term yields.A negative yield curve has generally been considered a warning sign that the economy is slowing and that a recession is likely.

➦A **Flat Yield curve** is observed when all maturities have similar yields. A flat curve sends signals of uncertainty in the economy. This mixed signal can revert to a normal curve or could later result into an inverted curve.

➦A **Humped Curve** results when short-term and long-term yields are equal and medium-term yields are higher than those of the short-term and long-term. Generally, these kinds of curves hint at overall uncertainty about the future

PREFERENCE SHARE VALUATION

VALUE OF REDEEMABLE PREFERENCE SHARES

➦Value of Preference Share $(PSC_0) = \frac{\text{Dividend}}{(1+K_P)^1} + \frac{\text{Dividend}}{(1+K_P)^2} + \ldots\ldots\ldots + \frac{\text{Dividend}}{(1+K_P)^n} + \frac{\text{Maturity Value}}{(1+K_P)^n}$

VALUE OF IRREDEEMABLE PREFERENCE SHARES

➦Value of Irredeemable Preference Shares$(PSC_0) = \frac{\text{Annual Dividend}}{K_P}$

COST OF REDEEMABLE PREFERENCE SHARE CAPITAL: ➦$Kp = \frac{\text{Annual Dividend} + \left(\frac{\text{Maturity Value} - PSC_0}{n}\right)}{\frac{\text{Maturity Value} + PSC_0}{2}}$

COST OF IRREDEEMABLE PREFERENCE SHARE CAPITAL: ➦$K_P = \frac{\text{Annual Dividend}}{PSC_O}$

➦Sometimes when relevant information is not given for calculation of K_p then we simply use K_p = Rate Of Preference Dividend.

CONVERSION VALUE OF CONVERTIBLE PREFERENCE SHARE CAPITAL

➦**Equation :** Fair Conversion Value = Number of Equity Shares x MPS of Equity Share

PREMIUM IN CASE OF CONVERTIBLE PREFERENCE SHARE CAPITAL

➦**Equation :** Conversion Premium or Premium Over Conversion Value
= Market Value Of Convertible Preference Share Capital - Fair Conversion Value Of Preference Share Capital
➦It should be further divided by Fair Conversion Value Of Preference Share Capital to calculate answer in %.

RIGHT SHARES VALUATION

THEORETICAL / FAIR MARKET PRICE AFTER RIGHT ISSUE

➦MPS After Right Issue $= \frac{\text{Existing MPS} \times \text{Existing No. Of ES} + \text{Offer Price} \times \text{Right Share} + \text{NPV}}{\text{Existing No. Of ES} + \text{New No. Of Equity Shares Issued}}$

THEORETICAL VALUE OF RIGHT

➦**ALTERNATIVE 1:** Value of Right Per Share = Cum Right Price - Ex - Right Price
Value of Right Per Lot = Value Of Right Per Share x Lot Size

➦**ALTERNATIVE 2:** Value of Right Per Lot = Ex - Right Price - Offer Price

$$\text{Value of Right Per Share} = \frac{\text{Value Of Right Per Lot}}{\text{Lot Size}}$$

➦**Note**: If we multiply the above right per share with no. of share per lot,we get value of right per lot.

SHARE BUYBACK

MPS AFTER BUY BACK: $\frac{\text{Market Value After Buyback}}{\text{Existing Share - Buyback Share}}$

EPS AFTER BUY BACK: $\frac{\text{Earnings After Buyback}}{\text{Existing Share - Buyback Share}}$

TOTAL NO. OF EQUITY SHARES AFTER BUY BACK: Existing No. Of ES - Buyback Shares

WHEN A LOAN IS TAKEN TO BUYBACK SHARE

➦In this case we have to pay interest on loan taken and than calculate our EPS after buyback

CALCULATION OF THE AMOUNT REQUIRED FOR BUYBACK:➦ Buyback price × No. of share buybacked

CALULATION OF PBT FROM PAT ➦ $\text{PBT} = \frac{\text{PAT}}{(1 - \text{tax rate})}$

CALCULATION OF THE NUMBER OF EQUITY SHARES ➦ $\frac{\text{Market Value}}{\text{MPS}}$

CALCULATION OF PREMIUM IN CASE BUYBACK (IN RS. AND IN%)

➦**Main Equation**

In Rs.: ➦ Buyback Price - Price Prevailing before Buyback

In %: ➦ $\frac{\text{Buyback Price - Price Prevailing before Buyback}}{\text{Price Prevailing before Buyback}}$

CALCULATION OF THE AMOUNT OF THE LOAN ➦ $\frac{\text{Amount of Interest}}{\text{Interest Rate}}$

CALCULATION OF AMOUNT OF INTEREST ON LOAN TAKEN DUE TO BUYBACK

Alernative 1:➦ Amount of loan × Interest Rate

Alernative 2: ➦Eraning Before Tax Before Buyback-Eraning Before Tax After Buyback

MUTUAL FUND

NET ASSET VALUE (NAV): $\text{NAV} = \frac{\text{Net Assets}}{\text{Number Of Units}} = \frac{\text{Total Assets - Total External Liability}}{\text{Total Number Of Units}}$

➦Where net assets of the scheme will normally be: Total Asset - Total External Liability = [Market Value of Investments + Receivables + Accured Income + Other Assets] - [Accured Expenses + Payables + Other Liabilities]

EXPENSE RATIO: Expense Ratio= $\frac{\text{Expenses Incurred Per Unit}}{\text{Average NAV}}$ Where Average NAV = $\frac{\text{Opening NAV} + \text{Closing NAV}}{2}$

HOLDING PERIOD RETURN (HPR): = $\frac{[NAV_1 - NAV_0] + \text{Dividend Received} + \text{Capital Gain Received}}{NAV_0}$

RELATION BETWEEN INITIAL EXPENSE, RECURRING EXPENSE, DESIRED RETURN OF INVESTOR AND RETURN OF MUTUAL FUND

➦Relationship Between Return Of Mutual Fund, Recurring Expenses , Initial Expenses and Return Desired By Investors can be given by using following relation :

➦**Return Required By Investors =** (Return of Mutual Fund - Recurring Expenses)(1 - Initial Expenses)

CORPORATE VALUATION

DIVIDEND YIELD VALUATION METHOD OR DIVIDEND CAPITALIZATION VALUATION METHOD

➦Dividend Yield = $\frac{\text{Dividend Per Share (DPS)}}{\text{Market Price Per Share (MPS)}}$ ⇒ Market Price Per Share = $\frac{\text{Dividend Per Share (DPS)}}{\text{Dividend Yield}}$

EARNING YIELD VALUATION METHOD OR INCOME OR EARNING CAPITALIZATION VALUATION METHOD

➦Earning Yield = $\frac{\text{Earning Per Share (EPS)}}{\text{Market Price Per Share (MPS)}}$ ⇒ Market Price Per Share = $\frac{\text{Earning Per Share (EPS)}}{\text{Earning Yield}}$

FUTURE MAINTAINABLE PROFITS (FMP): ➦Value Of Business = $\frac{\text{Future Maintainable Profit}}{\text{Relevant Capitalization Rate}}$

Calculation Of Future Maintainable Profits:

Average Past Year Profits	xxxx
Add :	
All Actual Expenses and Losses not likely to occur in future	xxxx
All Profits likely to arise in Future	xxxx
Less : All Expenses and Losses expected to arise in future	(xxxx)
Less : All Profits not likely to occur in future	(xxxx)
Future Maintainable Profits (FMP)	xxxx

PRICE EARNING [P/E] RATIO VALUATION METHOD

➦Price Earning Ratio [P/E Ratio] = $\frac{MPS}{EPS}$ ⇒ MPS = P/E Ratio x EPS

CASH FLOW STATEMENT (LIMITED COVERAGE)

PAT	xx
(+) Depriciation	xx
(-) Capital expenditure(Like purchase of furniture)	xx
(-) Increase in working capital	xx
(+) Decrease in working capital	xx
Net Cash Flow	xx

TREATMENT OF WORKING CAPITAL ➦Working capital = CA - CL
➦Working Capital is neither subject to depreciation nor tax.
➦**ASSUMPTIONS TO BE TAKEN: (i)** Introduction of WC :- Cash Outflow **(ii)** Release of WC :- Cash Inflow **(iii)** Increase in WC :- Cash Outflow **(iv)** Decrease in WC :- Cash Inflow

WACC OR KO OR COST OF CAPITAL OR WEIGHTED AVERAGE COST OF CAPITAL
➦K_0 = Ke x We + Kd x Wd + Kp x Wp + Kr x Wr
NOTE :- We + Wd + Wp + Wr = 1 **NOTE :-** If Silent, Kr = Ke **NOTE :-** Weights can be based on Book Value or Market Value **NOTE :-** Kd = Intt. rate (1 - Tax) **NOTE :-** Ke = R_f + Beta (R_m - R_f)

DEBT EQUITY RATIO: ➦Debt Equity Ratio = Debt / Equity

VALUE OF EQUITY AS PER RISK PREMIUM APPROACH

➦Value of Equity = $\frac{\text{Actual Yield}}{\text{Expected Yield (Adjusted)}}$ x Paid up value of share

Where, Actual Yield = $\frac{\text{Yield On ES (In Rupee)}}{\text{Equity Share Capital}}$ x 100

VALUATION OF OVERALL COMPANY USING EQUITY AND DEBENTURE
➦Value Of Firm = Value Of Equity + Value Of Debt

CHOICE OF DISCOUNT RATE: Value Of Firm K_0 **; Value Of Equity** K_e **; Value Of Debt** K_d

EQUATED ANNUAL LOAN INSTALMENT

➦Equated Annual Instalment = $\frac{\text{Amount Of Loan}}{\text{PVAF (r \%, n Years)}}$ Where, r % is the rate of interest.

NET ASSET VALUATION METHOD: ➦ Net Asset Value Per Equity Shareholder = $\frac{\text{Net Asset}}{\text{Total Number Of Equity Share}}$

Where Net Assets = [Total Assets - Total External Liability]
➦**Note :** Total Asset and Total External Liability may be taken on the basis of Market Value,Liquidation Value or Book Value as the case may be.
➦**Note** : If question is silent always use Market Value Approach.
➦**Note : Total External Liabilities will include: 1.** Long term loan, Debenture, Bond. **2.** Preference Share Capital [Since, we are calculating NAV for equity shareholder] **3.** Accumulated preference dividend outstanding. **4.** Current Liabilities (Which includes proposed dividend)

HOW TO CALCULATE CAPITAL EMPLOYED
➦**Capital employed can be calculated in two ways :**
Liabilities side: Capital employed = Equity Share Capital + Preference Share Capital + Reserves - Fictitious Assets + Debentures + Long Term Loans
Assets Side: Capital Employed = Fixed assets (excluding Fictitious Assets) + Current assets – Current liabilities

CALCULATION OF NET REALIZABLE VALUE
➦Net Realisable Value = Equity Shareholders' Fund + Increase in Value of Asset - Decrease in Value Of Assets

INCREMENTAL VALUE WHEN COMPANY ADOPTS NEW STRATEGY

➦Incremental Value Of New Strategy = Value Of Company Under New Strategy - Value Of Company Under Old Strategy

DEBT RATIO: ➦Debt Ratio $= \frac{\text{Debt}}{\text{Equity} + \text{Debt}}$

CAPITAL GEARING RATIO: ➦Capital Gearing Ratio $= \frac{\text{Debentures} + \text{Long Term Loan} + \text{Pref. Share Capital}}{\text{Equity Share Capital} + \text{Reserves \& Surplus}}$

➦**Decision**:- Lower the Better

FIXED INTEREST AND FIXED DIVIDEND COVERAGE RATIO

➦**Equation** :- FIXED INEREST & FIXED DIVIDEND COVERAGE RATIO $= \frac{\text{PAT} + \text{Interest}}{\text{Interest} + \text{Pref. Dividend}}$

➦**Decision** :- Higher the Better

ENTERPRISE VALUE (EV) - ➦It is also a type of valuation technique.

➦**Equation No.1: Balance sheet Approach.**

Enterprise Value(EV) = Market value of Equity + Market value of debentures - Cash and cash Equivalent

Note: Market value of Equity includes both Equity share capital & Reserve & Surplus. No need to take reserve & surplus separately, When you are taking market value of Equity.

➦**Equation No.2: Profit and Loss Account Approach**

EBITDA (Earning Before Interest Tax Depreciation & Amortization)	XXX
x EBITDA Multiple	XXX
Capitalized Value	XXX
Less: Debt	XXX
Add: Surplus Funds	XXX
Equity Value (Enterprise Value)	XXX

EV / EBITDA MULTIPLE ➦It is a ratio which measures Enterprise Value.

➦**Equation** :- EV/ EBITDA $= \frac{\text{Enterprise Value}}{\text{EBITDA}}$

➦**NOTE** :- EBITDA stands for Earnings Before Interest, Tax, Depreciation & Ammortization.

CALCULATION OF INTEREST RATES (%) : Equation :- $\frac{\text{Interest Amount}}{\text{Amount of Loan / Debt}}$

CALCULTION OF TAX RATES (%): $\frac{\text{Profit After Tax} - \text{Profit Before Tax}}{\text{Profit Before Tax}}$

ROCE ➦ROCE = EBIT/Capital Employed

DEBT TO CE RATIO ➦Debt to CE Ratio : Debenture/Total Capital Employed x 100

CURRENT RATIO ➦Current Ratio = Current Assets/Current Liabilities

DISCOUNTED CASH FLOW(DCF) APPROACH/ FREE CASH FLOW APPROACH FOR EQUITY

➦It is a method of evaluating an investment by estimating future cash flows and taking into consideration the time value of money.

➦**Note : How To Calculate Free Cash Flow For Equity :**

EBDITA	xxx
(-)Depreciation	xxx
(-)Amortization	xxx
(-)Interest	xxx
EBT	xxx
(-)Tax	xxx
EAT	xxx
+ Deprecciation	xxx
+Amortization	xxx
-Increase In Working Capital	xxx
+Decrease In Working Capital	xxx
-Capital Expenditure	xxx
Free Cash Flow	xxx

ECONOMIC VALUE ADDED (EVA)

HOW TO CALCULATE EVA

➦ EVA = Net Operating Profit After Taxes - Cost Of Capital Employed
➦ Where Net Operating Profit After Taxes [NOPAT] = EBIT(1 - Tax)
➦ Cost Of Capital Employed = Cost Of Capital x Capital Employed
➦ Cost Of Capital (K_0) or Weighted Average Cost of Capital(WACC)= Ke x We + Kr x Wr + Kd x Wd + Kp x Wp

➦**NOTE :** In Calculating Operating Profit, interest is not deducted as interest is a non-operating items.
➦**NOTE : Total Funds / Capital Employed includes** : Equity Share Capital + Reserves + Debentures + Preference Share Capital + Long Term Loan - Profit and Loss Account (Dr.) - Fictitious Asset

FINANCIAL LEVERAGE: ➦Financial Leverage = $\frac{\text{Earning or Profit Before Interest and Tax [EBIT]}}{\text{Earning or Profit Before Tax [EBT]}}$

➦**NOTE :** EBT = EBIT - Interest

CALCULATION OF MAXIMUM DPS AS PER EVA VALUE :➦ Maximum DPS as per EVA value = $\frac{\text{EVA}}{\text{No. Of E Shares}}$

MVA : MEANING

➦ MVA (Market Value Added) may be defined as excess value of company in market over and above book value.
➦ **MVA :-** Two alternatives : **(i)** Equity Approach **(ii)** Overall Approach

MVA : EQUITY APPROACH: ➦MVA = Value as per Market - Value as per books
➦Where, Value as per Market = MPS x No. of Equity Shares ;
➦Where,Value as per Books = Equity Shareholder's Fund (i.e. ESC + R & S - Accumulated loss etc.)

MVA : TOTAL APPROACH: ➦MVA = Value as per Market - Value as per Books
➦Where, Value as per Market = MVof Equity + MV of PSC + MV of Debenture
➦Where,Value as per Books = Total Capital Empolyed

CALCULATION OF KD, KP, KR, KE: ➦ Ke = Rf + Beta (Rm - Rf) ➦ Kr = Ke (Assumed) ➦ Kp = Rate of Dividend or Refer Preference Share Chapter ➦ Kd = Interest (1 - Tax) or Refer Debenture Chapter
➦ **NOTE :-** If you are taking market value of equity, then no need to take reserves & surplus separately.
➦ **NOTE :-** If question is silent regarding Ke Calculation, simply assume Ke = Rate of Dividend.

TREATMENT OF RESERVES - INCLUSION AND EXCLUSION IN MARKET VALUE OF EQUITY

➦**If book value of Equity Share Capital is used:** Then we must add Reserve and Surplus amount because market value of Equity includes all

MERGER & ACQUISITION

HOW TO CALCULATE SER ON THE BASIS OF EPS: ➦Share Exchange Ratio = $\frac{\text{EPS of Target Firm (B Ltd)}}{\text{EPS of Acquiring Firm(A Ltd)}}$

HOW TO CALCULATE SER ON THE BASIS OF MPS: ➦Share Exchange Ratio = $\frac{\text{MPS of Target Firm (B Ltd)}}{\text{MPS of Acquiring Firm (A Ltd)}}$

HOW TO CALCULATE SER ON THE BASIS OF NAV

➦Share Exchange Ratio = $\frac{\text{Net Asset Value of Target Firm (B Ltd)}}{\text{Net Asset Value of Acquiring Firm (A Ltd)}}$

HOW TO CALCULATE SER ON THE BASIS OF BVPS

➦Share Exchange Ratio = $\frac{\text{Book Value Per Share of Target Firm (B Ltd)}}{\text{Book Value Per Share of Acquiring Firm (A Ltd)}}$

TOTAL NUMBER OF EQUITY SHARES AFTER MERGER: ➦**Equation :** $N_A + N_B \times ER$

EPS AFTER MERGER

➦**EPS of the Combined Firm after Merger =** $\frac{\text{Total Earning After Merger}}{\text{Total No. Of Equity Shares After Merger}} = \frac{E_A + E_B + \text{Synergy Gain}}{N_A + N_B \times ER}$

MPS AFTER MERGER ➦**1ST PREFERENCE :** To be used when PE A+B is given or any hint regarding this is Given. MPS of Combined Firm after Merger = EPS_{A+B} x $P/E\ Ratio_{A+B}$ or

➦**2ND PREFERENCE :** MPS of Combined Firm after Merger = $\frac{\text{Total Market Value After Merger}}{\text{Total No. Of Equity Shares After Merger}}$

$= \frac{MV_A + MV_B + \text{Synergy Gain (If Any)}}{N_A + N_B \times ER}$

MARKET VALUE OF MERGED FIRM :➦ 1ST PREFERENCE : MV (A+B) = EPS_{A+B} x $P/E\ Ratio_{A+B}$ x $[N_A + N_B \times ER]$
➦**2ND PREFERENCE :** MV (A+B) = MV A + MV B + Synergy

EQUIVALENT EPS OF B LTD. AFTER MERGER : ➦**Equation :** EPS (A + B) x ER

EQUIVALENT MPS OF B LTD. AFTER MERGER : ➦**Equation :** MPS (A + B) x ER

CALCULATION OF NEW NUMBER OF ES ISSUED BY A LTD. TO B LTD.: ➦**Equation :** $N_B \times ER$

CALCULATION OF % HOLDING IN NEW COMPANY

➦**For A Ltd. :** $\frac{\text{Total No. Of A Ltd Shares}}{\text{Total No. Of A Ltd Shares} + \text{Total No. Of New Shares Issued To B Ltd}}$

➦**For B Ltd. :** $\frac{\text{Total No. Of New Shares Issued To B Ltd}}{\text{Total No. Of A Ltd Shares} + \text{Total No. Of New Shares Issued To B Ltd}}$

CALCULATION OF TOTAL EARNINGS AFTER MERGER WHEN SYNERGY IS EXPRESSED IN AMOUNT

➦**Equation :** $EPS_{A+B} = \left[\frac{(Earning_A + Earning_B + Synergy\ Gain)}{N_A + N_B \times ER}\right]$

CALCULATION OF TOTAL EARNINGS AFTER MERGER WHEN SYNERGY IS EXPRESSED IN %

➦**Equation :** $EPS_{A+B} = \left[\frac{(Earning_A + Earning_B)(1 + Synergy\ Gain)}{N_A + N_B \times ER}\right]$

GAIN OR LOSS ON THE BASIS OF MPS

	A Ltd	B Ltd	
MPS After Merger	xxx	xxx	[For B Ltd. we should use Equivalent]
MPS Before Merger	xxx	xxx	
Gain/Loss	xxx	xxx	

GAIN OR LOSS ON THE BASIS OF EPS
BASED ON EPS :

	A Ltd	B Ltd	
EPS After Merger	xxx	xxx*	[For B Ltd. we should use Equivalent]
EPS Before Merger	xxx	xxx	
Gain/Loss	xxx	xxx	

➦**NOTE :** In place of EPS and MPS we may also use total figure i.e Earnings and Market Value .

MAXIMUM ER FOR A LTD. (BASE: EPS) : Maximum Exchange Ratio :
(i.e the Exchange Ratio at which EPS of Firm's A shareholder before and after merger will be same)

➦**Equation:** $EPS_A = \frac{E_A + E_B + Synergy}{N_A + N_B \times ER}$

Now by solving the above equation keeping Exchange Ratio constant we can find desired Exchange Ratio.

MINIMUM ER FOR B LTD. (BASE: EPS) : Minimum Exchange Ratio :
(i.e the Exchange ratio at which EPS of Firm 's B shareholder before and after merger will be same)

➦**Equation:** $EPS_B = \frac{E_A + E_B + Synergy}{N_A + N_B \times ER} \times ER$

Now by solving the above equation keeping Exchange Ratio constant we can find desired Exchange Ratio.

MAXIMUM ER FOR A LTD. (BASE: MPS IF PE A + B IS GIVEN) : Maximum Exchange Ratio :
(i.e the Exchange Ratio at which MPS of Firm 's A shareholder before and after merger will be same)

➦**Equation :** $MPS_A = P/E\ Ratio_{A+B} \times \left[\frac{E_A + E_B + Synergy}{N_A + N_B \times ER}\right]$

Now by solving the above equation, keeping Exchange Ratio constant, we can find desired Exchange Ratio.

MINIMUM ER FOR B LTD. (BASE: MPS IF PE A + B IS GIVEN) : Minimum Exchange Ratio :
(i.e the Exchange ratio at which MPS of Firm 's B shareholder before and after merger will be same)

➦**Equation:** $MPS_B = ER \times P/E\ Ratio_{A+B} \times \left[\frac{E_A + E_B + Synergy}{N_A + N_B \times ER}\right]$

Now by solving the above equation keeping Exchange Ratio constant we can find desired Exchange Ratio.

MAXIMUM ER FOR A LTD. (BASE: MPS IF PE A + B IS NOT GIVEN) : Maximum Exchange Ratio :
(i.e the Exchange Ratio at which MPS of Firm 's A shareholder before and after merger will be same)

➦**Equation :** $MPS_A = \left[\frac{MPS_A \times N_A + MPS_B \times N_B + Synergy\ Gain}{No.\ of\ Equity\ Shares_A + No.\ Of\ Equity\ Shares_B \times Exchange\ Ratio}\right]$

Now by solving the above equation keeping Exchange Ratio constant we can find desired Exchange Ratio.

MINIMUM ER FOR B LTD. (BASE: MPS IF PE A + B IS NOT GIVEN) : Minimum Exchange Ratio :
(i.e the Exchange Ratio at which MPS of Firm 's B shareholder before and after merger will be same)

➦**Equation :** $MPS_B = ER \times \left[\frac{MPS_A \times N_A + MPS_B \times N_B + Synergy\ Gain}{No.\ of\ Equity\ Shares_A + No.\ Of\ Equity\ Shares_B \times ER}\right]$

Now by solving the above equation keeping Exchange Ratio constant we can find desired Exchange Ratio.

CALCULATION OF NPV: IN CASE OF MERGER

PV Of Cash Flows Received By A Ltd From B Ltd	xxx
Less: Cost of Acquisition Paid By A Ltd To B Ltd	xxx
NPV Of A Ltd if B Ltd is acquired	xxx

DECISION : If NPV is positive, A Ltd should takeover B Ltd.

CALCULATION OF SYNERGY IN TERMS OF EARNING :Equation: Merger Gain or Synergy Based On Earnings = Total Combined Earning Of Merged Firm - [Earning Of A + Earning Of B]

CALCULATION OF SYNERGY IN TERMS OF MARKET VALUE ➦Merger Gain or Synergy Based On Market Value = Total Combined Market Value Of Merged Firm - [Market Value Of A + Market Value Of B]

NOTE : Synergy should be calculated in question only if asked.
NOTE : If Synergy is not given in question we should assume it to be zero.
TERMINAL VALUE CALCULATION

➦**Valuation Of Equity - Constant Perpetual:** P_0 [Assuming Dividend is constant from year 4 onwards]

$$= \frac{D_1}{(1+Ke)^1} + \frac{D_2}{(1+Ke)^2} + \frac{D_3}{(1+Ke)^3} + \frac{D_4}{(1+Ke)^4} + \frac{D_5}{Ke} \times \frac{1}{(1+Ke)^4}$$; Here, $\left[\frac{D_5}{Ke}\right]$ is Terminal Value.

➦**Valuation Of Equity - Growing Perpetual:** P_0 [Assuming Dividend is growing constantly from year 4 onwards]

$$= \frac{D_1}{1+Ke} + \frac{D_2}{(1+Ke)^2} + \frac{D_3}{(1+Ke)^3} + \frac{D_4}{(1+Ke)^4} + \frac{D_4(1+g)}{Ke-g} \times \frac{1}{(1+Ke)^4}$$; Here, $\left[\frac{D_4(1+g)}{Ke-g}\right]$ is Terminal Value

CASH TAKEOVER THROUGH BORROWED MONEY

➦**Equation :** $EPS_{A+B} = \left[\frac{(Earning_A + Earning_B - Borrowed\,Amount \times Interest\,Rate \times (1 - Tax\,Rate)}{N_A}\right]$

CASH TAKEOVER THROUGH RETAINED EARNINGS

➦**Equation :** $EPS_{A+B} = \left[\frac{(Earning_A + Earning_B - Cash\,Paid \times Opportunity\,Cost\,Of\,Interest \times (1 - tax)}{N_A}\right]$

NET COST OF MERGER - IN CASE OF CASH TAKEOVER: ➦**Equation:** Net Cost = Cash Paid to B Ltd. - MV_B Received

NET COST OF MERGER - IN CASE OF SHARE TAKEOVER (TRUE COST)

➦**Equation:** Net Cost = MV_{A+B} x % Holdings Given to B Ltd. - MV_B Received

MPS BIFURCATION INTO VARIOUS PARTS

➦**Market Price Per Share(MPS)** = Earning Per Share (EPS) x Price Earning Ratio (PE Ratio) :

$$= \frac{Earning\,For\,Equity\,Shareholder}{No.\,of\,Equity\,Share} \times \frac{Market\,Price\,Per\,Share}{Earnings\,Per\,Share}$$

➦Now EPS can further be bifurcated into ROE & BVPS.

Return on Equity(ROE) x Book Value/Intrinsic Value Per Share :

$$= \frac{Earning\,For\,Equity\,Shareholder}{Equity\,Shareholder's\,Fund} \times \frac{Equity\,Shareholder's\,Fund}{No.\,of\,Equity\,Shares}$$

Where Equity Shareholder's Fund = Equity Share Capital + Reserves - P/L account (Dr.)

CALCULATION OF SER ON THE BASIS OF GROSS NPA :➦ Equation: Swap Ratio = $\frac{Gross\,NPA\,Of\,A\,Ltd.}{Gross\,NPA\,Of\,B\,Ltd.}$

GROSS NPA (%):➦ Equation : GNPA Ratio = $\frac{Gross\,NPA}{Gross\,Advance\,or\,Deposit\,Given\,By\,Bank} \times 100$

CAPITAL ADEQUACY RATIO (CAR) / CAPITAL RISK WEIGHTED ASSET RATIO (CRAR)

➦**Equation :** CAR or CRWAR or Total Capital To Risk Weight Asset Ratio = $\frac{Total\,Capital}{Risky\,Weighted\,Assets}$

CALCULATION OF NUMBER OF EQUITY SHARES

(i) $\frac{EFE}{EPS}$ **(ii)** $\frac{Market\,Value}{MPS}$ **(iii)** $\frac{Equity\,Share\,Capital}{Face\,Value}$ **(iv)** $\frac{Equity\,Shareholder's\,Fund}{BVPS}$

CALCULATION OF PURCHASE CONSIDERATION / COST OF ACQUISITION

Market Value Of Equity issued to various party	xxx
Market Value Of Debentures issued to various party	xxx
Market Value Of Preference Shares issued to various party	xxx
Payment of Current Liability	xxx
Payment of Unrecorded / Contingent Liabilities	xxx

Any other expenses paid	xxx
Less : Sale proceeds from sale of assets not required in business	(xxx)
Less : Cash in hand and bank received	(xxx)
Cost Of Acquisition	xxx

PURCHASE PRICE PREMIUM: ➦**Equation:** Purchase Price Premium = $\frac{\text{Offer Price} - MPS_B}{MPS_B}$

GROSS PROFIT RATIO : ➦**Equation:** Gross Profit Ratio = Gross Profit/Sales x 100

INVENTORY TURNOVER RATIO : ➦**Equation:** Inventory Turnover Ratio = COGS/Average Stock or Closing Stock

DEBTOR TURNOVER RATIO : ➦Debtor Turnover Ratio = Net Credit Sales/Average Debtor or Closing Debtor

TREATMENT OF EPS(A+B) AND MPS(A+B) AFTER THE MERGER IN CASE OF CASH TAKEOVER

➦$EPS_{A+B} = \left[\frac{E_A + E_B + \text{Synergy} - \text{Opportunity cost of cash paid}}{N_A}\right]$ ➦Cash Paid x Interest Rate x (1-tax)

➦$MPS_{A+B} = \left[\frac{MV_A + MV_B + \text{Synergy} - \text{cash paid}}{N_A}\right]$

TREATMENT OF CASH BALANCE WHEN WE CALCULATE VALUE OF FIRM USING DCF APPROACH

➦**There will be no treatment of cash balance in such case:** VF = VE + VD

➦VE = VF - VD

VD = This amount will be given in question; VF = It is received by discounting all future cash inflow annually

PORTFOLIO MANAGEMENT

CALCULATION OF RETURN OF INDIVIDUAL SECURITY

➦Holding Period Return $= \frac{(\text{Price At The End} - \text{Price At The Beginning}) + \text{Any Income}}{\text{Price At The Beginning}}$

STANDARD DEVIATION OF AN 'INDIVIDUAL SECURITY' : BASED ON PAST DATA

➦Standard Deviation $(\sigma) = \sqrt{\frac{\sum(\text{Given Return} - \text{Average Return})^2}{n}}$

Decision : Higher the S.D, Higher the Risk

Note : Standard Deviation can never be Negative. It can be 0 but not Negative.

STANDARD DEVIATION OF AN 'INDIVIDUAL SECURITY' : BASED ON FUTURE DATA

➦Standard Deviation $(\sigma) = \sqrt{\sum \text{probability} \times (\text{Given Return} - \text{Expected Return})^2}$

➦**Decision** : Higher the S.D, Higher the Risk

VARIANCE: ➦Variance = (Standard Deviation)^2 = σ^2 ➦**Decision** : Higher the variance, Higher the risk.

COEFFICIENT OF VARIATION(CV) : BASED ON PAST DATA: ➦ $CV = \frac{\text{Standard Deviation}}{\text{Average Return}}$

➦**Decision :** Higher the CV, Higher the risk.

COEFFICIENT OF VARIATION(CV) : BASED ON PROBABILITY: ➦ $CV = \frac{\text{Standard Deviation}}{\text{Expected Return}}$

➦**Decision :** Higher the CV, Higher the risk.

RETURN OF PORTFOLIO : BASED ON PAST DATA

➦The Return of the portfolio is the weighted average return of individual security .

Return Of Portfolio = $AR_A \times W_A + AR_B \times W_B$ Where, AR = Average Return

RETURN OF PORTFOLIO : BASED ON PROBABILITY

➦Return Of Portfolio = $ER_A \times W_A + ER_B \times W_B$ Where, ER = Expected Return

Note : Sum of Weights used in Portfolio for different security will always be equal to 1 .

STANDARD DEVIATION OF THE PORTFOLIO CONSISTING OF TWO SECURITIES

➦Standard Deviation $[\sigma_{A+B}] = \sqrt{\sigma_A^2 W_A^2 + \sigma_B^2 W_B^2 + 2\,\sigma_A\,\sigma_B\,W_A\,W_B\,r_{A,B}}$

Where , $[\sigma_{A+B}]$ = Standard Deviation of Portfolio consisting of Security A & B

σ_A = Standard Deviation of Security A; σ_B = Standard Deviation of Security B

W_A = Weight of Security A ; W_A = Weight of Security B ;

$r_{A,B}$ = Coefficient of Correlation Between Security A and Security B

COEFFICIENT OF CORRELATION ($r_{A,B}$) : ➦Coefficient of Correlation between A & B : $r_{A,B} = \frac{\text{Covariance (A , B)}}{\sigma_A \times \sigma_B}$

COVARIANCE OF PORTFOLIO : BASED ON PAST DATA

➦Coverience (A,B) = $\frac{\sum(\text{Given Return}_A - \text{Average Return}_A) \times (\text{Given Return}_B - \text{Average Return}_B)}{n} = \frac{\sum(d_A \times d_B)}{n}$

COVARIANCE OF PORTFOLIO : BASED ON PROBABILITY

➦ Covariance (A , B) = ∑Probabilty x (Given Return_A - Expected Return_A) x (Given Return_B - Expected Return_B)

= ∑Probabilty x (d_A x d_B)

RANGE OF 'r': ➦Range of r is between -1 to +1

MEANING OF r = +1 : ➦It is a Perfect Positive Correlated Portfolio.Portfolio Risk will be Maximum.

➦Standard Deviation Of Portfolio will become $(\sigma_{A+B}) = \sigma_A \times W_A + \sigma_B \times W_B$

➦It means two securities are moving in same direction.

MEANING OF r = -1 ➦It is a Perfect Negative Correlated Portfolio.

➦Portfolio Risk will be minimum.➦Standard Deviation Of Portfolio will become $(\sigma_{A+B}) = \sigma_A \times W_A - \sigma_B \times W_B$

➦It means two securities are moving in opposite direction.

MEANING OF r = 0 ➦It is a No Correlated Portfolio.➦Portfolio Risk will be between minimum and maximum range.➦Standard Deviation Of Portfolio will become $(\sigma_{A+B}) = \sqrt{\sigma^2_A \times W^2_A + \sigma^2_B \times W^2_B}$

STANDARD DEVIATION OF PORTFOLIO CONSISTING OF THREE SECURITIES

➦$\sigma_{ABC} = \sqrt{\sigma_A^2 W_A^2 + \sigma_B^2 W_B^2 + \sigma_C^2 W_C^2 + 2\sigma_A\sigma_B W_A W_B r_{A,B} + 2\sigma_B\sigma_C W_B W_C r_{B,C} + 2\sigma_C\sigma_A W_C W_A r_{C,A}}$

When r = +1 we can use short cut formula $\sigma_{ABC} = \sigma_A W_A + \sigma_B W_B + \sigma_C W_C$

STANDARD DEVIATION OF PORTFOLIO CONSISTING OF FOUR SECURITIES

➦$\sigma_{ABCD} =$

$$\sqrt{\begin{array}{l}\sigma_A^2 W_A^2 + \sigma_B^2 W_B^2 + \sigma_C^2 W_C^2 + \sigma_D^2 W_D^2 \\ + 2\sigma_A\sigma_B W_A W_B r_{A,B} + 2\sigma_B\sigma_C W_B W_C r_{B,C} + 2\sigma_C\sigma_D W_C W_D r_{C,D} + 2\sigma_D\sigma_A W_D W_A r_{D,A} + 2\sigma_A\sigma_C W_A W_C r_{A,C} \\ + 2\sigma_B\sigma_D W_B W_D r_{B,D}\end{array}}$$

When r = +1 we can use short cut formula $\sigma_{ABCD} = \sigma_A W_A + \sigma_B W_B + \sigma_C W_c + \sigma_D W_D$

STANDARD DEVIATION OF PORTFOLIO CONSISTING OF RISKY AND RISK FREE SECURITY

➦$\sigma_{\text{Risky + Risk Free}} = \sigma_{\text{Risky}} \times W_{\text{Risky}}$

WHEN WE TAKE BORROWINGS FOR INVESTMENT IN STOCK MARKET

➦Let the additional amount to be borrowed be X .

➦ Return Of Portfolio = Market Return x (1 + X) - Risk Free Return Paid on Borrowing x X $= R_m \times (1 + X) - R_f \times X$

➦ Standard Deviation / Risk Of Portfolio = Standard Deviation of Market x (1 + X) $= \sigma_m \times (1 + X)$

CAPITAL ASSET PRICING MODEL (CAPM) BASED RETURN

➦ **Equation:-** CAPM Return = $Rf + \frac{\text{Beta}_{\text{Security}}}{\text{Beta}_{\text{Market}}}[(Rm - Rf)] = Rf + \text{Beta}_{\text{Security}}(Rm - Rf)$

Where Rf = Risk Free Return, Rm = Market Return

➦**Note:** Beta Of Market is always equal to 1

MARKET RISK PREMIUM: ➦Market Risk premium = Rm - Rf

SECURITY RISK PREMIUM: ➦Security Risk Premium = $\text{Beta}_{\text{Security}}(Rm - Rf)$

HOW TO CALCULATE MARKET RETURN (Rm)

➦ Market means all the securities taken together. • In India Sensex or Nifty is denoted as market. • Market Return is always calculated on total basis.

➦ **Equation:-** $Rm = \frac{(\text{Total } P_1 - \text{Total } P_0) + \text{Total Dividend}}{\text{Total } P_0}$

OVERVALUED AND UNDERVALUED CONCEPT

CASE	VALUE TAKING CAPM BASE	STRATEGY
If CAPM Return > Given Return	Overvalued or Overpriced	Sell
If CAPM Return < Given Return	Undervalued or Underpriced	Buy
If CAPM Return = Given Return	Correctly valued or Correctly priced	Hold

HOW TO CALCULATE BETA OF SECURITY ?

➦We can calculate Beta of security in the following manner :

(i) % Change Formula **(ii)** Co-Variance Formula **(iii)** Regression Formula **(iv)** Correlation Formula

BETA CALCULATION USING % CHANGE FORMULA

➦Hence Beta may also be defined by using following relation : $\text{Beta} = \frac{\text{Change in Security Return}}{\text{Change in Market Return}}$

➦This equation is normally applicable when two return data is given.

BETA CALCULATION USING CO-VARIANCE

➦Beta of an Asset or Security $= \frac{\text{Covariance between Security and Market}}{\text{Variance of the market}} = \frac{\text{Covariance (s,m)}}{\sigma_m^2}$

BETA CALCULATION USING REGRESSION (COMPLETELY AVOID THIS CONCEPT FOR EXAM

➦Beta of Security $= \frac{\sum XY - n\bar{X}\bar{Y}}{\sum X^2 - n\bar{X}^2}$ Where 'X' represents Market Return and 'Y' represents Security Return.

BETA CALCULATION USING CORRELATION: Equation : ➦Beta of Security $= \frac{r_{s,m} \times \sigma_s}{\sigma_m}$

BETA OF PORTFOLIO: ➦Beta of portfolio is weighted average Beta.

BETA OF MARKET: ➦Beta of market is always assumed to be 1.

CALCULATION OF COVARIANCE OF A SECURITY WITH SAME SECURITY

➦Covariance of a security with same security will be Variance (Standard Deviation)^2

CORRELATION OF A SECURITY WITH SAME SECURITY :➦Correlation of a security with same security will be 1.

CALCULATION OF PORTFOLIO RETURN WITH THE HELP OF Rm & BETA OF PORTFOLIO

➦Portfolio Return = R_m x Beta of Portfolio

CALCULATION OF Rf RATE : ➦R_f Rate $= \frac{\text{Coupon Amount Received}}{\text{Investment Amount}} \times 100$

SHARPE'S RATIO (REWARD TO VARIABILITY RATIO)

➦It means excess return per unit of total risk.➦**Decision:** Higher the Better

➦ $\frac{R_p - R_f}{\sigma_p}$ or $\frac{R_s - R_f}{\sigma_s}$

TREYNOR'S RATIO (REWARD TO VOLATILITY RATIO)

➦It means excess return per unit of Beta. ➦**Decision:** Higher the Better

➦**Equation :** $\frac{R_p - R_f}{B_p}$ **or** $\frac{R_s - R_f}{B_s}$

Where, Rp = Return Of Portfolio ; Rs = Return Of Security ; Bp = Beta Of portfolio ; Bs = Beta Of Security ; σ_p =Standard Deviation Of Portfolio ; σ_s = Standard Deviation Of Security

JENSEN'S MEASURE (JENSEN'S ALPHA): ➦It is the difference between actual return and CAPM return.
➦**Equation :** Actual Return - CAPM Return
Note: Actual Return will be given in question ; CAPM Return = Rf + Beta x (Rm - Rf)
➦**Decision : Higher & Positive** : Outperformance ; **Lower & Negative** : Underperformance

Security Market Line (SML): ➦**Equation : SML Return = Rf + Beta (Rm - Rf)**

CAPITAL MARKET LINE (CML): ➦**Equation:** CML Return = $R_f + \frac{\sigma_s}{\sigma_m} \times (R_m - R_f)$

CHARACTERSTIC LINE (CL) : ➦**Equation :** $\bar{R}_s = a + Beta \times \bar{R}_m$ Where; a = intercept (Also known as Alpha)

SLOPE OF SML : ➦**Equation :** Slope of SML = $\frac{R_m - R_f}{\text{Beta of Market}}$

SLOPE OF CML : ➦**Equation :** Slope of SML = $\frac{R_m - R_f}{\text{S.D. of Market}}$

SLOPE OF CL : ➦**Equation :** Slope of CL is Beta of security.

CALCULATION OF EXPECTED MPS WHEN PROBABILITY IS GIVEN
➦**Equation :** Expected MPS (P0) or Price = $Price_1$ x $Prob._1$ + $Price_2$ x $Prob._2$ + _ _ _ _ _ _

ARBITRAGE PRICING THEORY (APT) : ➦**Equation** :APT = R_f + Beta x Risk Premium of each factor
Where Risk Premium = Actual Return - Expected Return

BETA IN CASE OF MERGER
➦Beta of merged company will be weighted average beta of individual company.
➦**Equation:** $Beta_{A+B} = Beta_A \times W_A + Beta_B \times W_B$

OPTIMUM WEIGHTS

➦In this concept, we will find such weights which will help us to minimize our portfolio risk.

➦**Equation** $W_A = \frac{\sigma_B^2 - r_{A,B} \times \sigma_A \times \sigma_B}{\sigma_A^2 + \sigma_B^2 - 2 \times r_{A,B} \times \sigma_A \times \sigma_B}$; $W_B = 1 - W_A$

OPTIMUM WEIGHTS WHEN R = -1 : ➦**Alternative 1** : Same as above.

➦**Alternative 2:** Shortcut (Can be used in exam) $WA = \frac{\sigma_B}{\sigma_A \times \sigma_B}$; $W_B = 1 - W_A$

TREATMENT OF INFLATION RATE

➦**When inflation rate rises:** Revised Ke = Existing Ke + Rise in Inflation Rate

➦**When inflation rate falls:** Revised Ke = Existing Ke - Fall in Inflation Rate

CALCULATION OF BETA USING CAPM: ➦**Equation:** CAPM Return = Rf + $Beta_s$ (R_m - R_f)

Where $Beta_s = \frac{CAPM\,Return - Rf}{R_m - R_f}$

COVARIANCE CALCULATION USING BETA : ➦**Equation:** $Cov(A,B) = Beta_A \times Beta_B \times \sigma_m^2$

COVARIANCE CALCULATION USING 'r' : ➦**Equation :** $Cov(A,B) = r_{A,B} \times \sigma_A \times \sigma_B$

COVARIANCE MATRIX : ➦It is a presentation of covariance of each security with another security.

Format:	A	B	C
A	COV(A,A)	COV(A,B)	COV(A,C)
B	COV(B,A)	COV(B,B)	COV(B,C)
C	COV(C,A)	COV(C,B)	COV(C,C)

➦**Note:** Cov(A,A) = Variance of A, and likewise.

HOW TO CALCULATE SYSTEMATIC RISK (IN %)

➦**Equation : For a Security** = $Beta_s^2 \times \sigma_m^2$; **For a Portfolio** = $Beta_P^2 \times \sigma_m^2$

HOW TO CALCULATE UNSYSTEMATIC RISK OF PORTFOLIO ?

Security Unsystematic Risk : Total $Risk_s$ - Systematic $Risk_s$

Portfolio Unsystematic Risk : Alternative 1: Total $Risk_p$ - Systematic $Risk_p$; **Alternative 2:** $USR_A^2 W_A^2 + USR_B^2 W_B^2$

CALCULATION OF SR AND USR USING r^2

➦Systematic Risk of a Security = $r_{s,m}^2 \times \sigma_s^2$; Unsystematic Risk of a Security = $(1 - r_{s,m}^2) \times \sigma_s^2$

➦**Extra Notes:** SR is known as explained Variance and USR is known as unexplained variance.

$SR = r_{s,m}^2 \times \sigma_s^2 \Rightarrow r_{s,m}^2 = \frac{\text{Explained Variance}}{\text{Total Variance}}$

BETA OF CASH : ➦Beta of cash is always assumed to be zero.

MARKET ATTITUDE TOWARDS RISK : ➦**Equation:** $\frac{R_m - R_f}{\sigma_m}$

➦**Meaning:** Excess Return of Market, per unit of Market Risk. ➦**Decision :** Higher the Better.

HOW TO SELECT BEST MANAGER ? ➦Manager who will give highest excess return (%), will be considered best.

➦**Excess % Return :** $\frac{\text{Actual Return} - \text{Fair Return}}{\text{Fair Return}} \times 100$

➦Where; Actual Return will be given in question. Fair Return means CAPM Return.

COEFFICIENT OF DETERMINATION : ➦r^2 is known as Coefficient of Determination.

➦$r^2 = \frac{a\sum Y + b\sum XY - n(\bar{Y})^2}{\sum Y^2 - n(\bar{Y})^2}$ [same equation is also given in Miscellaneous Chapter]

TRACKING ERROR : ➦**The Tracking Error is calculated as follows**: Tracking Error = $\sqrt{\frac{\sum (d \quad Ad)}{n-1}}$

where, d = Differential return ; Ad = Average differential return ; n = No. of observation
➦Higher the tracking error **higher is the risk profile** of the fund. If the funds outperform or underperform their benchmark indices; it clearly indicates that of fund managers are not following the benchmark indices properly.

FOREIGN EXCHANGE

HOME CURRENCY OR DOMESTIC CURRENCY ➦Country's Own Currency is known as Home Currency.
➦**Example :** For India " Rupee" is the domestic currency. ; For Japan "Yen" is the domestic currency. ; For Germany "Euro" is the domestic currency.

FOREIGN CURRENCY ➦For a country, any Currency other than home currency is known as Foreign Currency.
➦**Example :** For India " US$" is the foreign currency. ; For Japan " ₹ " is the foreign currency. ; For Germany " ₹ " is the foreign currency.

EXCHANGE RATE ➦Exchange Rate is the value of one currency for the purpose of conversion into another currency. ➦Exchange Rate is of two types : **(a)** Spot Exchange Rate **(b)** Forward Exchange Rate
➦**Example :** 1 $ = ₹ 70, It is an exchange rate.

SPOT RATE :➦Spot Rate is the rate applicable for immediate settlement.

FORWARD RATE :➦Forward Rate is the rate applicable for future settlement .
ONE WAY QUOTE :
➦Here Bid and Ask Rate is same thats why it is known as One-way Quote. **Example :** 1 $ = Rs. 42.50

TWO WAY QUOTE
➦**Example :** 1 $ = 47.6500 - 47.6595 ; In this quote 47.6500 is the bid rate and 47.6595 is the ask rate.

ASK RATE AND BID RATE : ➦There are two types of rates in a foreign exchange quote :
(i) Bid Rate (Bank Buying Rate) : Bid Rate is the rate at which Bank Buys Left Hand Currency
(ii) Ask Rate (Bank Selling Rate / Offer Rate) : Ask Rate is the Rate at which Bank Sells Left Hand Currency .
➦**NOTE:** Ask Rate will always be greater than Bid Rate .
➦**NOTE:** The quote of Bid and Ask Rate is given from the banker's point of view .

DIRECT AND INDIRECT QUOTE

➦**Direct Quote :** A direct quote is the home currency price for one unit foreign currency.
Example : The quote $ 1 = ₹ 44.00 is a direct quote for India.
➦**Indirect Quote :** An indirect quote is the foreign currency price of one unit of the home currency.
Example : The quote ₹ 1 = $ 0.0227 is an indirect quote for India.

HOW TO CONVERT DIRECT QUOTE INTO INDIRECT QUOTE AND VICE VERSA (ONE WAY QUOTE) ?

➦Direct Quotes can be converted into Indirect Quotes by taking reciprocals of each other, which can be mathematically expressed as follows : Direct Quote = $\frac{1}{\text{Indirect Quote}}$ or Indirect Quote = $\frac{1}{\text{Direct Quote}}$

➦**Example :** 1 DM = Rs. 20 is a direct quote for India. ₹ 1 = $\frac{1}{20}$ DM is indirect quote for India

HOW TO CONVERT DIRECT QUOTE INTO INDIRECT QUOTE AND VICE VERSA (TWO WAY QUOTE) ?

➦Direct Quotes can be converted into Indirect Quotes by taking reciprocals of each other and then switching the position. ➦**Example:** Direct Quote wih reference to India : 1 $ = ₹ 46.10 - 46.20.

Indirect Quote with reference to India : ₹ 1 = $\$\frac{1}{46.20} - \$\frac{1}{46.10}$ or ₹ 1 = $ .02165 - $ .02170

EXCHANGE MARGIN ➦**In case of Buying Rate Quoted by Bank** :
Deduct Exchange Margin : i.e. Actual Buying Rate = Bid Rate (1 - Exchange Margin)
➦**In case of Selling Rate Quoted by Bank** :
Add Exchange Margin : i.e. Actual Selling Rate = Ask Rate (1 + Exchange Margin)

PURCHASE PRICE PARITY THEORY (PPPT) : CALCULATION OF SPOT RATE

➦PPP Theory is based on the concept of "Law of One Price" i.e. the price of the commodity shall be the same in two markets. ➦**Equation :** Spot Rate (₹/$) = $\frac{\text{A[Current Price in India]}}{\text{B[Current Price in USA]}}$

PURCHASE PRICE PARITY THEORY (PPPT) : CALCULATION OF FORWARD RATE

➦**As per PPP Theory we have** : Forward Rate (Rupee/Dollar) = $\left(\frac{1+\text{Rupee Inflation}}{1+\text{Dollar Inflation}}\right)$ x Spot Rate (Rupee/Dollar)

or $\frac{\text{Forward Rate (Rupee/Dollar)}}{\text{Spot Rate (Rupee/Dollar)}} = \left(\frac{1+\text{Rupee Inflation}}{1+\text{Dollar Inflation}}\right)$

NOTE : In the above calculation the rate of inflation should be taken proportionate to Forward period .
Case (i) : When Forward Period is less than one year :

$$\frac{\text{Forward Rate (Rupee/Dollar)}}{\text{Spot Rate (Rupee/Dollar)}} = \left(\frac{1+\text{Rupee Inflation Adjusted For Period}}{1+\text{Dollar Inflation Adjusted For Period}}\right)$$

Case (ii) : When Forward Period is more than one year:

$$\frac{\text{Forward Rate (Rupee/Dollar)}}{\text{Spot Rate (Rupee/Dollar)}} = \left[\frac{(1+\text{Rupee Inflation})^n}{(1+\text{Dollar Inflation})^n}\right]$$

INTEREST RATE PARITY THEORY (IRPT)

➦IRPT is based on the concept that investment opportunity in any two given country will always be same.

➦**Equation:** $\frac{\text{Forward Rate (Rupee/Dollar)}}{\text{Spot Rate (Rupee/Dollar)}} = \frac{1+\text{Rupee Interest Rate}}{1+\text{Dollar Interest Rate}}$

NOTE :Same as above

DETERMINATION OF PREMIUM & DISCOUNT AS PER PPPT ➦Higher Rate of Inflation in one country (as compared to the other country) results in discount of currency of that country and vice-versa.

DETERMINATION OF PREMIUM & DISCOUNT AS PER IRPT ➦Higher Rate of Interest in one country (as compared to the other country) results in discount of currency of that country and vice-versa.

LEADING TECHNIQUE : ➦Leads means advancing the timing of payment or receipt.

LAGGING TECHNIQUE : ➦Lags means postponing the timing of payment or receipt.

PREMIUM AND DISCOUNT

Rate of Premium or Discount of Left Hand Currency is given by: $\frac{\text{Forward Rate} - \text{Spot Rate}}{\text{Spot Rate}} \times \frac{12}{\text{Forward Period}} \times 100$

TRANSACTION RISK / LOSS / EXPOSURE

Amount paid or received Before Exchange Rate Change	xxx
Amount paid or received After Exchange Rate Change	xxx
Transaction Loss or Gain Due To Currency Fluctuation	xxx

CALCULATION OF EXPECTED EXCHANGE RATE USING PROBABILITY

➦**Expected Exchange Rate (ER):** $ER_1 \times Prob._1 + ER_2 \times Prob._2 + ER_3 \times Prob._3 + \ldots\ldots\ldots\ldots$

➦**Always remember:** Sum of probability to be equal to 1.

INTEREST RATE DIFFERENTIAL : NO ARBITRAGE

➦Interest Rate Differential is just another name of premium or discount of one currency in relation to another currency i.e.

$= \frac{\text{FR[Rupee/Dollar]} - \text{SR[Rupee/Dollar]}}{\text{SR[Rupee/Dollar]}} \times \frac{12}{\text{Forward Period}} \times 100 = \text{Interest Rate of Rupee - Interest Rate of Dollar}$

SQUARING UP THE POSITION / HOW TO CLOSE OR COVER A POSITION

➦Buy position should be closed by taking a sell position and vice - versa.

FOREIGN EXCHANGE ACCOUNTS

- **Exchange Position Account :** All purchases and sales whether spot or forward are recorded in this account.
- **Cash Position (Nostro Account)** : All the items related to Spot (Cash) transaction are recorded in this account

CONTRIBUTION TO SALES RATIO : ➦Contribution to Sales Ratio = $\frac{\text{Contribution}}{\text{Sales}} \times 100$

➦**DECISION** : Higher the C/S Ratio better the situation

CALCULATION OF GAIN OR LOSS DUE TO BANK STRIKE

Amount paid or received before bank's strike	xxx
Amount paid or received after bank's strike	xxx
Gain or Loss due to bank strike	xxx

CALCULATION OF NET EXPOSURE USING FORWARD RATE AND SPOT RATE

➦Net Exposure, we mean advantage of using Forward Contract over Spot Contract .
➦**Equation :** Net Exposure = Net Cash Flow x Forward Rate - Net Cash Flow x Spot Rate
= Net Cash Flow x (Forward Rate - Spot Rate) = Net Cash Flow x Swap Points
➦**DECISION :** A positive Net Exposure indicates benefit of Forward Rate over Spot Rate.

MID RATES : ➦Mid rate is the average of ask rate and bid rate.

TYPES OF EXCHANGE RATE : ➦**There can be four types of Exchange Rates :**
(i) Spot Rate : of today, quoted by bank, as on today.
(ii) Forward Rate : of future date, quoted by bank, as on today.
(iii) Expected Rate : of future date, estimated by company's management.
(iv) Spot Rate of maturity : quoted by bank, on maturity. This rate will be known only on maturity.

INTERNATIONAL FISHER EFFECT (IFE)

➦It analyses the relationship between the Interest Rates and the Inflation.
➦As per IFE we have (1 + Money Interest Rate) = (1 + Real Interest Rate) (1 + Inflation Rate)

GAIN OR LOSS DUE TO EXPORT BILL

Amount received under forward contract under an export bill	xxx
Amount which could have received at today's value of export bill	xxx
Gain or Loss	xxx

AGGRESSIVE V/S DEFENSIVE APPROACH ➦When we enter into a forward contract, it indicates defensive approach. ➦When we remain unhedged, it indicates an aggressive approach.

EXTERNAL COMMERCIAL BORROWINGS ➦When a domestic company borrows from foreign countries (in foreign currency), then such borrowing is known as ECB.
INTER BANK RATES : ➦The rate which are quoted among the authorised dealers i.e. from one bank to another is called "Inter Bank Rates".

MERCHANT RATES : ➦The rate quoted by banks to their non bank customers are called "Merchant Rates".

MEANING OF COVER RATE

➦Whenever a branch enters into forward contract with any customer, the bank takes an opposite position in inter bank to hedge its position . This position is known as covering and the rate is known as cover rate.

CALCULATION OF PREMIUM (OR DISCOUNT) ON AN AVERAGE RATE

Equation: $\frac{\text{Forward Rate} - \text{Spot Rate}}{\text{Average Rate}} \times \frac{12}{\text{Forward Period}} \times 100$; Where, Average Rate $= \frac{\text{Forward Rate} + \text{Spot Rate}}{2}$

SPREAD

➦The difference between Ask and Bid Rates is called the Spread, representing the profit margin of the dealer .
➦**In Rs.:**Spread = Ask Rate - Bid Rate ➦**In %:** Spread = Ask Rate - Bid Rate / Bid Rate

SUB CURRENCY (SELECTED)

COUNTRY	CURRENCY		SUB-CURRENCY
France	1 Euro	=	100 cents
India	1 Rupee	=	100 paise
Japan	1 Yen	=	100 cen
Pakistan	1 Rupee	=	100 paisa
Switzerland	1 Franc	=	100 centimes
United States	1 Dollar	=	100 cents
United Kingdom	1 Pound	=	100 pence

TYPES OF INTEREST RATE QUOTATION : ➦There are two types of Interest Rate Quotations :
(i) Fixed Rate Of Interest **(ii)** Floating Rate Of Interest like LIBOR,MIBOR etc

EXPORT RATE AND IMPORT RATE : EXPORT RATE : BID RATE ; **IMPORT RATE :** ASK RATE

POSITION TAKEN IN FORWARD CONTRACT ON THE BASIS OF EXPECTATION
➦**If we expect a currency to rise in future :** Buy that Currency.
➦**If we expect a currency to fall in future :** Sell that Currency.

FEDAI RULE FOR ROUNDING OFF THE PERIOD ➦According to FEDAI:
(i) If foreign currency is at a premium: Round Off to lower month
(ii) If foreign currency is at a discount: Round Off to higher month

ADVANCED CAPITAL BUDGETING-PART 1

TECHNIQUES OF EVALUATION
1.Traditional or Non-discounted cash flows: (i) Payback Period Method **(ii)**Average rate of return
2.Modern or Discounted Cash Flow Techniques: (i) Net Present Value Method **(ii)**Profitability Index **(iii)**Internal Rate of Return **(iv)**Discounted Payback Period Method **(v)**Net Present Value Index Method **(vi)**Modified NPV/ IRR

ACCOUNTING RATE OF RETURN (ARR)

➦**Formula :** $\text{ARR} = \frac{\text{Average Annual Profit After Tax}}{\text{Average Investment}}$ or $\frac{\text{Average Annual Profit After Tax}}{\text{Initial Investment}}$

Where, $\text{Average Annual Profit After Tax} = \frac{\text{Total Expected After Tax Profits}}{\text{Number Of Years}}$;

$\text{Average Investment} = \frac{\text{Initial Investment} + \text{Salvage Value}}{2}$

➦**Accept/Reject Criterion/Decision**: Higher the ARR better the project.

PAY BACK PERIOD / PAY OFF PERIOD / CAPITAL RECOVERY PERIOD
➦**Decision :** The project with the lower payback period will be preferred.
➦**How to Calculate Payback Period :**

IN CASE OF EVEN CASH FLOWS: ➦**Formula:** Payback Period = $\frac{\text{Initial Investment}}{\text{Annual Cash Inflows}}$

IN CASE OF UNEVEN CASH FLOWS: ➦**Formula:** Payback Period = $\text{Completed Years} + \frac{\text{Remaining Amount}}{\text{Available Amount}}$

NPV (NET PRESENT VALUE)

➦**Equation :** Net Present Value (NPV) = Present Value Of Cash Inflows - Present Value Of Cash Outflows

➦**DECISION :NPV > 0** Accept the Proposal, **NPV = 0** Indifference Point, **NPV < 0** Reject the Proposal

➦**NOTE:** If question has not said specifically that which evaluation technique should be used, we will always prefer NPV Method.

PROFITABILITY INDEX ➦**Profitability Index (PI)** = $\frac{\text{Present Value of Inflows}}{\text{Present Value of Outflows}}$

➦**Decision**: Where PI > 0 Accept the proposal; PI = 0 Indifference point; PI < 0 Reject the proposal

INTERNAL RATE OF RETURN ➦ IRR is the discount rate at which NPV of the project is zero.

➦**Formula:** $\text{Lower Rate} + \frac{\text{Lower Rate NPV}}{\text{Lower Rate NPV} - \text{Higher Rate NPV}} \times (\text{Higher Rate} - \text{Lower Rate})$

➦**Decision** : IRR > Cost Of Capital **Accept the proposal;** IRR = Cost Of Capital **Indifferent;** IRR < Cost Of Capital **Reject the proposal**

DISCOUNTED PAYBACK PERIOD ➦ The discounted payback period is calculated in the same way as the payback period except that the future cash inflows are first discounted and then payback is calculated.

➦**Decision :** The lower the Discounted Payback Period better the project.

➦ It is superior to Payback period as under this time value of money is also considered

REPLACEMENT DECISION

➦**Under Replacement Decision we will decide:** Whether to Replace the existing machine & Buy new machine

TREATMENT OF WORKING CAPITAL ➦**In the absense of information the students are advised to assume:**

Introduction Of Working Capital at the beginning : This should be treated as Outflow.

Release Of Working Capital at the end : This should be treated as Inflow

➦**Note** : Changes in items such as Working Capital do not affect taxes.➦**Note** : Any Increase in Working Capital should be treated as Outflow.➦**Note** : Any Decrease in Working Capital should be treated as Inflow ➦**Note** : Working Capital is not subject to depreciation.

MODIFIED NPV / MODIFIED IRR ➦Modified Net Present Value = $\frac{\text{Terminal Value}}{(1 + \text{Cost Of Capital})^n}$ – Initial Cash Outflow

➦Modified IRR is the rate at which Modified NPV is zero.

CONFUSION REGARDING FIXED COST AND FIXED ASSET

Fixed Cost	Fixed Assets
1.Shown In Profit & Loss Account	1.Shown in Balanace Sheet
2.Example-Rent;Salary etc	2.Example-Land,Buildings etc
3.Annual Cost	3.One Time Cost normally in Year 0
4.Taken Net Of Tax	4.Not Taken Net Of Tax

5.Not Subject To Depreciation	**5.**Subject To Depreciation

TREATMENT OF DEPRECIATION

➦Depreciation is not an item of Cash Outflow,hence it should not be considered for our analysis.
➦**However** Tax Saving on depreciation is an item of inflow and hence must be recognized .
➦Tax Saving On Depreciation = Amount Of Depreciation x Tax Rate

COMPARISION IN CASE OF UNEQUAL LIFE / EQUATED ANNUAL VALUE

➦If two projects have unequal life, then the two projects are not comparable. To make them comparable we will use Equivalent Annual Value Concept for each project by applying the following formula :

➦**Equation:** $$\frac{\text{NPV or Present Value Of Cash Outflow or Present Value Of Cash Inflow}}{\text{PVAF}(K\%, n \text{ years})}$$

Where K % = Discount Rate and n = Total Life of the project

SALVAGE VALUE

TREATMENT OF SALVAGE VALUE-WDV -IN CASE OF PROFIT

Adjusted Salvage Value = Salvage Value - Profit On Sale x Tax Rate

TREATMENT OF SALVAGE VALUE-WDV -IN CASE OF LOSS

➦Adjusted Salvage Value = Salvage Value + Loss On Sale x Tax Rate

TREATMENT OF SALVAGE VALUE-SLM➦Salvage Value is not adjusted for tax under SLM unless otherwise stated.

ADVANCED CAPITAL BUDGETING-PART 2

RISK ADJUSTED DISCOUNT RATE (RADR): ➦The Net Present Value computed by using Risk Adjusted Discount Rate is known as Risk Adjusted Net Present Value.

Note: Higher Risk should be discounted by higher rate.

CERTAINTY EQUIVALENT APPROACH (CEC)

➦Certainty Equivalent Approach involves discounting of Certain Cash Flows instead of the Total Cash Flows.

Steps In Certainty Equivalent Approach

Step 1: Estimate the total future cash flows from the proposal. These cash flows have some degree of risk involved.

Step 2: Calculate the Certainty Equivalent Coefficient (CEC) factors for different years. The value of CEC can vary between 1 indicating no risk and 0 indicating the extreme risk. This means higher the risk, lower is the value of CEC. (This value is generally given in question)

Step 3: Multiply Total Cash Flows (Step 1) x CEC (Step 2) = Certainty Equivalent Cash Flows

Step 4: Certainty Equivalent Cash Flows are discounted at Risk Free Rate to find out the NPV of the proposal.

EXPECTED NET PRESENT VALUE OR EXPECTED CASH FLOWS OR EXPECTED VALUE

Expected NPV or Expected CF or Expected Value

= $\sum$ Each possible outcome of an event x Probability of that outcome occuring

Example :

Estimated Value	Probability	Estimated Value x Probability
1000	.1	100
2000	.3	600
4000	.3	1200
3000	.2	600

5000	.1	500
	1 Expected Value/NPV/Cash Flow =	3000

Note: Probability Of All Outcomes will always be equal to 1

EFFECT ON CASH FLOW DUE TO INFLATION:

➦**The future cash flows can be either expressed as**

(i) inclusive of inflation which are referred as Money Cash Flows

(ii) exclusive of Inflation which are referred as Real Cash flows

➦**Conversion of Real Cash Flows into Money Cash Flows and Vice-versa:**

Money Cash flows = Real Cash Flows (1 + Inflation Rate) or Real Cash Flows $= \frac{\text{Money Cash Flows}}{(1+\text{Inflation Rate})}$

EFFECT OF INFLATION ON DISCOUNT RATE ➦**Discount Rate can be expressed either as**

(i) inclusive of future inflation which is referred to as Money Discount Rate

(ii) exclusive of future inflation which is referred to as Real Discount Rate

➦**Conversion of Money Discount Rate into Real Discount Rate and vice versa :**

(1 + Money Discount Rate) = (1 + Real Discount Rate) (1 + Inflation Rate)

CALCULATION OF NPV WHEN INFLATION RATE IS GIVEN ➦**Present Value may be found either by**

(i) Discounting the Real Cash Flows at the Real Discount Rate or

(ii) Discounting the Money Cash Flows at the Money Discount Rate

➦In both cases resultant NPV would be same.

SENSITIVITY ANALYSIS / SCENARIO ANALYSIS - KEEPING NPV = 0

➦**Decision:** If NPV were to become 0 with 2 % change in Initial Investment relative to 10 % change in Cash Inflows , Project is said to be more sensitive to Intial Investment than to Cash Inflows .

➦**Symbolically :** $\text{Sensitivity}(\%) = \frac{\text{Change}}{\text{Base}} \times 100$

➦Some factors to be used under Sensitivity Analysis are Size of the project, Cash flows, Life of the project, Discount rate.

➦Under this analysis adverse effect of each input variable (parameters) is considered separately and all other variables are held constant.

➦Factor	Adverse Effect
Inflow	Decrease
Discount Rate	Increase
Outflow	Increase
Life	Decrease

SENSITIVITY ANALYSIS USING % ADVERSE VARIATION IN FACTORS

➦Under this method Sensitivity is calculated by taking adverse changes by a specific % which will be indicated in question. ➦The adverse factor for which % Fall In NPV is maximum is considered to be most sensitive.

➦% Fall In NPV = $\frac{\text{Revised NPV} - \text{Original NPV}}{\text{Original NPV}} \times 100$

PROBABILITY OF OCCURRENCE IF THE CASH FLOWS ARE (A) PERFECTLY DEPENDENT OVERTIME (B) INDEPENDENT OVERTIME

➦**The probability of occurrence of the worst or best case if the cash flows are**
(a) Perfectly Dependent Overtime is Required Probability **(b)** Independent Overtime is (Required Probability)^n

INTERNATIONAL FINANCIAL MANAGEMENT

INTERNATIONAL CAPITAL BUDGETING

➦**Two approaches:(a)**Home Currency Approach **(b)**Foreign Currency Approach

HOME CURRENCY APPROACH

Step 1 : Compute Foreign Currency Cash Flows
Step 2 : Convert Foreign Currency Cash Flows into Home Currency Cash Flows by using Estimated Spot Rate or Forward Rate
Step 3 : Calculate Home Currency Discount Rate .
Step 4 : Calculate Home Currency NPV by discounting Home Currency Cash Flows by Home Currency Discount Rate

FOREIGN CURRENCY APPROACH

Step 1 : Compute Foreign Currrency Cash Flows .
Step 2 : Compute Foreign Currency Discount Rate .
Step 3 : Compute Foreign Currency NPV by Discounting Foreign Currency Cash Flows by Foreign Currency Discount Rate .
Step 4 : Convert Foreign Currency NPV into Home Currency NPV by using Spot Rate.

NOTE: NPV arrived at both Home Currency Approach and Foreign Currency Approach will be same.
NOTE: Calculation of Discount Rate:(1+ Risk Adjusted Discount Rate)=(1+ Risk Free Rate)(1+ Risk Premium)
NOTE: Risk Adjusted Discount Rate in Domestic Country and Foreign Country will be different.
NOTE: It is generally assumed that Risk Premium attached to any project will be same both in Domestic Country and Foreign Country Approach.

ADR / GDR / International Issues

➦Many companies raise fund from foreign countries for financing their investment activities.
➦**Some important issues are:**
(i) ADR **(ii)** GDR **(iii)** Euro Convertible Bond **(iv)** FCCB (Foreign Currency Convertible Bond) **(v)** Masala Bond

NUMBER OF GDR CALCULATION : ➦**Equation:** $\text{Number of GDR} = \dfrac{\text{Gross Issue Value}}{\text{Issue Price Of One GDR}}$

$\text{Where Gross Issue Value} = \dfrac{\text{Amount Required Net Of Issue Expenses}}{(1-\text{Issue Expenses})}$

$\text{Where Issue Price Of One GDR} = \dfrac{\text{MPS (Rs.) Of one equity share x No. of Shares In Each GDR x (1-Discount \%)}}{\text{Spot Rate (Rs./\$)}}$

CALCULATION COST OF GDR ➦**Equation:**By using following equation we can calculate Cost Of GDR

$\text{Issue Price Of One GDR(1-Flotation Cost)} = \dfrac{\text{Dividend Rate x Face Value(Rs.) x No. of Shares In One GDR } (1+g)}{K_{GDR} - g}$

CALCULATION OF OVERALL BETA / FIRM BETA / ASSET BETA / PROJECT BETA : WITHOUT TAX

➦**Overall Beta or Firm Beta or Asset Beta or Project Beta :**

$$= \text{Equity Beta} \times \left[\frac{\text{Equity}}{\text{Debt} + \text{Equity}}\right] + \text{Debt Beta} \times \frac{\text{Debt}}{\text{Debt} + \text{Equity}}$$

CALCULATION OF OVERALL BETA / FIRM BETA / ASSET BETA / PROJECT BETA : WITH TAX

➦**Overall Beta or Firm Beta or Asset Beta or Project Beta :**

$$= \text{Equity Beta} \times \left[\frac{\text{Equity}}{\text{Debt}(1-\text{tax}) + \text{Equity}}\right] + \text{Debt Beta} \times \frac{\text{Debt}\,(1-\text{tax})}{\text{Debt}\,(1-\text{tax}) + \text{Equity}}$$

LEVERED FIRM AND UNLEVERED FIRM ➦If a company finances its investments and projects completely with Equity then the company is known as Unlevered Firm. ➦If a company finances its investments and projects both with Equity and Debt then the company is known as Levered Firm.

KE, KD, KO CALCULATION : WITHOUT TAX

➦**Alt. 1 :** K_0 = Risk Free Rate + $Beta_{Overall}$ (Market Return - Risk Free Return)

➦**Alt. 2 :** K_0 = Cost of Equity x Weight of Equity + Cost of Debt x Weight of Debt = $K_e \times W_e + K_d \times W_d$

Where , K_e = Risk Free Rate + Equity Beta (Market Return - Risk Free Rate) = $R_f + B_{Equity}\,(R_m - R_f)$

$K_d = R_f + B_{Debt}\,(R_m - R_f)$

KE, KD, KO CALCULATION : WITH TAX

➦K_0 = Cost of Equity x Weight of Equity + Cost of Debt x Weight of Debt = $K_e \times W_e + K_d \times W_d$

Where , ➦K_e = Risk Free Rate + Equity Beta (Market Return - Risk Free Rate) = $R_f + B_{Equity}\,(R_m - R_f)$

➦K_d = Interest (1 - Tax)

KO OF UNLEVERED FIRM : ➦Cost Of Capital = Cost Of Equity

O_B OF UNLEVERED FIRM :➦Overall Beta For Unlevered Firm = Equity Beta

ADJUSTED PRESENT VALUE :

Step 1 : Compute NPV of the project on the assumption that it is fully financed by Equity Shareholders .This would mean that you would discount the cash flows at cost of equity. This is called Base Case NPV .

Step 2 : Compute the issue cost . Issue costs are the costs that the firm has to incur to raise the money. It will always be normally incurred in Year 0 and it represents an Outflow .

Step 3 : Compute the present value of the tax shield / saving on interest. This is achieved by discounting the tax saving at the pre tax cost of debt or interest rate before tax .

Step 4 : Adjusted Net Present Value = Base Case NPV - Issue Costs + Present Value of Interest Tax Shield/Saving

SENSITIVITY OF EXCHANGE RATE:

➦ $\text{Sensitivity}(\%) = \left[\frac{\text{Given Exchange Rate} - \text{Exchange rate at which NPV is 0}}{\text{Given exchange rate}}\right] \times 100$

FUTURES

INTRODUCTION ➦Future contract is nothing but a forward contract covered under forex.

SEGMENT OF STOCK MARKET

➦There are two type of market which exist in Stock Exchange : **(i)** Cash Market **(ii)** Future Market

PROFIT OR LOSS UNDER STOCK MARKET : LONG POSITION

POSITION	ACTUAL PRICE ON EXPIRATION	PROFIT/LOSS
Long	Increase	Profit
Long	Decrease	Loss

PROFIT OR LOSS UNDER STOCK MARKET : SHORT POSITION

POSITION	ACTUAL PRICE ON EXPIRATION	PROFIT/LOSS
Short	Increase	Loss
Short	Decrease	Profit

➦From the above analysis we can conclude that :

- If Price rises then the Buyer of the Future Contract Gains and Seller Of the Future Contract Losses.
- If Price falls then the Buyer of the Future Contract losses and Seller Of the Future Contract Gains

HOW TO SETTLE A POSITION : LONG

➦Long Position is settled by taking Short Position at the time of settlement

HOW TO SETTLE A POSITION : SHORT

➦Short Position is settled by taking Long position at the time of settlement.

TYPES OF POSITIONS IN STOCK MARKET

- **Long Position :** If a person buys or holds an asset, he is said to be in a Long Position.
- **Short Position :** If a person sells an asset, he is said to be in a Short Position.

POSITION DETERMINATION ON THE BASIS OF EXPECTATIONS

➦If the price is expected to Increase : Buy ➦If the price is expected to Decrease : Sell

LOT SIZE : ➦In 'Derivative' chapter, 'lot size' concept is applicable.➦This lot size is determined by SEBI/NSE/BSE.
TYPES OF DERIVATIVES IN INDIA :(i) Stock Futures **(ii)** Index Futures **(iii)** Commodity Futures **(iv)** Currency Futures

FAIR FUTURE PRICE (FFP) : WHEN DIVIDEND INCOME IS NOT GIVEN

➦**Equation :** Fair Future Price = Current Market Price x e^{rt}
Where, r = risk free interest rate p.a with continuous compounding ; t = time to maturity expressed in years (Number of Days/365 or Number of Months/12)

FAIR FUTURE PRICE (FFP) : IN CASE OF DIVIDEND INCOME

➦**Equation :** Fair Future Price =[CMP - PV of Dividend Income] x e^{rt}
Where, r = risk free interest rate p.a with continuous compounding; t = time to maturity expressed in years (Number of Days/365 or Number of Months/12)

FAIR FUTURE PRICE : WHEN INCOME IS EXPRESSED IN %

➦**Equation :** FFP = CMP x $e^{(r-y)\times t}$Where, y = dividend yield expressed in % p.a.
NOTE : Dividend Yield is always given or calculated on a per annum basis.

FFP : WHEN STORAGE COST IS GIVEN : ➦**Equation:** FFP = [CMP +PV of Storage Cost] x e^{rt}

FFP : WHEN STORAGE COST IS EXPRESSED IN %: ➦ **Equation:** FFP = CMP x $e^{(r+s)\times t}$ Where, S = Storage Cost p.a in %

FFP : WHEN CONVENIENCE YIELD IS GIVEN IN % : ➦ It is the % return which is given in case of commodity.
➦ **Equation :** FFP = CMP x $e^{(r-c)\times t}$ Where, C = Convenience Yield

FFP : IN CASE CONVENIENCE YIELD IS EXPRESSED IN AMOUNT : ➦ FFP = [CMP - Convenience Yield] x e^{rt}

WHAT IS THE FUNDA OF FFP ?
➦ **Basic Principle While Calculating Fair Future Price :**
(i) Cost : If Given In ₹ : Add in CMP ; **If Given In % :** Add in rate
(ii) Dividend : If Given In ₹ : Deduct in CMP ; **If Given In % :** Deduct in rate

WHEN ARBITRAGE IS POSSIBLE ?
➦ If Actual Future Price (AFP) is not equal to the Fair Future Price (FFP) arbitrage opportunity will emerge.

HOW TO CALCULATE ARBITRAGE PROFIT ? : IF AFP > FFP
➦ **DECISION :**

CASE	VALUATION	BORROW/INVEST	CASH MARKET	FUTURE MARKET
Actual Future Value > Fair Future Value	Overvalued	Borrow	Buy	Sell

HOW TO CALCULATE ARBITRAGE PROFIT ? IF AFP < FFP
DECISION :

CASE	VALUATION	BORROW/INVEST	CASH MARKET	FUTURE MARKET
Actual Future Value < Fair Future Value	Undervalued	Invest	Sell*	Buy

* here we are assuming that arbitrageur holds one share in cash market.

COST OF CARRY CONCEPT : ➦ Difference between Future Price and Cash Price is known as 'Cost of Carry'.
➦ **Equation :** Cost of Carry = Future Price - Cash Price

INDEX HEDGING POSITION TO BE TAKEN
➦ **If you have taken a long position on any security:** Take short position in Index.
➦ **If you have taken a short position on any security:** Take long position in Index.

INDEX HEDGING VALUE OF POSITION : FOR COMPLETE HEDGING
➦ **Extent Of Hedging or Total Value to be hedged or Value of Perfect Hedge:** Existing Beta Of The Stock x Value Of Transaction or Value Of Exposure or Current Value Of Portfolio which requires hedging

PARTIAL HEDGING : Partial Hedging = $C_V \times E_B \times$ % which you want to hedge.

HEDGING USING INDEX : WHEN BETA IS INCREASED OR DECREASED [CASE OF PARTIAL HEDGE]
➦ **Assumed:** Long Position Security
➦ **Decrease the Beta:** • Sell Nifty • $C_V \times (E_B - D_B)$; ➦ **Increase the Beta:** • Buy Nifty • $C_V \times (D_B - E_B)$

DETERMINATION OF NUMBER OF CONTRACT OF INDEX FUTURE TO BE TAKEN

➦ **Equation:** $\frac{\text{Value Of Total Index Future Position}}{\text{Value Of One Index Future Contract}}$

HEDGE RATIO CALCULATION UNDER FUTURE CONTRACT : ➦**Equation:** Hedge Ratio = $r_{s,f} \times \frac{\sigma_S}{\sigma_f}$

Where, σ_S = S.D of Spot Price ; σ_f = S.D of Future Price ; $r_{s,f}$ = Coefficient of correlation between Spot Price & Future Price

WHEN INITIAL MARGIN AMOUNT IS NOT GIVEN IN QUESTION
➦**Equation :** Daily Absolute Change + 3 x Standard Deviation

MEANING OF CONTANGO/ BACKWARDATION : ➦Basis = Spot Price - Future Price
➦**Basis**: Types

Positive:	Backwardation Inverted Market ;	**When Spot Price > Future Price**
Negative:	Contango Market ;	**When Spot Price < Future Price**
Zero:	Convergence ;	**When Spot Price = Future Price**

NOTE: Basis will approach zero towards the expiry of the contract, i.e. on expiry cash and future price will become equal. This process of the basis approaching to zero is known as convergence.

HOW TO CALCULATE E TO THE POWER OF ANY NUMBER FROM A CALCULATOR

Note : How to solve a^b in calculator ?

Step 1 : 12 times $\sqrt{}$ of a **Step 2** : - 1 **Step 3** : $\times$ b **Step 4** : + 1 **Step 5** : $\times$ = for 12 times

Note : Value of e = 2.71828; **Note :** Value of Log e = .4343

OPTIONS

TYPES OF OPTION CONTRACT: (i) Call Options Contract **(ii)** Put Options Contract

TYPES OF PARTIES ➦**Call Option : (i)** Call Writer / Call Seller **(ii)** Call Holder / Call Buyer
➦**Put Option : (i)** Put Writer / Put Seller **(ii)** Put Holder/Put Buyer

MEANING OF BUYER AND SELLER IN THIS CHAPTER
- **Buyer:** In this chapter, person who buys the Right is known as Buyer.
- **Seller:** In this chapter, person who sells the Right is known as seller.

OPTION PREMIUM / OPTION VALUE / OPTION PRICE
➦When the buyer buys a right (either the right to buy or the right to sell) he has to pay the seller a price. This is called Option Premium.➦Option Premium is cost from the viewpoint of holders(buyers) and income from the viewpoint of writers (sellers).

CALL BUYER V/S CALL SELLER

CALL BUYER	CALL SELLER
Pay Premium	Receive Premium
Purchase Right	Sell Right
Buy Share	Sell Share

PUT BUYER V/S PUT SELLER

PUT BUYER	PUT SELLER
Pay Premium	Receive Premium

Purchase Right	Sell Right
Sell Share	Buy Share

IN / OUT / AT THE MONEY OPTION : CALL

MARKET SCENARIO	IN/OUT/AT
• Cash Market Price as on expiry > Strike Price	In the Money
• Cash Market Price as on expiry < Strike Price	Out Of The Money
• Cash Market Price as on expiry = Strike Price	At The Money

NOTE: The above position is reversed for the Writer of the Option .

IN / OUT / AT THE MONEY OPTION : PUT

MARKET SCENARIO	IN/OUT/AT
• Cash Market Price as on expiry > Strike Price	Out Of The Money
• Cash Market Price as on expiry < Strike Price	In the Money
• Cash Market Price as on expiry = Strike Price	At The Money

NOTE : The above position is reversed for the Writer of the Option .

BREAKDOWN POINT FOR CALL OPTION

➦Breakeven price is the market price at which the option parties neither makes a profit nor incur any losses.
➦**Break-Even Market Price for Buyer and Seller of Call Option:** Exercise Price + Option Premium

BREAKDOWN POINT FOR PUT OPTION

➦Breakeven price is the market price at which the option parties neither makes a profit nor incur any losses.
➦**Break-Even Market Price for Buyer and Seller of Put Option:** Exercise Price - Option Premium

MAXIMUM LOSS AND MAXIMUM PROFIT : FOR CALL

➦Call Buyer maximum loss will be the amount of premium paid.
➦Call Seller maximum profit will be equal to the amount of premium received.
➦Call Buyer maximum profit will be unlimited.
➦Call Seller maximum loss will be unlimited.

MAXIMUM LOSS AND MAXIMUM PROFIT : FOR PUT

➦Put Buyer maximum loss will be the amount of premium paid.
➦Put Seller maximum profit will be equal to the amount of premium received.
➦Put Buyer maximum profit will be equal to Strike Price - Premium Paid.
➦Put Seller maximum loss will be Strike Price - Premium Received.

MEANING OF LONG POSITION AND SHORT POSITION

Long Call means Call Buyer	Long Put means Put Buyer
Short Call means Call Seller	Short Put means Put Seller

POSITION TO BE TAKEN AS PER EXPECTATION : FOR CALL

EXPECTATION	CALL
• If Expected Market Price As On Expiry > EP or If Market will go up	Buy Call
• If Expected Market Price As On Expiry < EP or If Market will go down	Sell Call
• If Expected Market Price As On Expiry = EP or If Market will remain same	No action

POSITION TO BE TAKEN AS PER EXPECTATION : FOR PUT

EXPECTATION	CALL
• If Expected Market Price As On Expiry > EP or If Market will go up	Sell Put
• If Expected Market Price As On Expiry < EP or If Market will go down	Buy Put
• If Expected Market Price As On Expiry = EP or If Market will remain same	No action

PROFIT / LOSS : FOR CALL BUYER

➦ **Profit : When Cash Market Price As On Expiry > Strike Price**

In such case Call Buyer will exercise the Option.

Net Profit = Cash Market Price As On Expiry - Strike Price - Option Premium

➦ **Loss : When Cash Market Price As On Expiry < Strike Price**

In such case Call Buyer will not exercise the option.

His loss is limited to the amount of Call Premium i.e. Loss = Amount Of Premium Paid.

PROFIT / LOSS : FOR CALL SELLER ➦The position of Call Seller will just be opposite of Call Buyer.

PROFIT / LOSS : FOR PUT BUYER

➦ **Profit : When Cash Market Price As On Expiry < Strike Price**

In such case Put Buyer will exercise the option .

Net Profit = Strike Price - Cash Market Price as on expiry - Option Premium

➦**Loss : When Cash Market Price As On Expiry > Strike Price**

In such case Put Buyer will not exercise the Option.

His Loss will be limited to the amount of premium.

PROFIT / LOSS : FOR PUT SELLER ➦The position of Put Seller will just be opposite of Put Buyer.

RULE OF EXERCISING : FOR CALL BUYER

➦IF Cash Market Price as on expiry > Exercise Price Call Buyer Will Exercise

➦IF Cash Market Price as on expiry < Exercise Price Call Buyer Will Not Exercise

RULE OF EXERCISING : FOR CALL SELLER

➦It may be noted that under Option Chapter, Call Seller has no right to exercise. It is the buyer who has a right whether he wants to exercise or not.

RULE OF EXERCISING : FOR PUT BUYER

➦IF Cash Market Price as on expiry > Exercise PricePut Buyer Will Not Exercise

➦IF Cash Market Price as on expiry < Exercise PricePut Buyer Will Exercise

RULE OF EXERCISE : FOR PUT SELLER ➦It may be noted that under Option Chapter, Put Seller has no right to exercise.It is the buyer who has a right whether he wants to exercise or not.

FAIR OP AS ON EXPIRY : FOR CALL

➦**Value(Premium) of Call Option at expiration** :Maximum of (Cash Market Price As On Expiry - Strike Price , 0)

FAIR OP AS ON EXPIRY : FOR PUT

➦**Value(Premium) of Put Option at expiration** :Maximum of (Strike Price - Cash Market Price As On Expiry, 0)

FAIR OP BEFORE EXPIRY (I.E. AT THE TIME OF ENTERING INTO THE CONTRACT) : FOR CALL

➦**Equation** : OP of Call as on today = CMP as on today - PV of EP

FAIR OP BEFORE EXPIRY (I.E. AT THE TIME OF ENTERING INTO THE CONTRACT) : FOR PUT

➦**Equation :** EP x e^{-rt} - CMP as on today = OP of Put as on today

RISK NEUTRAL APPROACH : DETERMINATION OF FAIR OP : FOR CALL

➦**Equation :** OP of Call as on Today:

[Fair OP of call as on Expiry at high price x P + Fair OP of call as on Expiry at low price x (1 - P)] x e^{-rt}

where, P = Probability of High Price ; 1 - P = Probability of Low Price

HOW TO CALCULATE PROBABILITY ?

➦**Alternative 1:** $P = \frac{\text{Spot Price}\,(1+\text{Interest Rate}) - \text{Lower Price}}{\text{Higher Price - Lower Price}}$ ➦**Alternative 2:** $P = \left[\frac{1+r-d}{u-d}\right]$

Where, P_1 and P_2 are the probability of price increase and price decrease.

S = Current Market Price; S_1 = Higher Price ; S_2 = Lower Price

C_1 = Fair/Value/Premium of Call Option as on expiry at Higher Price i.e Max [S_1 - Exercise Price , 0]

C_2 = Fair/Value/Premium of Call Option as on expiry at Lower Price i.e Max [S_2 - Exercise Price, 0]

NOTE: In place of nc (normal compounding) we could have used cc (continuous compounding) as per the requirement of question.

OPTION STRATEGY : STRADDLE ➦**Straddle can be of two types :**

1. **Long Straddle :** • Buying a Call and a Put with the same strike price and the same exipry date.
• In Long straddle the investor will have to pay premium on the call as well as on put option contract.
2. **Short Straddle :** • Selling a Call and a Put with the same strike price and the same exipry date.
• In Short straddle the investor will receive premium on the call as well as on put option contract.
• If question is silent always assume Long Straddle.

HEDGE TECHNIQUE : OP CALCULATION : FOR CALL

Equation : Fair OP of call as on today = Δ x CMP - Borrowing ; where Δ = Delta

HEDGE TECHNIQUE : DELTA CALCULATION : $\Delta = \frac{C_1 - C_2}{S_1 - S_2}$

C_1 = Fair OP of call as on expiry at high price.; C_2 = Fair OP of call as on expiry at low price. ; S_1 = High Price

S_2 = Low Price

HEDGE TECHNIQUE : BORROWING CALCULATION : Amount of Borrowings : $B = \frac{1}{1+r}(\Delta S_2 - C_2)$ or $\frac{1}{1+r}(\Delta S_1 - C_1)$

Where r = rate of interest adjusted for periods

BSM (BLACK & SCHOLES MODEL) : FOR CALL : Equation : OP of call as on today : CMP x $N(d_1)$ - EP x e^{-rt} x $N(d_2)$

HOW TO CALCULATE D1 AND D2 ? $d_1 = \frac{\ln\left[\frac{\text{Current Market Price}}{\text{Exercise Price}}\right] + [r + .50 \times \sigma^2] \times t}{\sigma \times \sqrt{t}}$; $d_2 = d_1 - \sigma \times \sqrt{t}$

Where, σ = Standard Deviation; t = remaining life to expiration of the option in terms of year; r = continuous compounded risk free annual rate of return; ln = Natural Log

BSM : FOR PUT

➦**Equation :** Value/Premium Of Put : Strike Pice x $\left[1-N(d_2)\times e^{-r\times t}\right]$ - Current Market Price x $\left[1-N(d_1)\right]$

➦**NOTE** : We can also use PCPT Model,provided Value of Call is either given or it is already calculated.

BSM : FOR CALL :WHEN DIVIDEND AMOUNT IS GIVEN ➦In this case, we will use Adjusted CMP in place of CMP.
Equation : Adjusted CMP = CMP - PV of Dividend Income
Where Adjusted Current Market Price = Current Market Price - Present Value Of Dividend Income

AMERICAN OPTION AND EUROPEAN OPTION (THEORETICAL CONCEPT)
➦**European Option** : When an option can be exercised only on the expiry date, it is called a European Option.
➦**American Option** : When an option can be exercised on or before the expiry date, it is called an American Option.
NOTE : The concept of EUROPEAN & AMERICAN OPTION is only Theoretical and no practical relevance.
NOTE : PE means European Put; CE means European Call; PA means American Put; CA - means American Call

HOW PROFIT AND LOSS IS SETTLED PRACTICALLY IN OPTION CONTRACT ?
➦**If you pay OP :** (Buyer) **and OP rises :** Profit ; **and OP falls :** Loss
➦**If you receive OP :** (Seller) **and OP rises :** Loss ; **and OP falls :** Profit

COMPONENT OF OP PREMIUM : FOR CALL
➦**Two Components: (i) Intrinsic Value =** Maximum of [CMP Today - EP,0] **(ii) Time Value =** [OP - IV]
COMPONENT OF OP PREMIUM : FOR PUT
➦**Two Components: (i) Intrinsic Value =** Maximum of [EP - CMP Today, 0] **(ii) Time Value =** OP - IV

PCPT (PUT CALL PARITY THEORY) ➦**Equation:** As per PCPT we have :
OP Of Call As On Today + Present Value of Strike Price = OP of Put As On Today + Current Market Price
➦**Condition:** Both Call and Put Option should have same exercise price and same maturity.

DECISION ON THE BASIS OF FAIR AND ACTUAL PREMIUM
If Actual Premium > Fair Premium : It is advisable to take seller position
If Actual Premium < Fair Premium : It is advisable to take buyer position

OPTION GREEKS ➦Greeks are a collection of statistical values.
(i)Delta (Sensitivity to Change in Price of the Underlying Asset) :

➦**It is calculated as :** $\text{Delta } \Delta = \frac{\text{Change in Option Premium}}{\text{Change in Price of Underlying Asset}}$

➦**Delta of a Call Option is always positive and Delta of a Put Option is always negative**

(ii)Gamma (Sensitivity to Change in Delta): ➦**It is calculated as :** $\text{Gamma} = \frac{\text{Change in Delta}}{\text{Change in Price of Underlying Asset}}$

(iii)Theta (Sensitivity to Change in Time to Expiry) : ➦**It is calculated as :** $\text{Theta} = \frac{\text{Change in Option Premium}}{\text{Change in Time to Expiry}}$

(iv)Rho (Sensitivity to Change in Interest Rate) : ➦**It is calculated as :** $\text{Rho} = \frac{\text{Change in Option Premium}}{\text{Change in Rate of Interest}}$

(v)Vega (Sensitivity to Change in Volatility of Asset Price) :

➦**It is calculated as** : $\text{Vega} = \frac{\text{Change in Option Premium}}{\text{Change in Volatility of Price}}$

INTEREST RATE FUTURES

TYPES OF INTEREST RATE FUTURES CONTRACT POSITION?
(a) Long Position in IRF **(b)** Short Position in IRF

HOW TO DECIDE POSITION INTEREST RATE FUTURES ?
Case (I) : if we expect rise in interest rate : Take short position in bond.
Case (II) : If we expect fall in interest rate : Take long position in bond.

CHEAPEST TO DELIVER : ➦**Profit of seller of futures** = (Futures Settlement Price x Conversion factor) - Quoted Spot Price of Deliverable Bond
➦**Loss of Seller of futures** = Quoted Spot Price of deliverable bond - (Futures Settlement Price x Conversion factor)
➦That bond is chosen as CTD bond which **either maximizes the profit or minimizes the loss.**

VALUE AT RISK

HOW TO CALCULATE VAR:(a)Relative VAR (%):Z-Value x SD**(b)Absolute VAR (Amount):**Z- Value xSDxAsset Value

CONVERSION OF VAR FROM ONE CONFIDENCE LEVEL TO ANOTHER
➦If at 99%, VAR is 30290, then calculate Var at 95% and 90%.

Solution: VAR at 95%= $\frac{30290}{2.33} \times 1.64 = 21320$; VAR at 90%= $\frac{30290}{2.33} \times 1.28 = 16640$

Equation conversion: $\text{VAR}_{95\%} = \left[\frac{\text{VAR}_{99\%}}{Z_{99\%}} X Z_{95\%}\right]$

ASSUMPTION OF NUMBER OF DAYS:
Yearly = 250 Days ; Half Yearly = 125 Days ; Monthly = 20 days ; Weekly = 5 days

CONVERSION OF TIME PERIOD : Equation : Daily VAR x $\sqrt{\text{Revised Time Period}}$

HOW TO CONVERT S.D. FROM ONE PERIOD TO ANOTHER? :S.D. of n days = S.D. Daily x $\sqrt{\text{n Days}}$

CALCULATION OF VAR OF PORTFOLIO :Equation : $\sigma_{A+B} = \sqrt{\sigma_A^2 + \sigma_B^2 + 2\sigma_A\sigma_B r_{A,B}}$

CONVERSION OF RETURN FROM ONE PERIOD TO ANOTHER ➦Return p.a. = Return Daily x 250

CALCULATION OF PROBABILITY : **Step 1** First calculate Z value : $Z = \left[\frac{X - \bar{X}}{\sigma}\right]$

Where, X = Profit / Loss amount given in question $\bar{X}$ = Mean; σ = Standard deviation.
Step 2 Now use table to locate probability against the Z value calculated.
Step 3 Thus the probability the company shall be in financial difficulty is 50% - above calculated probability

MONEY MARKET OPERATION

CALCULATION OF YIELD (RETURN)

$$\text{Effective Interest /Yield p.a} = \frac{\text{Face Value - Selling or Issue Price}}{\text{Selling or Issue Price}} \times \frac{\text{12 or 360 or 365}}{\text{Maturity Months or Days}} \times 100$$

EFFECTIVE RATE OF INTEREST : ➦Effective Rate of Interest is the annual equivalent rate of interest calculated in case when interest is compounded more than once in a year.

➦Effective Rate of Interest = $[1 + \frac{r}{m}]^m - 1$, Where m is the number of times interest is compounded every year.

MISCELLANEOUS

PORTFOLIO REBALANCING TECHNIQUE
➦Portfolio Rebalancing means rebalancing our portfolio at a regular interval.
➦**There are three policies of portfolio rebalancing :**
• Buy And Hold Policy, • Constant Mix Policy, and • Constant Proportion Portfolio Insurance Policy (CPPI).

BUY & HOLD STRATEGY : ➦The initial mix that is bought is held. This is basically a 'do nothing' policy. No constant ratio is required to be maintained in this policy.

CONSTANT MIX STRATEGY
➦In this case Ratio of Equity & Debt is to be maintained at each interval and hence portfolio is rebalanced.

PPI STRATEGY [CONSTANT PROPORTION PORTFOLIO INSURANCE]
➦Investment in stocks or equity is to be maintained in the following manner :
m (Portfolio Value – Floor Value) where m stands for multiplier
➦Floor Value & m will be given in question.

MOVING AVERAGE : ➦It is a statistical concept based on averaging technique.
➦**Two popular types are** : **(i)** Simple Moving Average **(ii)** Exponential Moving Average

SIMPLE MOVING AVERAGE (SMA) ➦**Example** : Calculate the Simple moving average, when time period is 3 and the closing prices are 25, 85, 65, 45, 95, 75, 15, 35 **Solution :**
Average A3 = (25 + 85 + 65) / 3 = 58.3333 ; A4 = (85 + 65 + 45) / 3 = 65 ; A5 = (65 + 45 + 95) / 3 = 68.3333 ; A6 = (45 + 95 + 75) / 3 = 71.6667 ; A7 = (95 + 75 + 15) / 3 = 61.6667 ; A8 = (75 + 15 + 35) / 3 = 41.6667

EXPONENTIAL MOVING AVERAGE (EMA)
➦**Equation** :EMA = EMA yesterday + a x [Price Today - EMA Yesterday]
➦Where a = Smoothing Constant / Multiplier. It will be normally given in question .If not given than it can be calculated by using a = 2/(N+1) where N is the number of items in the average.
➦When using the formula to calculate the first point of the EMA, you may notice that there is no value available

to use as the previous EMA.The starting EMA will be given in question directly.

ELASTICITY OF DEMAND ➦The formula for the Price Elasticity of Demand (PEoD) is:
Price Elasticity Of Demand = (% Change in Quantity Demanded)/(% Change in Price)

CUT OFF POINT (BASED ON STATISTICS

1. Find out the "excess return to beta" ratio for each stock under consideration.
2. Rank them from the highest to the lowest.
3. Proceed to calculate Cut Off Point Of Security (Ci) for all the stocks according to the ranked order using the following formula:

$$C_i = \frac{\sigma^2_m \sum_{i=1}^{N} \frac{(R_i - R_f) \times \beta_i}{\sigma^2_{ei}}}{1 + \sigma^2_m \sum_{i=1}^{N} \frac{\beta_i^2}{\sigma^2_{ei}}}$$

Where σ^2_{ei} = variance of a stock's movement that is not associated with the movement of market index i.e. stock's unsystematic risk.
The highest Ci value is taken as the cut-off point i.e. C*.It is the cut off rate.Security with C* value and the securities before this security are to be included in the portfolio and others are rejected.
4. The next step is to calculate weights.For this purpose we have to calculate Zi.

$$Zi = \frac{\beta_i}{\sigma^2_{ei}}\left[\frac{R_i - R_f}{\beta_i} - C^*\right]$$

By using Zi ,weights are calculated.

RUN TEST
Step-1: **First Calculate Mean Value of r & Standard Deviation in the following manner :**

$$\text{Mean Value Of } r = \frac{2n_1n_2}{n_1 + n_2} + 1 \quad ; \text{Standard Deviation} = \sqrt{\frac{2n_1n_2(2n_1n_2 \quad n_1 \quad n_2)}{(n_1 + n_2)^2(n_1 + n_2 \quad 1)}}$$

Here n1 refers to total number of positive changes ;n2 refers to total number of negative changes.
Step-2: Calculate Standard Lower & Upper Limit in the following manner :
The Standard Lower limit = Mean Value Of r - Table Value x SD
The Standard Upper limit = Mean Value Of r + Table Value x SD
Step-3: Decision: If our value of r lies within the standard lower limit and standard upper limit,the randomness is there i.e the market is weakly efficient,otherwise it is not weakly efficient.
Here r refers to number of times sign changes
Note: Table Value or Degree Of freedom should be selected in following manner :n1+n2-1

AUTO CORRELATION TEST : ➦It is a statistical Concept. ➦The Value of auto-correlation range from -1 to +1. ➦**A value between 0 to 1** : Positive Correlation ➦**A value between -1 to 0** : Negative Correlation
Note: Positive: Two variables are moving in some direction. They are related to each other. [It means they are strong form] **Negative:** Two Variables are moving in opposite direction. They are related to each other. [It means they are Weak Form]

➦**How to do Auto Correlation best?** **1.** b (Slope) (Beta) : $b = \frac{\sum XY - n\bar{X}\bar{Y}}{\sum X^2 - n(\bar{X})^2}$ **2.** $\bar{Y} = a + b\bar{X} \Rightarrow a = \bar{Y} - b\bar{X}$

3. r^2 [Coefficient of Determination] : $= \frac{a\sum Y + b\sum XY - n(\bar{Y})^2}{\sum Y^2 - n(\bar{Y})^2}$

H MODEL: ➦ $P_0 = \left[\frac{D_0(1+g_n)}{r-g_n}\right] + \left[\frac{D_0 H_1 (g_c - g_n)}{r-g_n}\right]$

Where: gn = Normal growth rate long run; gc = current growth rate i.e. initial short term growth rate; H1 = Half life growth rate; r = rate of return expected by the investor; D0 = Dividend received in the present year.

STOCK MARKET

HOW INDEX POINTS ARE CALCULATED

➦Computing index of next day requires the index value and the total market capitalization of the previous day and is computed as follows:

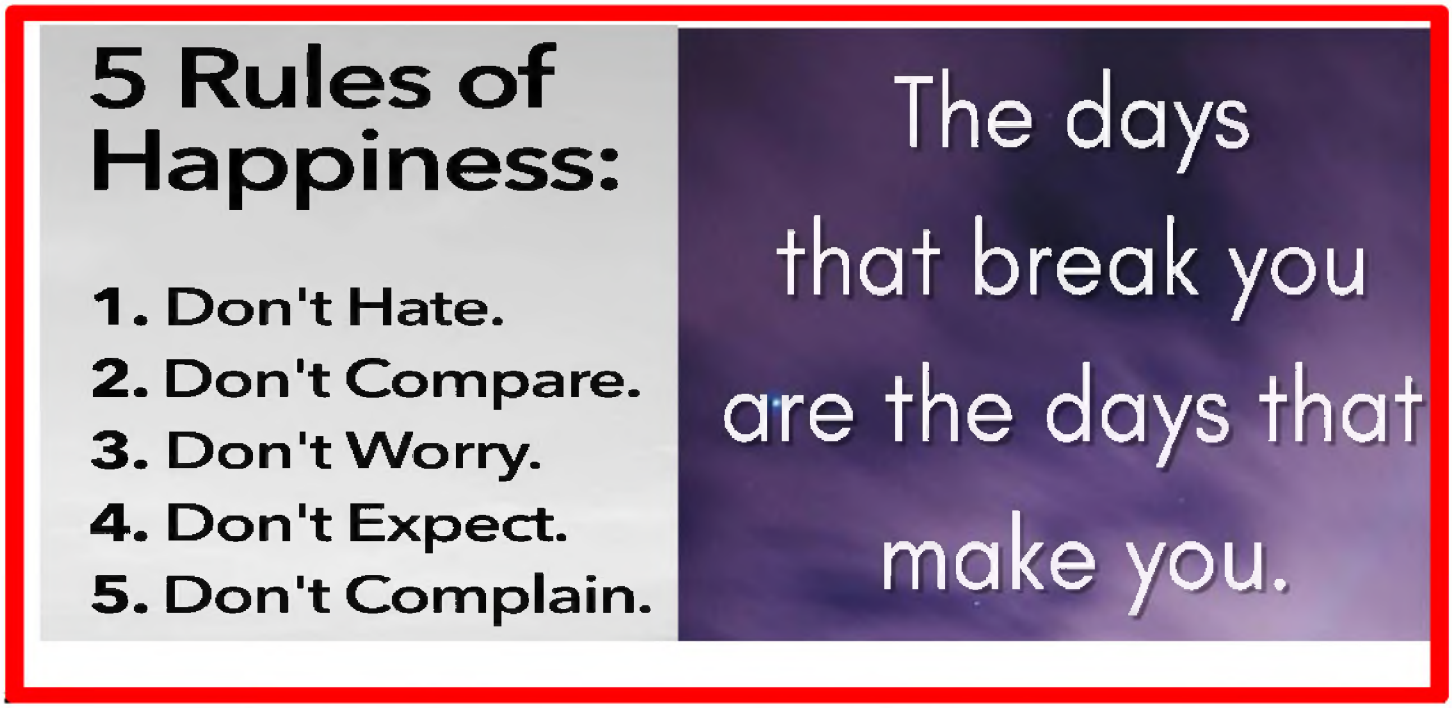
$$\text{Index Value} = \frac{\text{Today's Market Capitalisation}}{\text{Yesterday's Market Capitalisation}} \times \text{Yesterday's Index Point}$$

➦**Example :** If the market capitalization of 10 securities (considered to be the index) as at the beginning of 01.04.2008 amount to Rs. 5 crores is taken as base and equated to 100 and at day end market capitalization amounts to Rs. 5.50 crores, then the index at the end of 01.04.2008 will be 110 .

$$\text{i.e Opening Index} \times \frac{\text{Closing Market Capitalization}}{\text{Opening Market Capitalization}} = 100 \times \frac{5.50}{5.00} = 110$$

If at the end 02.04.2008 , the market capitalization is Rs. 6.30 crores , then the index value would be 126.

$$\text{Opening Index} \times \frac{\text{Closing Market Capitalization}}{\text{Opening Market Capitalization}} = 110 \times \frac{6.30}{5.50} = 126$$



DONOT FORGET TO REFER THEORY BOOK AND MCQ BOOK WHICH IS POSTED IN YOUR BATCH GROUP

FIRST CA FINAL AFM EXAM UNDER NEW ICAI SYLLABUS..100% COVERAGE FROM SIR MATERIAL

RITISH GUPTA, 94 IN AFM, MAY'24

Arise awake and stop not till the goal is reached

The Institute of Chartered Accountants of India
Examination Results, Nov 2017

THANKS TO AADITYA JAIN SIR .I SCORED 100 OUT OF 100 MARKS IN SFM WITH ALL INDIA RANK 3 YOU ARE NO.1 SFM FACULTY OF INDIA.PLZ CHECK MY RESULT AT NRO-0329834;ROLL NO.-426168;ITS A TRIBUTE TO YOUR TEACHING

Roll Number	426168
Name	ADITYA MITTAL
Group I	
Financial Reporting	062
Strategic Financial Management	100
Advanced Auditing and Professional Ethics	059
Corporate and Allied Laws	057
Total	278
Result	PASS
Group II	
Advanced Management Accounting	083
Information Systems Control and Audit	059
Direct Tax Laws	073
Indirect Tax Laws	072
Total	287
Result	PASS
Grand Total	565

IF YOU ARE NOT IN CA FINAL AFM GROUP THEN MAIL US AT classbyaj@gmail.com FOR GROUP LINK