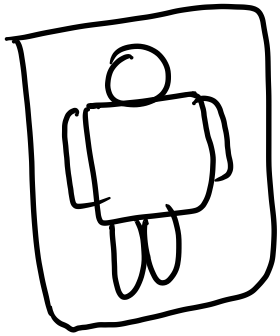
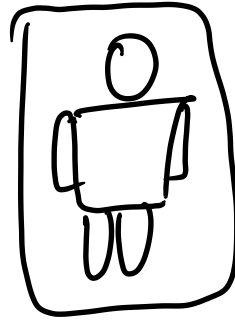


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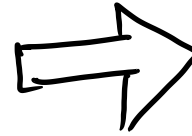


INVESTOR

+



ASSET MANAGEMENT
COMPANY
(AMC)



MUTUAL
FUNDS



MONEY

RISK

RETURN



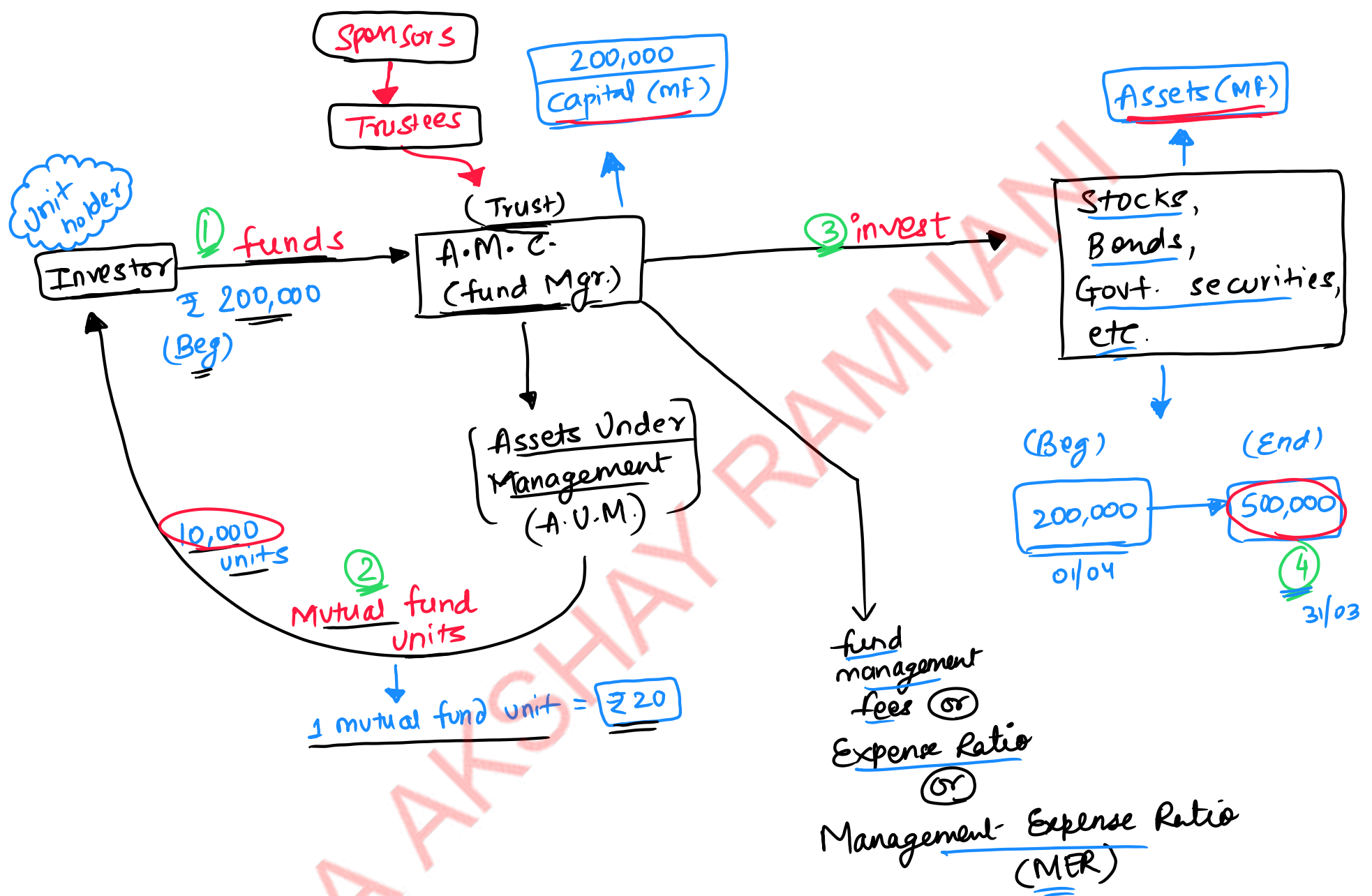
FUND
MANAGERS



KNOWLEDGE

FEE S

TIME



for eg.,
Accrued Expenses (mf) = ₹ 20,000

CN

$$\text{NAV} = \text{Net Asset Value} = \frac{\text{Assets} - \text{Liabilities}}{\text{Number of m.f. units}}$$

(UNIT PRICE)

↓
[इस mutual fund unit
की Price]

↓
₹48/unit
↓

$$= \frac{₹500,000 - ₹20,000}{10,000 \text{ units}}$$

$$= \frac{₹480,000}{10,000} = \boxed{₹48} / \text{unit}$$

Beginning NAV	End NAV
$\frac{₹200,000}{10,000 \text{ units}}$	$\frac{500,000 - 20,000}{10,000}$

= 220

= 248

Appreciation in NAV

Return 6

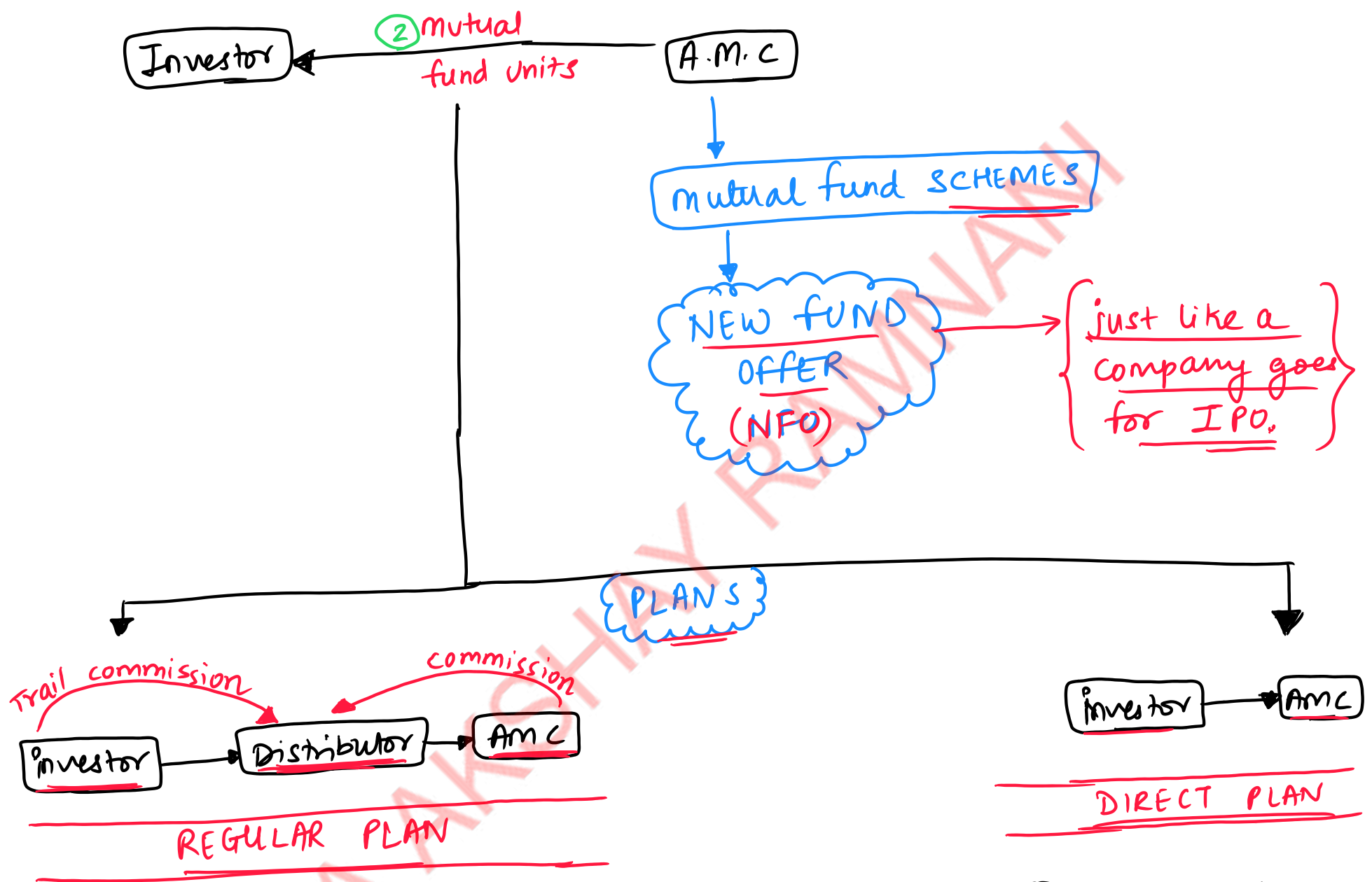
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lump
sum

Systematic
Investment
Plan
(SIP)

auto-debit
facility



① Extra charges

② Low returns

③ High expense ratio

① No extra charges

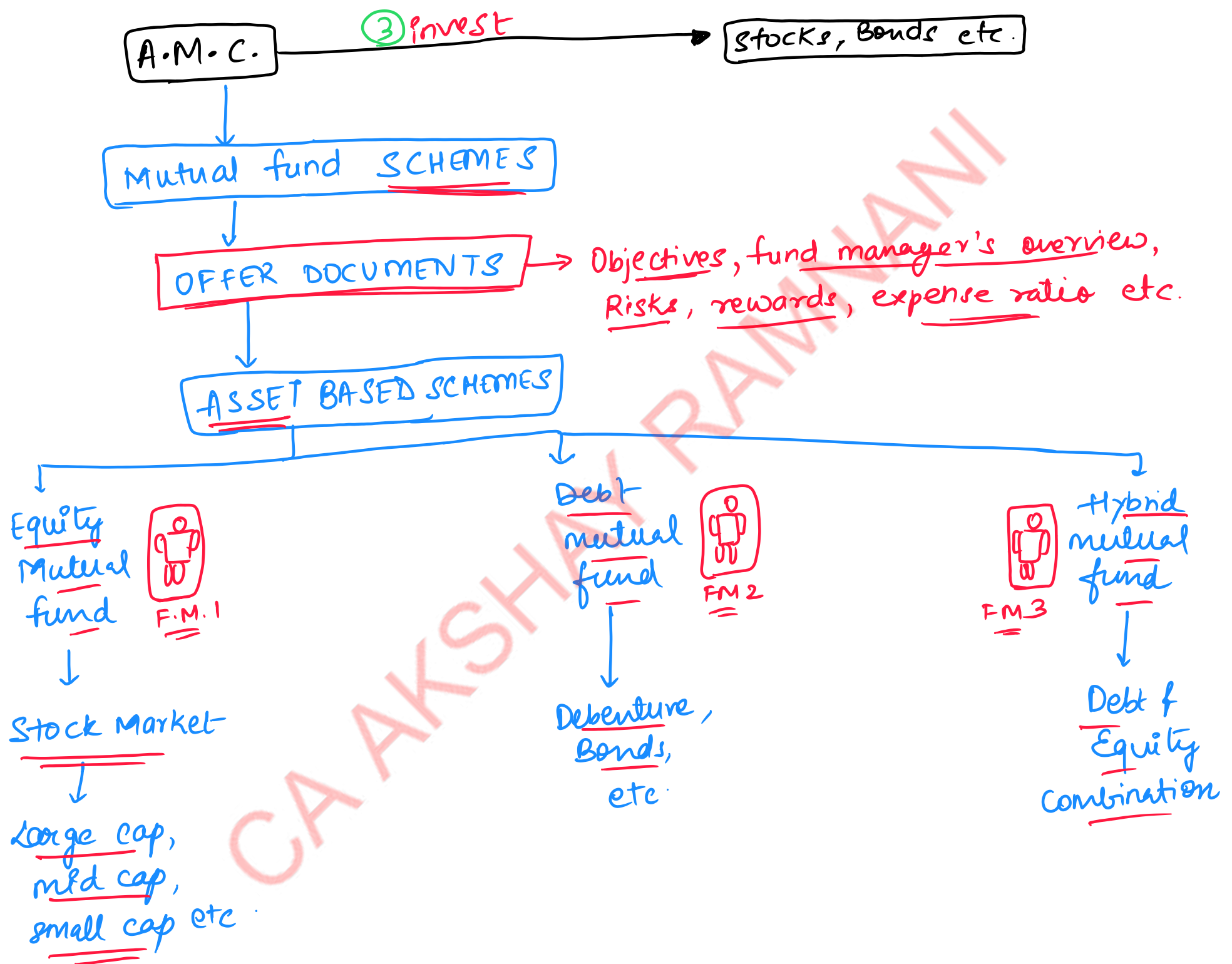
② High returns

③ Low expense ratio

- ③ High experience
- ④ Different NAV
- ⑤ Distributor has knowledge

- ④ Different NAV
- ⑤ Requires knowledge

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STRUCTURE BASED SCHEMES

open ended.

→ Buy / sell anytime

→ No. of mf. units may increase ie

Amc can issue more
mfs at prevailing NAV

→ most mfs are open ended.

close ended.

→ Buy at NFO /
sell at maturity

→ No. of m.f. units are
FIXED.

→ Listed on Stock
Exchange

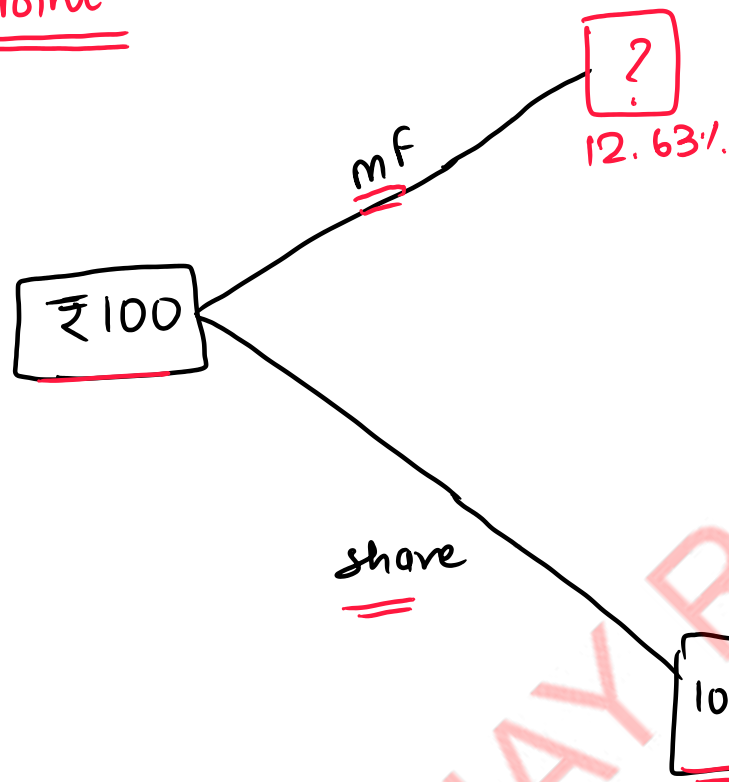
TYPE OF QUESTIONS $\Leftrightarrow$ CONCEPTS

Concept Notebook - CN

- ① Indifference Point
- ② Entry load and Exit load
- ③ Return / Yield
- ④ NAV calculation
- ⑤ Plans $\rightarrow$ Dividend Reinvestment Plan / Bonus Plan / Growth Plan
- ⑥ Dividend Equalisation
- ⑦ Constant Ratio Plan
- ⑧ fund management fees or Expense Ratio

Indifference Point

↓
"neutral"
↓



Initial expenses 6% = $\frac{6}{100} = 0.06$
Annual recurring expenses 2%

CN

$$\text{Indifference Point} = \left[\frac{1}{1 - \text{initial exp (decimal)}} \times \text{share Return (\%)} \right] + \text{Annual Recurring Exp (\%)} \\ \downarrow \\ \text{"should earn rate"}$$

$$= \left[\frac{1}{1 - \underline{0.06}} \times \underline{10\%} \right] + \underline{2\%}$$

$$= \underline{10.63\%} + \underline{2\%} = \boxed{12.63\%}$$

share $\rightarrow$ $\frac{\underline{\text{₹}10}}{\underline{\text{₹}100}} \times 100 = \boxed{\underline{10\%}}$

$$\frac{\underline{\text{₹}10}}{\underline{\text{₹}100 - \text{₹}6}} \Rightarrow \frac{\underline{\text{₹}10}}{\underline{\text{₹}94}} \times 100 = \boxed{\underline{10.63\%}} + 2\% = \boxed{12.63\%}$$

Q1.

Given,

Share return on his own = 16%

Initial Expenses (IE) = 5.5% = 0.055

Annual Recurring Expenses
(ARE) = 1.5%

$$\text{Indifference Point} = \left[\frac{1}{1 - \text{I.E.}} \times \text{Share Return} \right] + \text{ARE}$$

$$= \left[\frac{1}{1 - 0.055} \times 16 \right] + 1.5\%$$

$$= \left(\frac{16}{0.945} \right) + 1.5\%$$

$$= \underline{16.93 + 1.5} = \boxed{\underline{18.43\%}}$$

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Entry and Exit Load.

→ also called sales charges → just like brokerage

→ Entry load = front End load

→ Exit load = Back end load

CN

PUBLIC OFFERING PRICE (POP)

(or)

SALE PRICE

(or)

ISSUE PRICE

$$= \underline{\underline{\text{NAV}}} + \text{Entry load } (\%) \text{ @ NAV} + \text{Dividend Equalisation per unit}$$



CN

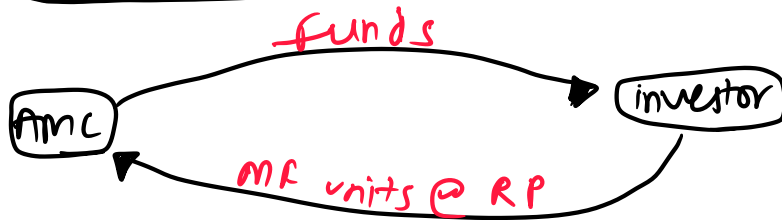
Repurchase Price (or)

Redemption Price (RP)

= NAV

Exit load (%)
@ NAV

Dividend
Equalisation
per
unit



Q1

Given,

$$\text{Unit Price} = \text{NAV} = \underline{10}$$

$$\text{Public Offering Price (POP)} = \underline{10.204}$$

$$\text{Redemption Price (RP)} = \underline{9.80}$$

let front end load = x% & Back end load = y%

$$\boxed{\text{POP} = \text{NAV} + \text{front End load @ NAV}}$$

$$\boxed{10.204} = 10 + 10 \times (x\%)$$

$$10.204 = 10 + 0.10x$$

$$0.10x = 10.204 - 10$$

$$0.10x = \underline{0.204}$$

$$\underline{x} = \frac{0.204}{0.10} = \boxed{\underline{2.04\%}}$$

$$RP = NAV - \text{Back end load @ NAV}$$

$$\boxed{9.80} = \underline{10} - \underline{10} \times \underline{(y\%)}$$

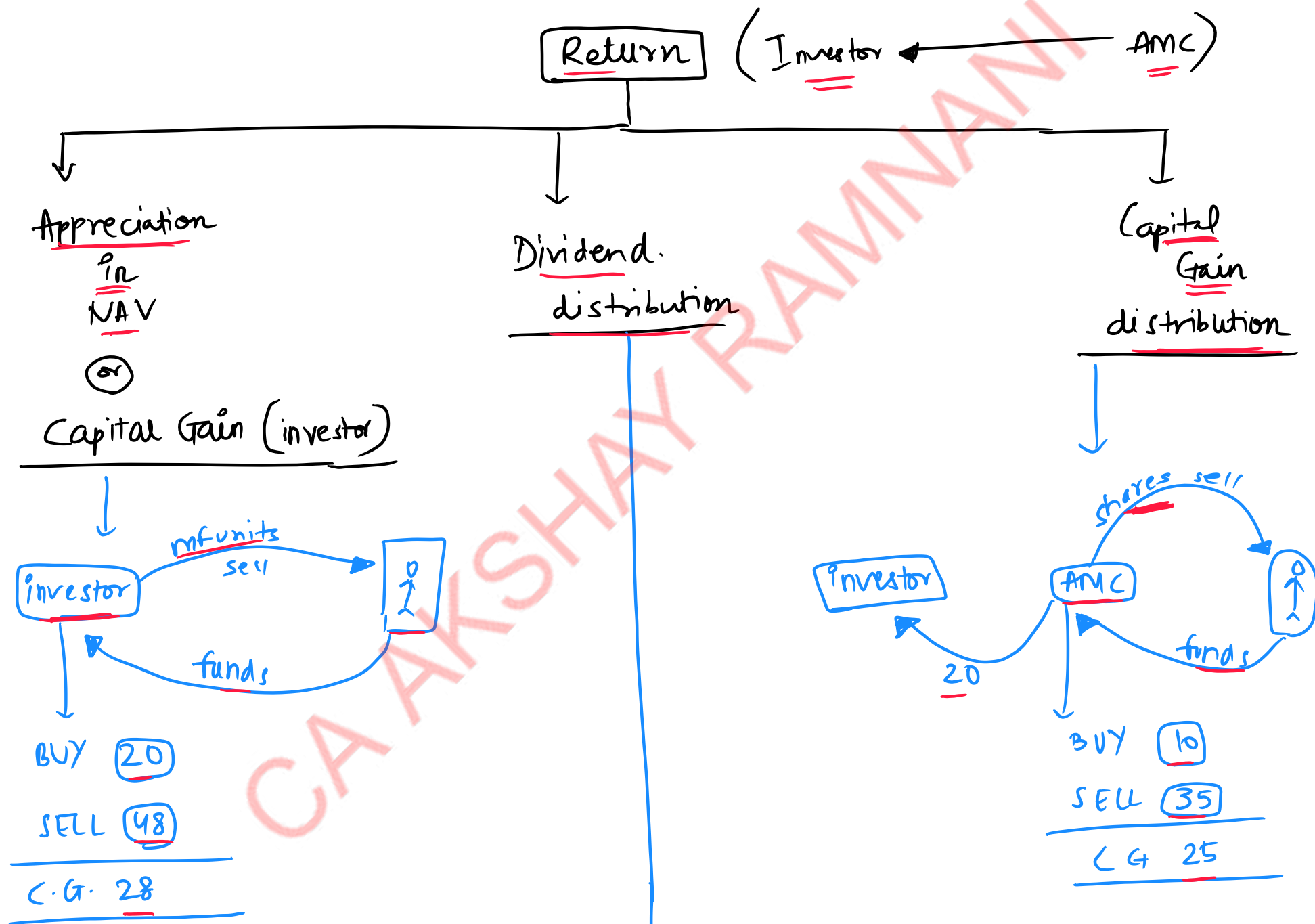
$$\underline{9.80} = 10 - \underline{0.10y}$$

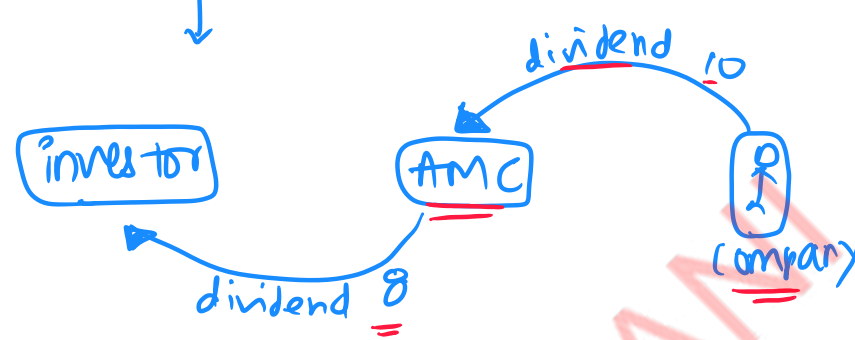
$$0.10y = 10 - \underline{9.80}$$

$$0.10y = \underline{0.20}$$

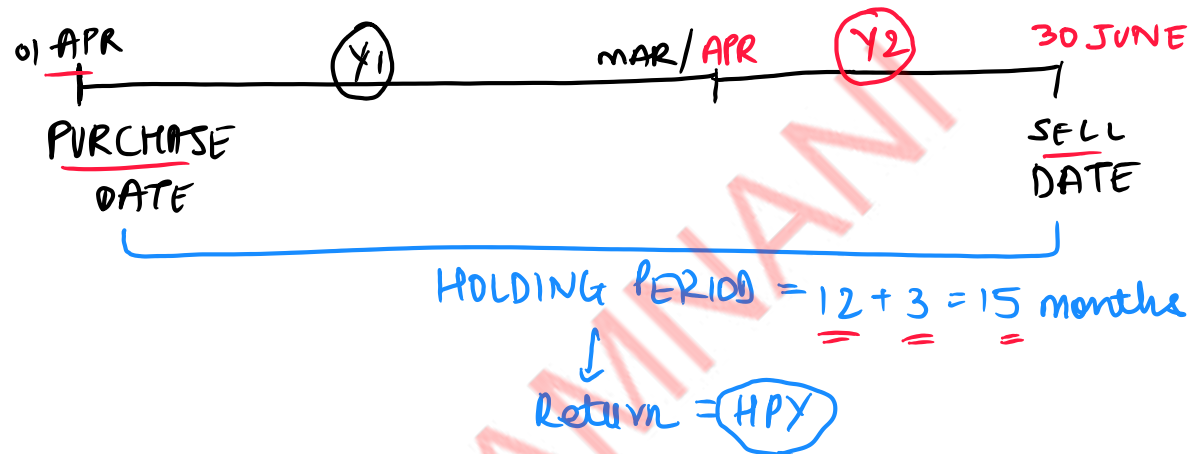
$$y = \frac{0.20}{\underline{0.10}} = \boxed{\underline{2\%}}$$

Return / Yield.





① HOLDING PERIOD YIELD (HPY)



→ HOLDING PERIOD YIELD IS NOT ANNUAL.



$$\text{HPY (\%)} = \frac{\text{Dividend distribution per unit} + \text{Capital Gain distribution per unit} + \text{Appreciation in NAV}}{\text{Beginning NAV}} \times 100$$

(No Load NAV)
(PER UNIT)

Realised Earnings

change in NAV

closing opening/

LN

HPY (%)
(Load NAV)
(PER UNIT)

$$= \frac{\text{Divd. Distb}^n_{P.U.} + \text{Cap. Gain Distb}^n_{P.U.} + \text{RP} - \text{POP}}{\text{Beg. NAV}} \times 100$$

NAV
Sell time NAV
Beginning NAV
Pur. time NAV

HPY (TOTAL BASIS)

BUY 5 MF units @ 10
₹ 50

Beg. value

Beg NAV

BONUS
1:5

Total Bonus units
= $5 \times \frac{1}{5} = 1$

Total dividend. = 10

Total cap. gain = 20

Total units = $5+1 = \underline{6}$

↓
6 mf units @ 15 ^{closing NAV}
→ ₹ 90
Ending value

HPY (%)
(no load NAV)
(TOTAL BASIS)

$$= \frac{\left[\text{Total dividend} + \text{Total capital gain} \right] + \left[\text{Ending value} - \text{Beg. Value} \right]}{\text{Beg. Value}} \times 100$$

$$= \frac{(10 + 20) + (90 - 50)}{50} \times 100$$

$$= \frac{30 + 40}{50} \times 100$$

$$= \frac{70}{50} \times 100 = \underline{140\%}$$

→ Check the data given in question and then decide whether to calculate HPY (per unit) or HPY (total basis)



Annualised Yield, monthly return

Annualised
Yield
(%)

= Effective
Yield

Money
Market
Yield
(MMY)

$$= \frac{HPY \times 12}{n}$$

months
case

or

$$= \frac{HPY \times 365}{n}$$

or

$$= \frac{HPY \times 360}{n}$$

Year
case

Dates
given

$$\text{Monthly Return (\%)} = \frac{\text{annualised yield (\%)}}{12}$$

or

$$\text{monthly return (\%)} = \text{HPY when period} = \underline{\underline{1 \text{ month}}}$$

Q.3

Given,

$$\text{NAV (Beg)} = \underline{16}$$

$$\text{Income distb}^n \text{ per unit} = \underline{0.04}$$

$$\text{Cap. gain distb}^n \text{ per unit} = \underline{0.03}$$

$$\text{NAV (End)} = \underline{16.08}$$

$$\text{monthly return} = \boxed{\text{HPY}} = \frac{\text{Income distb}^n \text{ P.V.} + \text{cap gain distb}^n \text{ P.V.} + \left[\text{NAV (End)} - \text{NAV (Beg)} \right]}{\text{NAV (Beg)}}$$

holding period = 1 month

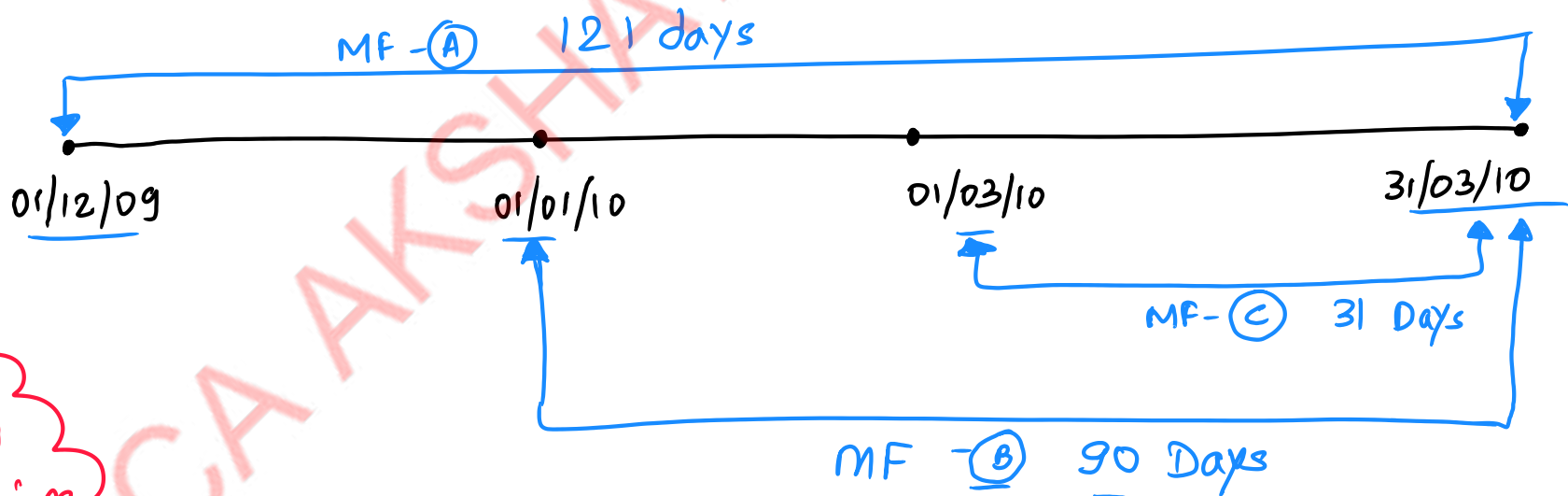
$$\times 100$$

$$= \left[0.04 + 0.03 + (16.08 - 16) \right] \times 100$$

$$= \boxed{0.9375\% \text{ p.m.}}$$

$$\begin{aligned} \text{Annual Return} &= 0.9375\% \times \frac{12 \text{ months}}{1 \text{ month}} \\ &= \boxed{11.25\% \text{ p.a.}} \end{aligned}$$

Q 6.



Both
Dates
inclusive

	MF-(A)	MF-(B)	MF-(C)
① Investment <u>amount</u>	50,000	100,000	50,000
② NAV (Beg)	10.50	10	10
③ Beg. no. of units [①/②]	4761.905	10,000	5000
④ NAV (End)	10.40	10.10	9.80
⑤ Ending Investment value [③ × ④]	49,523.812	101,000	49000
⑥ Dividend amount	950	1500	—
⑦ Holding Period	121	90	31

Effective yield p.a. (TOTAL BASIS)

$$\text{MF-(A)} = \text{H.P.Y.} \times \frac{365}{n}$$

$$= \left\{ \frac{\text{Dividend amt.} + [\text{Ending value} - \text{Beg. value}]}{\text{Beg. value}} \times 100 \right\} \times \frac{365}{121}$$

$$= \left\{ \frac{950 + (49523.812 - 50,000)}{50,000} \times 100 \right\} \times \frac{365}{121}$$

$$= \boxed{2.858\%}$$

MF-(B)

$$= \left\{ \frac{1500 + (101,000 - 100,000)}{100,000} \times 100 \right\} \times \frac{365}{90}$$

$$= 10.139\%$$

MF - (C)

$$= \left\{ \frac{0 + (49000 - 50,000)}{50,000} \times 100 \right\} \times \frac{365}{31}$$

$$= -24\%$$

NAV Calculation

CN

BASIC

"unit Price"

$$\text{NAV} = \frac{\text{Assets} - \text{Liabilities}}{\text{No. of m.f. units}}$$

$\Rightarrow$

$$\frac{\text{Net Assets (BOOK VALUE)}}{\text{No. of m.f. units}}$$

CN

RETURN FORMULA

$$\text{MMY} = \text{HPY} \times \frac{12}{n}$$

NAV
Basis

Total
Basis

$$\frac{\text{Divd} + \text{C.G} + (\text{change in NAV})}{\text{Beg. NAV}} \times 100$$

Q 1

Given,

$$\text{Beg NAV} = 65.78$$

$$\text{Annualised Return} = \text{MMY} = 15\%$$

$$\text{Income dist}^n = 0.50/\text{unit}$$

$$\text{C.G. dist}^n = 0.32/\text{unit}$$

$$n = 1 \text{ month}$$

$$\text{MMY} = \frac{\text{HPY}}{n} \times 12$$

$$15\% = \left[\left\{ \frac{\text{I.D.} + \text{C.G.D.} + (\text{End NAV} - \text{Beg NAV})}{\text{Beg NAV}} \right\} \times 100 \right] \times 12$$

$$15\% = \left\{ \frac{0.50 + 0.32 + (\text{End NAV} - 65.78)}{65.78} \right\} \times 12 \times 100$$

$$\frac{15}{12} \times 65.78 = \left[0.82 - 65.78 + \text{End NAV} \right] \times 100$$

$$82.225 = \left[-64.96 + \text{End NAV} \right] \times 100$$

$$\text{End NAV} = \underline{\underline{65.78}}$$

WHEN THERE IS NO DIVIDEND

CN

Market Value of Investments

Net Assets
(MARKET
VALUE)

① share	② MPS	③ = ① × ② Mkt. Value
✓	✓	✓
✓	✓	✓

Total → ✓

$$\frac{\text{Amount Invested}}{\text{}} \times (1 + \text{HPY})$$

CN

Net Assets (market Value)

(-) accrued expenses

(✓) NIL

(-) other liabilities

(✓) NIL

(+) accrued income

+ ✓ NIL

Net Assets (Book Value)

✓

NAV =

No. of M.F. units

Note: If no data given regarding liabilities or income,
then $\text{Net Assets (market value)} = \text{Net Assets (Book value)}$

Q2

Given,

No. of m. f. units = 10,00,000 units

Accrued expenses = 250,000

Other liabilities = 200,000

Market Value of Investments

<u>Company</u> ①	<u>No. of shares</u> ②	<u>Mkt. Price</u> ③	<u>market value</u> ④ = ② × ③
Nairobi Ltd.	25,000	20	500,000
Dakar Ltd.	35,000	300	1,05,00,000

Senzal Ltd	29,000	380	1,10,20,000
Cairo Ltd	40,000	500	2,00,00,000
Net Assets (MKT. VALUE) TOTAL		=	4,20,20,000

(-) accrued exps

(2,50,000)

(-) other liabilities

(2,00,000)

Net Assets (BOOK Value)

₹ 4,15,70,000

No. of m.f. units

10,00,000 units

$$\text{NAV} = \frac{\text{NA (BV)}}{\text{No. of mf units}}$$

41.57

Q4

Given,

No. of mf units = 6,00,000

mkt. value of Investments =

01/02			
<u>Co.</u>	<u>shares.</u>	<u>Mkt Price</u>	<u>Mkt value</u>
L	20,000	20	400,000
M	30,000	312.40	93,72,000
N	20,000	361.20	72,24,000
P	60,000	505.10	3,03,06,000
N.A. (MV) =			4,73,02,000

N.A. (B.V.) ₹ 4,73,02,000

No. of mf units

600,000 units.

(i)

NAV =

₹ 78.84 /unit

(ii)

Co.
L

shares
20,000

01/02
Mkt Price
20
312.40

Mkt value
400,000
1,18,71,200

20,000 + 8,000

N	20,000	361.20	72,24,000
P	60,000	505.10	3,03,06,000
<u>Cash</u> *	<u>—</u>	<u>—</u>	<u>500,800</u>

N.A. (MV) = 5,03,02,000

N.A. (B.V.)

₹ 5,03,02,000

No. of m.f. units

$$\left[\underline{\underline{6,00,000}} + \frac{30,00,000}{\underline{\underline{78.84}}} \right]$$

6,38,053 units

WN:

Total amount received from Mr. A 30,00,000
(-) amount invested in M Ltd.
[8000 shares $\times$ 312.40] (24,99,200)

Cash at Bank 500,800

(iff)

<u>Co.</u>	<u>share</u>	<u>02/02</u> <u>mkt price</u>	<u>mkt. value</u>
L	20,000	20.50	410,000
M	<u>38,000</u>	360	1,36,80,000
N	20,000	383.10	76,62,000
P	60,000	503.90	3,02,34,000
<u>Cash</u>			<u>500,800</u>
NA (MV)			5,24,86,800
NA. (BV)			₹ 5,24,86,800

No. of mf units

638,053 units

NAV =

₹ 82.26

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WHEN THERE IS DIVIDEND

$$\left[\text{NAV} \times \text{No. of mf units} \right] + \left[\text{Dividend per unit} \times \text{No. of mf units} \right] = \text{Net Assets (Book value)}$$

Net Assets
(market value)

Q8

Given,

	01/07/07	31/03/08	31/03/09	31/03/10
		275 DAYS	1005 DAYS	
units	10,000	10,487.80		11,296.11
NAV	10/-	<u>20.50</u>	<u>25.95</u>	<u>26.75</u>
Dividend	-	10%	20%	-
Annualised Yield	-	153.33%	-	73.52%

NAV
(MMY)

NAV (31/03/08)

$$(\text{NAV} \times \text{No.}) + (\text{Divd. p.u.} \times \text{No.}) = \text{N.A. (B.V.)}$$

$$(\text{NAV} \times 10,000) + \left[\left(\frac{10\% \times 10}{\text{face value}} \right) \times 10,000 \right] = \text{N.A. (M.V.)}$$

$$(\text{NAV} \times 10,000) + [10,000] = \text{Amount invested (1 + HPY)}$$

$$\text{MMY} = \text{HPY} \times \frac{365}{n}$$

$$\text{HPY} = \frac{\text{MMY} \times n}{365}$$

$$(\text{NAV} \times 10,000) + 10,000 = (10 \times 10,000) \left[1 + \left\{ \frac{153.33\% \times 275}{365} \right\} \right]$$

$$(\text{NAV} \times 10,000) + 10,000 = 100,000 \left[1 + \{115\% \} \right]$$

$$NAV \times 10,000 + 10,000 = 100,000 [1 + 1.15]$$

$$NAV \times 10,000 + 10,000 = 215,000$$

$$\boxed{NAV} = \frac{215,000 - 10,000}{10,000} = \boxed{20.50}$$

(31/03/08)

CN ↓

$$\text{No. of m.f. units received due to reinvestment of dividend amount} = \frac{\text{Dividend amount}}{\text{prevailing NAV (31/03/08)}}$$

$$= \frac{\text{₹ } 10,000/-}{20.50}$$

$$= \boxed{487.80} \text{ units}$$

$$\text{Total units} = \underline{10,000} + \underline{487.80} = \boxed{10487.80 \text{ units}}$$

NAV (31/03/09)

$$\begin{aligned}\text{Dividend amount} &= \text{Dividend per unit} \times \text{No.} \\ &= (20\% \times 10) \times \underline{10487.80} \\ &= \boxed{\underline{\text{₹ } 20,975.60}}\end{aligned}$$

This dividend amount is reinvested @ NAV on 31/03/09

$$\begin{array}{l} \text{No. of mf units units received.} \\ \text{due to reinvestment} \end{array} = \frac{\text{Dividend amount}}{\text{NAV (31/03/09)}}$$

$$\underline{11296.11} - \underline{10487.80}$$

808.31 units

$$= \frac{\text{₹ } \underline{20975.60}}{\underline{\text{NAV (31/03/09)}}$$

$$\boxed{\text{NAV (31/03/09)}} = \frac{\text{₹ } 20975.60}{808.31}$$

$$= \boxed{25.95}$$

NAV (31/03/10)

$$(\text{NAV} \times \text{No.}) + (\text{Divd p.v.} \times \text{No.}) = \text{N.A. (B.V.)}$$

$$(\text{NAV} \times 11296.11) + (0) = \text{Amount invested } (1 + \text{HPY})$$

$$\text{NAV} \times 11296.11 = 100,000 \left[1 + \left\{ \text{mmy} \times \frac{n}{365} \right\} \right]$$

$$\text{NAV} \times 11296.11 = 100,000 \left[1 + 73.52\% \times \frac{1005}{365} \right]$$

$$\text{NAV} \times 11296.11 = 100,000 \left[1 + 202.18\% \right]$$

$$\text{NAV} \times 11296.11 = 100,000 \left[1 + 2.0218 \right]$$

$$NAV \times 11296.11 = 302,180$$

$$\begin{array}{l} NAV \\ (31/03/09) \end{array} = 26.75$$

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TABLE APPROACH

① CN

Particulars	₹
Beginning value of Investments $\longrightarrow$ <u>N.A. (B.V)</u> (<u>Beg. NAV</u> $\times$ No. of <u>mf units</u>)	✓
(+) Portfolio appreciation	✓
(+) Issue of fresh units @ <u>POP</u>	✓
(-) units <u>repurchased @ RP</u>	(✓)
(+) Income <u>received</u>	✓
(-) Income <u>distributed</u>	(✓)
closing value of Investments <u>(a)</u>	₹ ✓
<u>closing number</u> of m.f. <u>units</u> (b)	✓ units
<u>closing NAV</u> (a/b)	✓

TABLE APPROACH

CN

2

Particulars	₹
① opening <u>cash balance</u> (<u>amount issued</u> - <u>amount invested</u>)	✓
② Expenses (<u>paid only</u>)	(✓)
③ Amount raised from <u>fresh units</u>	+ ✓
④ Interest <u>income received</u>	+ ✓
⑤ Dividend <u>income received</u>	+ ✓
⑥ Dividend <u>distributed</u>	(✓)
⑦ Capital <u>gain distributed</u>	(✓)
⑧ sale of <u>securities</u>	+ ✓
⑨ Purchase of <u>securities</u>	(✓)
<u>Closing cash balance</u>	✓

Note: If cash balance given in Q, assume closing.

Particulars	₹
① closing <u>cash</u> balance	<u>✓</u>
② market value of Investments [<u>Net Assets</u> (M.V.) <u>at the end</u>]	+ ✓ <u> </u>
③ Income <u>accrued</u>	+ ✓
④ Accrued <u>expenses</u>	<u>(✓)</u>
⑤ other <u>liabilities</u>	<u>(✓)</u>
⑥ Net Assets (<u>Book Value</u>) <u>at the end</u>	₹ ✓
⑦ Number of m.f. units <u>at end</u>	

$$[\text{beginning} + \text{fresh} - \text{Redeemed}]$$

units units

✓ units

⑧ NAV at end [⑥ / ⑦]

✓

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Q 11

→ Cash balance calculation

	(₹ in lakhs)
① Opening <u>Cash Balance</u> [(<u>20 lakh</u> × <u>10</u>) - <u>185 lakh</u>]	15
② Expenses (<u>initial</u>) <u>paid</u>	(12)
③ <u>Sale</u> of securities	+ <u>63</u>
④ <u>Purchase</u> of securities	(<u>56</u>)
⑤ <u>Expenses</u> (<u>fund management</u>) <u>paid</u> [<u>8</u> × (100% - 10%)]	(<u>7.2</u>)
⑥ Dividend received	<u>2</u>
⑦ <u>"Realised earnings" distributed %</u> Dividend <u>2</u>	

(+) Capital gain

$$\frac{(63 - 60)}{3} = 1$$

R.E. $\rightarrow$ 5

$$[5 \times \underline{80\%}]$$

(4)

Closing cash balance

0.80

	₹ in lakhs
① closing cash balance	0.80
② market value of investments at end	198
③ Accrued expenses (fund management) [$8 \times \underline{10\%}$]	<u>(0.80)</u>
Net Assets (book value) at <u>end</u>	<u>198</u>
Closing no. of <u>units</u>	<u>20</u>

NAV

9.90

Annual Rate of Earnings (mmy) →

(NAV Basis)

$$= \left\{ \frac{(\text{Divd. p.u.} + \text{C.G. p.u.}) + (\text{closing NAV} - \text{Beg. NAV})}{\text{Beg. NAV}} \times 100 \right\} \times \frac{12}{n}$$

$$\left\{ \frac{\left(\frac{\text{₹ 4 lakh}}{20 \text{ lakh units}} \right) + (\text{9.90} - \text{10})}{10} \times 100 \right\} \times \frac{12}{1}$$

$$= \frac{0.20 - 0.10}{10} \times 100 \times 12$$

10

$$= \frac{12\%}{10} \text{ p.a.}$$

CA AKSHAY RAMNANI

Q13

→ cash balance calculation

① Opening cash balance
[(10 lakh × 10) - 98 lakh]

② Dividend received

③ Interest received :-

Govt. sec. (8 × 7%)

Unlisted deb. (5 × 9%)

Listed deb. (5 × 10%)

④ Expenses paid

closing cash balance

₹ in lakh	₹ in lakh
	<u>2</u>
	<u>+ 12</u>
<u>0.56</u>	
<u>0.45</u>	
<u>0.50</u>	<u>+ 1.51</u>
	(5)
	<u>10.51</u> output

- ① closing cash balance
- ② market value of investments at end.

Eq. shares $\left[(\underline{50,000} \times \underline{100}) \times \underline{175\%} \right]$

87.50

7% Govt. sec.

8.00

9% Deb. (unlisted)

5.00

10% Deb. (listed) $\left[5 \times 90\% \right]$

4.50

105.00

Net Assets (Book value) at end

115.51

No. of units

10

Closing NAV

11.55

Part 2

₹ in lakhs

Net Assets (B.V.) before dividend

115.51

Net Assets (B.V.)
(-) Dividend distributed
 $[0.80 \times 10]$

(8.00)

Net Assets (B.V.) after dividend

107.51

No. of units

10

closing NAV after dividend

10.75

Q16 (comprehensive)

(₹ in lakhs)

① closing cash balance

2.76

② market value of investments at end :-

→ Listed shares

$$\left[\begin{array}{ccc} 12500 & \longrightarrow & 19975 \\ 40 & \longrightarrow & ? \end{array} \right] \quad \frac{19975}{12500} \times 40 = 63.92$$

→ Listed Bonds & Debentures

7.50

→ Unlisted Bonds & Debentures

$$2.50 \times [100\% - 15\%]$$

2.125

→ other fixed intt. securities

$$\left[\begin{array}{ccc} 100 & \longrightarrow & 96.50 \\ 100 & \longrightarrow & ? \end{array} \right] \quad \frac{96.50}{100} \times 9.75 = 9.409$$

	+ 82.954
③ Accrued dividend	+ 1.95
④ Amount payable on shares (liability)	(13.54)
⑤ Accrued expenses	(1.76)
Net Assets (Book Value)	72.364
No of units	2.75
Closing NAV	26.3142

NOTE:

Expenses paid ₹ 2.24 lakhs have not been considered because cash balance given in Q is ASSUMED TO BE CLOSING.

Q7

	<u>X</u>	<u>Y</u>	<u>Z</u>
① Investment amount	200,000	400,000	200,000
② NAV (Beg.)	10.30	10.10	10
③ No. of mf units [①/②]	19,417.48	39,603.96	20,000

Total NAV = Total Net Assets Value (or) Net Assets (Book Value)
on 31/03/18

	<u>X</u>	<u>Y</u>	<u>Z</u>
① No. of units	19,417.48	39,603.96	20,000
② NAV (<u>End</u>)	10.25	10	10.20
③ Net Assets	199,029.17	396,039.60	204,000

(BOOK value)

$$\begin{aligned}\text{TOTAL NAV} &= 199029.17 + 396,039.60 + 204,000 \\ &= \underline{799,068.77}\end{aligned}$$

Total Yield. $\rightarrow$ Treat X, Y & Z as one mutual fund.

$$\begin{aligned}\text{HPY} \\ (\text{Total basis}) &= \left[\frac{\left(\text{Total Dividend} + \text{Total C.G.} \right) + \left(\text{Ending value} - \text{Beg. value} \right)}{\text{Beg. value}} \right] \\ &\quad \times \\ &\quad \underline{100}\end{aligned}$$

$$\begin{aligned}\text{Total Dividend} &= \overset{x}{6000} + \overset{y}{0} + \overset{z}{5000} \\ &= \boxed{11,000}\end{aligned}$$

$$\text{Ending value} = \boxed{799,068.77}$$

$$\begin{aligned}\text{Beg. value} &= 2,00,000 + 400,000 + 200,000 \\ &= \boxed{800,000}\end{aligned}$$

$$\begin{aligned}\boxed{\text{TOTAL YIELD}} &= \frac{11,000 + (799,068.77 - 800,000)}{800,000} \times 100 \\ &= \boxed{1.2586\%}\end{aligned}$$

Number of days Investment held.

$$\text{Effective yield} = \text{mmy} = \text{HPY} \times \frac{365}{n}$$

$$= \left\{ \frac{(\text{Divd. amt} + \text{C.G. amt}) + (\text{Ending value} - \text{Beg. value})}{\text{Beg. value}} \times 100 \right\} \times \frac{365}{n}$$

MF-X

9.66%

=

$$\frac{6000 + (199029.17 - 200,000)}{200,000} \times 100 \times \frac{365}{n}$$

$$\frac{9.66}{100} =$$

$$\frac{5029.17 \times 365}{200,000 \times n}$$

(31/03/18)

$n = 95$ DAYS

$\Rightarrow$

26/12/17

MF-Y

$\Rightarrow$

31 DAYS

$\Rightarrow$

28/02/18

MF-Z

$\Rightarrow$

68 DAYS

$\Rightarrow$

22/01/18

DIVIDEND REINVESTMENT PLAN

OPTIONS

Dividend
Payout
option

Dividend amount is
credited to your
account

just like dividend
on shares

Dividend
Reinvestment
option

The dividend
amount is calculated
and the amount is
not credited in
your account

The amount is
invested in the same
mutual fund scheme

↓
Holdings of investor remains
same

↓
Holdings of investor
increases because
additional units are
given

⑤ column table :- CN

<u>Date</u>	<u>NAV</u>	<u>Dividend</u> <u>amount</u>	<u>Units</u> <u>Purchased</u>	<u>Cumulative No</u> <u>of units</u>
①	②	③	④	⑤

Q4

Given,

No. of mf units = 200

NAV (Beg) = NAV (purchase) = ₹ 45/unit

Divd. p.u. = ₹ 1

C.G. p.u. = ₹ 2

NAV (End) = ₹ 48/unit

(i) DIVIDEND PAYOUT :-

Return for one year $\rightarrow$ $n = 12$ months

$$\text{MMY}_{\text{(NAV Basis)}} = \left\{ \frac{(\text{Divd. p.u.} + \text{C.G.p.u.}) + [\text{NAV}(\text{end}) - \text{NAV}(\text{Beg})] \times 100}{\text{NAV}(\text{Beg})} \right\} \times \frac{12}{n}$$

$$= \left\{ \frac{1 + 2 + (48 - 45) \times 100}{45} \right\} \times \frac{12}{12}$$

$$= \boxed{13.33\%}$$

(99) DIVIDEND RE-INVESTMENT :-

<u>Date</u>	<u>NAV</u>	<u>Dividend amt</u>	<u>Units purchased</u>	<u>Cum. No. of units</u>
<u>31/12/09</u>	<u>45</u>	—	<u>200</u>	<u>200</u>
<u>2010</u>	<u>46</u> ↑ avg. NAV	$ \begin{aligned} &(1 \times 200) \\ &+ \\ &(2 \times 200) \\ &= \\ &\text{₹ } 600 \end{aligned} $	$ \begin{aligned} &\frac{\text{₹ } 600}{\text{₹ } 46} \\ &= \text{13.04} \end{aligned} $	213.04

Beginning value = 200 units × 45 = ₹ 9000

Ending value = 213.04 units × 48 = ₹ 10,225.92

mmy
(Total Basis)

$$= \left\{ \frac{\left(\text{Divd. amt} + \text{CG amt} \right) + \left(\frac{\text{NAV(End)}}{\text{Ending value} - \text{Beg. value}} \right) \times 100}{\text{Beg value}} \right\} \times \frac{12}{12}$$

$$= \left\{ \frac{(0 + 0) + (10225.92 - 9000) \times 100}{9000} \right\} \times \frac{12}{12}$$

$$= \boxed{13.62\%}$$

PLANS

BONUS PLAN

GROWTH PLAN

additional m.f. units are given
free of cost based on
Bonus Ratio.

Same units
are held
by investor
at beginning &
end.

Eg.

Bonus Ratio = 5 : 4

Existing units = 8 units

Bonus units = $\frac{8 \times \textcircled{5}}{\textcircled{4}} = \underline{10} \text{ units}$

TOTAL units = $8 + 10 = \underline{18 \text{ units}}$

Increase in NAV
leads to growth.

Calculation of Annualised Return / mmy :-

CN

- ① Number of units held at the time of redemption
- ② Annualised Return = MMY formula

Q1

PLAN - A

Dividend Re-investment
Plan



Charu

PLAN - B

Bonus
Plan



Anand

PLAN - C

Growth
Plan



Bacchan

Dividend Reinvestment Plan

PLAN-A

CN

→ ⑤ column Table.

<u>Date</u> ①	<u>NAV</u> ②	<u>Dividend Amt.</u> ③	<u>Units Purchased</u> ④	<u>Cumulative No. of units held.</u> ⑤
------------------	-----------------	---------------------------	-----------------------------	---

✓

At time of Purchase

—

Given in ①.
↓
Amount Invested.
②

same as

④

+

✓ units

Start

Next... ✓

✓
=

[Dividend. (%) Rate/Payout]

X
[face value]
X
⑤

=

₹ ✓

₹ ✓ units
NAV in ②

Previous ⑤ + ④

last value (5)

=
Number of units held at
time of redemption

<u>Date</u>	<u>NAV</u>	<u>Dividend Amount</u> (Cum. Units X Face value of Rs. 10 X Dividend Payout %)	<u>Units</u>	<u>Cumulative Number of Units</u>
<u>01.04.1999</u>	<u>10.00</u>	-	<u>10,000.00</u>	<u>10,000.00</u>
<u>28.07.2003</u>	<u>30.70</u>	<u>20,000.00</u> ^{*1}	<u>651.47</u> ^{*2}	<u>10,651.47</u>
<u>31.03.2004</u>	<u>58.42</u>	<u>74,560.29</u>	<u>1,276.28</u>	<u>11,927.75</u>
<u>30.10.2007</u>	<u>42.18</u>	<u>47,711.00</u>	<u>1,131.13</u>	<u>13,058.88</u>
<u>15.03.2008</u>	<u>46.45</u>	<u>32,647.20</u>	<u>702.85</u>	<u>13,761.73</u>
<u>24.03.2009</u>	<u>48.10</u>	<u>55,046.92</u>	<u>1,144.43</u>	<u>14,906.16</u>

number of units held at redemption = 14906.16 units ←

★1

$$(\underline{20\%} \times \underline{\text{₹}10}) \times \underline{10,000 \text{ units}} = \underline{\text{₹}20,000}$$

★2

$$\boxed{\text{additional units} = \frac{\text{dividend amount}}{\text{prevailing NAV}}} = \frac{\text{₹}20,000 \checkmark}{\text{₹}30.70 \checkmark}$$
$$= \boxed{651.47} \checkmark$$

Bonus Plan

Plan B



$$\text{No. of units held at time of redemption} = \text{original units} \times \left\{ 1 + \text{Bonus Ratio} \right\} \times \left\{ 1 + \text{Bonus Ratio} \right\} \dots$$

$$= \left[\frac{\text{₹}100,000}{\text{₹}10} \right] \times \left[1 + \frac{5}{4} \right] \times \left[1 + \frac{1}{3} \right] \times \left[1 + \frac{1}{4} \right]$$

$$= 10,000 \times \frac{9}{4} \times \frac{4}{3} \times \frac{5}{4}$$

$$= \underline{37,500 \text{ units}}$$

$$\checkmark \times \frac{1}{4}$$

$$= \underline{7500}$$

GROWTH PLAN

PLAN C

CN

$$\text{No. of units held at redemption} = \text{original units} = \underline{10,000 \text{ units}}$$

CA AKSHAY RAMNANI

CN ENDING VALUE

Dividend Reinvestment Plan

Redemption NAV	(✓)
⊖ S.T.T. @ (✓) (%)	(✓)
Red ⁿ NAV net of STT	(✓)
Redemption Proceeds =	
$\text{No. of units held at Red}^n \times \text{Red}^n \text{ NAV net of STT}$	(✓)
⊖ STCG tax	(✓)
Red ⁿ NAV	(✓)
⊖ Last divd. जो मिला, उस की NAV because those divd. reinvested units are STCA	(✓)
STCG/unit	(✓)
Last divd. पर No. of units. मिले	(✓) multiply unit
STCG	(✓)
STCG x Tax %	(✓)
ENDING VALUE	(✓)

Bonus Plan.

Redemption NAV	(✓)
⊖ STT @ (✓) (%)	(✓)
Red ⁿ NAV net of STT	(✓)
Redemption Proceeds =	
$\text{No. of units held at red}^n \times \text{Red}^n \text{ NAV net of STT}$	(✓)
⊖ STCG tax	(✓)
Red ⁿ NAV	(✓)
⊖ Last Bonus पर मिले units की value NAV	NIL
STCG/unit	(✓)
Last Bonus पर मिले units	(✓) multiply
STCG	(✓)
STCG x Tax %	(✓)
ENDING VALUE	(✓)

Growth Plan

Redemption NAV	(✓)
⊖ STT @ (✓) (%)	(✓)
Red ⁿ NAV net of STT	(✓)
Redemption Proceeds =	
$\text{No. of units held at red}^n \times \text{Red}^n \text{ NAV net of STT}$	(✓)
ENDING VALUE	(✓)

Dividend Reinvestment

Red ⁿ NAV	53.75
(-) STT @ 0.20%	(0.1075)

Red ⁿ NAV net of STT	53.6425
---------------------------------	---------

$$\text{Redemption Proceeds} = 53.6425 \times \underbrace{14906.16}_{\text{units}} = 799603.69$$

(-) STCG tax $\frac{10}{100}$

Red ⁿ NAV	53.75
(-) last divd. NAV	(48.10)
STCG/unit	5.65

last divd. units 1144.43 units

STCG	6466/-
------	--------

STCG tax @ 10%

(646.60)

Ending value

798,957.09

Bonus Plan

Redⁿ NAV

22.98

(-) STT @ 0.20%

(0.04596)

Redⁿ NAV net of STT

22.93404

Redⁿ Proceeds =

37500

units

x 22.93404

=

860026.50

(-) STCG tax

Redⁿ NAV

22.98

(-) last Bonus NAV

NIL

STCG/unit

22.98

Bonus units

7500

STCG

172350

STCG Tax @ 10%

(17235)

ENDING VALUE

842,791.50

Growth Plan

Redⁿ NAV

82.07

(-) STP @ 1.20%

(0.16414)

Redⁿ NAV net of
STT

81.90586

Redemption Proceeds $81.90586 \times 10,000 = 8,19,058.60$

ENDING VALUE

819,058.60

Annual Rate of Return %



MMY
(TOTAL
BASIS)

$$= \left[\frac{\text{HPY}}{(\text{TOTAL BASIS})} \right] \times \frac{12}{n}$$

Divd. Reinvestment Plan

$$= \left\{ \frac{(\text{Ending Value} - \text{Beg. Value})}{\text{Beg. Value}} \times 100 \right\} \times \frac{12}{n}$$

$$= \left\{ \frac{798957.09 - 100,000}{100,000} \times 100 \right\} \times \frac{12}{124 \text{ months}}$$

$$= \underline{67.64\%}$$

Bonus Plan

$$= \left\{ \frac{842791.50 - 100,000}{100,000} \times 100 \right\} \times \frac{12}{124}$$

$$= \underline{71.88\%}$$

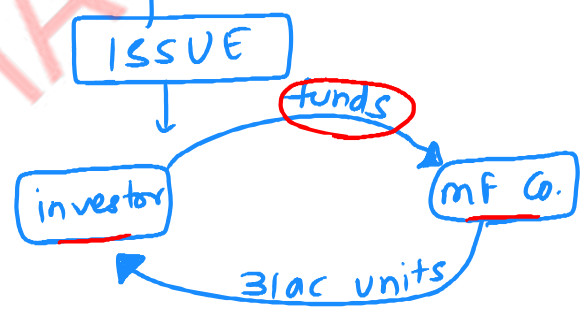
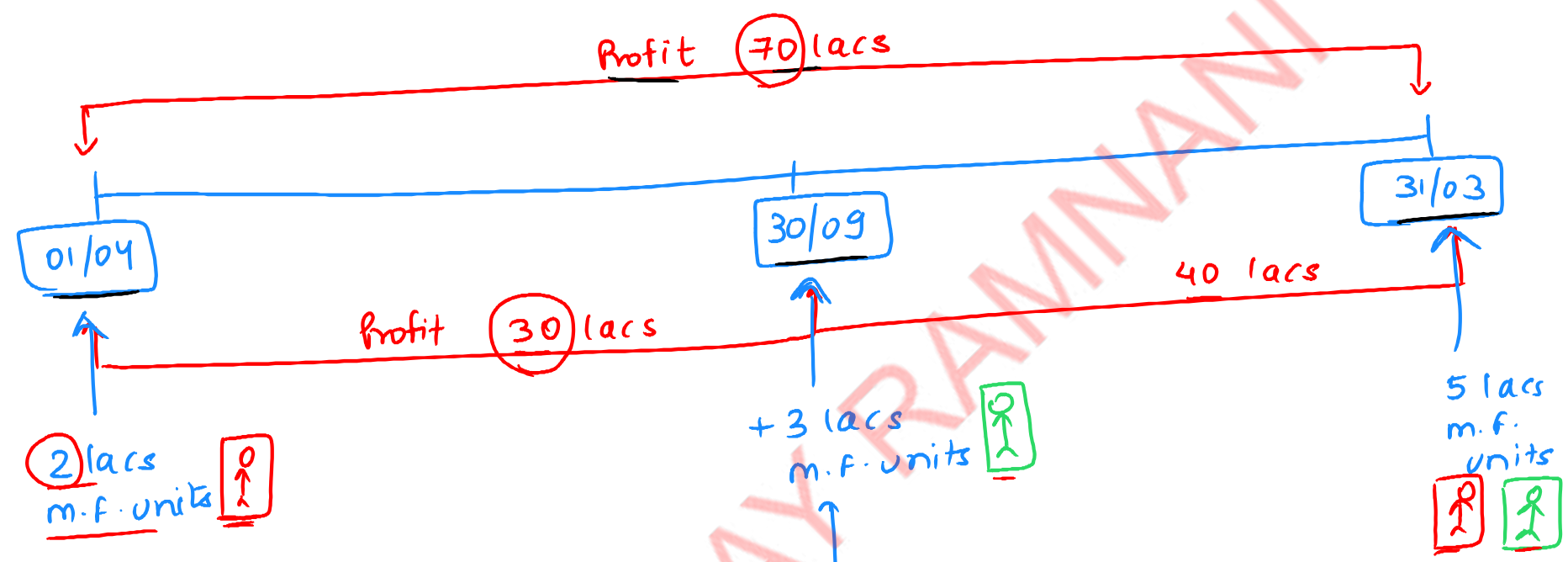
Growth Plan

$$= \left\{ \frac{819058.60 - 100,000}{100,000} \times 100 \right\} \times \frac{12}{124}$$

$$= \boxed{69.59\%}$$

CA AKSHAY RAMNANI

Dividend Equalisation



₹ 70 Lacs

₹ 30 lacs



2 lacs m.f. unit holders



$$\frac{\text{₹ 30 lacs}}{2 \text{ lacs unit}}$$

$$= \text{₹ 15/unit}$$



$$\text{₹ 23/unit}$$



₹ 40 lacs



2 lac
m.f.
unit holders



$$40 \times \frac{2}{2+3}$$

$$40 \times \frac{2}{5}$$

$$16 \text{ lac}$$



$$\frac{\text{₹ 16 lac}}{2}$$

$$\text{₹ 8/unit}$$



3 lac
m.f.
unit holders



$$40 \times \frac{3}{2+3}$$



$$40 \times \frac{3}{5}$$



$$24 \text{ lac}$$



$$\frac{\text{₹ 24 lac}}{3}$$



$$\text{₹ 8/unit}$$

Dividend
distribution

M.F. Company has to declare only one dividend %.

option 1 :- ₹ 23/unit



$23 \times 2 \text{ lac}$

46 lac



23×3

69 lac



8×2

16 lac



8×3

24 lac

option 3 :- 23/unit + collect 15/unit @ issue

M.F. Co.

① funds @ POP



3 lac
unitholders

② 3 lac unit

$$\textcircled{3} \text{ extra money} = (23 - 8 = 15) / \text{unit} \times 3 \text{ lac} = \textcircled{45} \text{ lacs}$$

$$\textcircled{4} \text{ Dividend dist}^n = 23 / \text{unit} \times 3 = \textcircled{69} \text{ lacs}$$

$$\text{Net dividend paid} = \underline{69} \text{ lac} - \underline{45} \text{ lacs} = \boxed{24 \text{ lacs}}$$

to 3 lac unitholders



$$\text{Dividend paid to} = \underline{23} / \text{unit} \times \underline{2} \text{ lac} = \boxed{46 \text{ lacs}}$$

2 lac unitholders



$$\text{TOTAL} \Rightarrow \textcircled{70} \text{ lacs}$$

Note:-

Dividend equalisation is collected @ issue of M.F. units

Dividend equalisation is paid @ repurchase of MF units

CN

$$\text{Dividend Equalisation per unit} = \frac{\text{Income for the period before issue/repurchase}}{\text{Existing NO. of units before issue/repurchase}}$$

$$= \frac{₹ 30 \text{ lacs}}{2 \text{ lac units}}$$

$$= \boxed{₹ 15 / \text{unit}}$$



Income available for distribution ?

Particulars	units	Rate	Amount
Income ①	<u>✓</u>	⊙ calculate	<u>✓</u>
(+) Dividend eq ⁿ <u>collected</u> on issue	+ <u>✓</u>	⊙ prevailing	+ <u>✓</u>
	✓	⊙	✓
Income ②	✓	⊙ calculate	+ <u>✓</u>
	✓	✓	✓
(-) dividend eq ⁿ <u>paid</u> on repurchase	(<u>✓</u>)	⊙ prevailing	(<u>✓</u>)
	✓	⊙	⊙ 100L
	✓	calculate (<u>✓</u>)	(<u>✓</u>)
(-) income distributed	✓	✓	✓

CA AKSHAY RAMNANI

Q1

	<u>APRIL</u>		<u>MAY</u>		<u>JUNE</u>
	<u>01/04</u>				
units	300 L	+6 L	-3 L		-
NAV	18.75	-	-		-
POP	-	NAV + 2% + DE	-		-
RP	-	-	NAV - 2% + DE		-
Dividend distb ⁿ	-	-	-		70%

Income available for distribution

Particulars	Units (lac)	Rate	(lac) Amount
-------------	-------------	------	-----------------

Income of April
 (+) Divd eqⁿ collected on issue

Share	Rate	Amount
<u>300</u>	<u>0.0765</u>	<u>22.9500</u>
<u>+ 6</u>	<u>0.0765</u>	<u>+ 0.4590</u>
<u>306</u>	<u>0.0765</u>	<u>23.4090</u>

Income of May

<u>306</u>	<u>0.1125</u>	<u>34.4250</u>
<u>306</u>	<u>0.1890</u>	<u>57.8340</u>

(-) divd eqⁿ paid on repurchase

<u>(3)</u>	<u>0.1890</u>	<u>(0.5670)</u>
<u>303</u>	<u>0.1890</u>	<u>57.2670</u>

Income of June

<u>303</u>	<u>+ 0.1500</u>	<u>+ 45.4500</u>
<u>303</u>	<u>0.3390</u>	<u>102.7170</u>

(-) Income distributed

<u>303</u>	<u>(0.2373)</u>	<u>(71.9019)</u> 70%
<u>303</u>	<u>0.1017</u>	<u>30.8151</u> 30%

Issue Price = Public Offering Price (POP)

CN

PUBLIC OFFERING PRICE (POP)

(or)

SALE PRICE

(or)

ISSUE PRICE

$$\left. \begin{array}{l} \text{PUBLIC OFFERING PRICE (POP)} \\ \text{(or)} \\ \text{SALE PRICE} \\ \text{(or)} \\ \text{ISSUE PRICE} \end{array} \right\} = \text{NAV} + \text{Entry Load (\%)} @ \text{NAV} + \text{Dividend Equalisation per unit}$$



$$\text{Issue Price} = 18.75 + (2\% \times 18.75) + 0.0765$$

$$= 19.2015$$

CN

Repurchase Price @

Redemption Price (RP)

$$= \text{NAV} \underline{\underline{=}}$$

Exit load (%)
@ NAV

+ Dividend
Equalisation
Per
unit



$$\begin{aligned}\text{Repurchase Price} &= 18.75 - (2\% \times 18.75) + 0.1890 \\ &= 18.564\end{aligned}$$

CA AKSHAY RAMNANI

NAV as on 30th June

	₹ in lacs
Opening value (<u>18.75</u> x <u>300</u> L)	5625.00
(+) Portfolio appreciation	425.47
(+) Issue of fresh units @ <u>POP</u> [<u>6</u> x <u>19.2015</u>]	115.2090
(+) Income received (<u>22.95</u> + <u>34.425</u> + <u>45.45</u>)	102.8250
(-) Units repurchased @ <u>RP</u> [<u>3</u> x <u>18.564</u>]	(55.692)
(-) income distributed	(71.9019)
① closing N.A. (BV)	₹ 6140.9101 L

303 L units

② closing unit (300 + 6 - 3)

NAV as on 30th June [①/②]

₹ 20.267

CA AKSHAY RAMNANI

CONSTANT RATIO PLAN

Buy & Hold strategy

Just like growth plan,
value of Portfolio
changes with change in
NAV

Amount invested in
Growth Plan
Mutual fund.

Constant Ratio strategy

Amount Invested in mutual fund.

fund ①

Conservative
Portfolio

Bonds

fund ②

Aggressive
Portfolio

stocks

Portfolio is fixed.

Portfolio is dynamic i.e.
it keeps on
changing
because
share prices
are
changing

↓
This will
lead to
changes in
NAV

IF NAV changes for a %,
then **REBALANCE**

↓
convert **TOTAL VALUE OF PORTFOLIO**

into equal values of
individual conservative and
aggressive portfolios.

CA AKSHAY RAMNANI

Q1

Buy & Hold
strategy

Amount
invested = ₹ 200,000

NAV
(Beg.) = ₹ 40/unit

Total units = $\frac{200,000}{40}$

= 5000 units

NAV
(end) = ₹ 52/unit

Total
Portfolio
value = 5000 × 52

Constant Ratio
Strategy

₹ 100,000

Conservative
Portfolio
of
Bonds

₹ 100,000

Aggressive
Portfolio

Amount
Invested = ₹ 100,000

NAV (Beg) = ₹ 40/unit

Total
units = $\frac{₹ 100,000}{₹ 40}$

= 2500 units

①
Ending
value

₹ 260,000

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① Aggressive Portfolio NAV	② % change	③ Value of Conservative Portfolio	④ Value of Aggressive Portfolio	⑤ Total value of Constant Ratio Plan	⑥ Rebalancing Action	⑦ Total No. of units in Aggressive Portfolio
40.00	-	1,00,000	1,00,000	2,00,000	-	★1 2500
25.00	★2 (37.5)%	1,00,000	★3 62,500	1,62,500	-	2500
		↪ 81,250	★4 81,250	↪ 1,62,500	★5 Buy 750 units	3250
36.00	+44.00%	81,250	1,17,000	1,98,250	-	3250
		↪ 99,125	↪ 99,125	1,98,250	Sell 496.53 units	2753.47
32.00	(11.11)%	99,125	88,111.04	1,87,236.04	-	2753.47
38.00	+18.75%	99,125	1,04,631.86	2,03,756.86	-	2753.47
		1,01,878.43	1,01,878.43	2,03,756.86	Sell 72.46 units	2681.01
37.00	(2.63)%	1,01,878.50	99,197.37	2,01,075.87	-	2681.01
42.00	+13.51%	1,01,878.50	1,12,602.42	2,14,480.92	-	2681.01
43.00	+2.38%	1,01,878.50	1,15,283.43	2,17,161.93	-	2681.01
50.00	+16.28%	1,01,878.50	1,34,050.50	2,35,929	-	2681.01
		1,17,964.50	1,17,964.50	2,35,929	Sell 321.72 units	2359.29
52.00	+4.00%	1,17,964.50	1,22,683.08	2,40,647.58	-	2359.29

★1 No. of units = $\frac{100,000}{40} = \boxed{2500}$ units

★2 $\frac{40 - 25}{40} \times 100 = -37.50\%$

★3 $25 \times \boxed{2500} = \boxed{₹ 62,500}$

★4 $\frac{162500}{2} = \boxed{₹ 81,250}$

★5

conservative

Aggressive

$$100,000 - 18,750 = 81,250$$

$$62,500 + 18,750 = 81,250$$

$$\frac{\text{Additional units to be purchased}}{= \frac{18,750}{25} = 750 \text{ units}}$$

$$\text{Total Portfolio value @ Ending value (CONSTANT RATIO)} = \boxed{\text{₹ } 240,647.58}$$

$$\text{Total Portfolio value @ Ending value} = \boxed{\text{₹ } 260,000}$$

(BUY & HOLD)

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EXPENSE RATIO

- fund management fees ✓
- Travel costs ✓
- Consultancy fees ✓
- Brokerage costs ✗

CN

$$\text{Expense Ratio (ER)} = \frac{\text{Expenses incurred per unit (₹/unit)}}{\text{Average NAV (₹/unit)}}$$

CN

$$ER = \boxed{\text{Expenses}}$$

Average value of Portfolio

Q1

Given,

$$\text{NAV (Beg)} = 20/-$$

$$\text{NAV (end)} = 24/-$$

$$\text{Average NAV} = \frac{20 + 24}{2} = 22/-$$

$$\text{Expenses per unit} = ₹ 0.50/-$$

$$\text{Expense Ratio} = \frac{0.50}{22} = 0.0227$$

$$\text{Expense Ratio } (\%) = 0.0227 \times 100 = \boxed{2.27\%}$$

Q2

Particulars	<u>(₹ in lacs)</u>		
	(a) <u>29%</u>	(b) <u>4.50%</u>	(c) <u>-1.8%</u>
① Assets Portfolio	<u>2000</u>	2000	2000
② fixed fees @ 0.10%	<u>2</u>	<u>2</u>	<u>2</u>
③ New assets value [<u>①</u> + <u>Return%</u>]	<u>2580</u>	<u>2090</u>	<u>1964</u>
④ Incentive fees applicability [<u>③</u> > <u>2100</u>]	<u>YES</u>	<u>NO</u>	<u>NO</u>
⑤ Incentive fees [{ <u>③</u> - 2100 } × 2%]	<u>9.60</u>	—	—

TOTAL FEES (② + ⑤)	11.60	2	2
--------------------	-------	---	---

CRITERIA FOR EVALUATING THE PERFORMANCE OF M.F. :-

→ Ratios have no unit like % etc. Please avoid any unit.

RATIOS

Sharpe Ratio = $\frac{E(R_p) - R_f}{\sigma_p}$ = $\frac{\text{Return}}{\text{Risk}}$ → Higher the better!

also called,

σ_p → σ_s → SD

Re-word to variability ratio

Compensation for risk undertaken

→ Noble Laureate "William Sharpe" developed this ratio

Here,

$E(R)$ = expected return of a mutual fund scheme @ share

$E(R_p)$ = Expected return of a Portfolio

σ_s = Standard deviation (Risk) of a mutual fund scheme (volatility) @

share

σ_p = standard deviation (Risk) of a Portfolio
(volatility)

R_f = risk free return (i.e. fixed deposit, govt. securities etc.)

Example :

	<u>Fund A</u>	<u>Fund B</u>
Return	<u>30%</u>	<u>25%</u>
<u>Risk (%)</u>	<u>11%</u>	<u>5%</u>
<u>R_f</u>	<u>8%</u>	

$$\text{Sharpe Ratio} = \frac{30 - 8}{11}$$

$$= \boxed{2}$$

$$\frac{25 - 8}{5}$$

$$= \boxed{3.40}$$

↓
Preferred !

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TREYNOR RATIO

$$\frac{E(R_p) - R_f}{\beta_p^*}$$

$$= \frac{\text{Return}}{\text{Risk}}$$

Higher
the
better!

also called,

Reward to volatility ratio

*Beta ÷

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RISK

Volatility of a stock return around Expected Return

Deviation from mean

STANDARD DEVIATION

SD

It is in %

i.e. SD is used to quantify RISK.

also, Variance = $(S.D.)^2$ is also used. It is %²

② factors affecting volatility

Unsystematic factors (micro)

affect only that stock

UNSYSTEMATIC RISK

also called Residual Risk.

systematic factors (macro)

affects all stocks

SYSTEMATIC RISK

BETA → also called RISK FACTOR

or Residual Variance.

if $\beta = 2.50$, then if
market index goes $\uparrow$ by 1%
fund also $\uparrow$ by 2.50%

same direction,

different sensitivity

Treynor Ratio's assumption :-

The portfolio is diversified i.e. an investor invests the money funds in more than one mutual funds. Through this diversification, the unsystematic risk is nullified and systematic risk remains only.

$$\text{Sharpe Ratio } \left[\frac{E(R) - R_f}{\sigma} \right] \rightarrow TR$$

① Takes into account

$$\text{Treynor Ratio } \left[\frac{E(R) - R_f}{\beta} \right] \rightarrow SR$$

① Takes into account

Total Risk = unsystematic + systematic

only systematic.

② More helpful in evaluating sector specific portfolio.

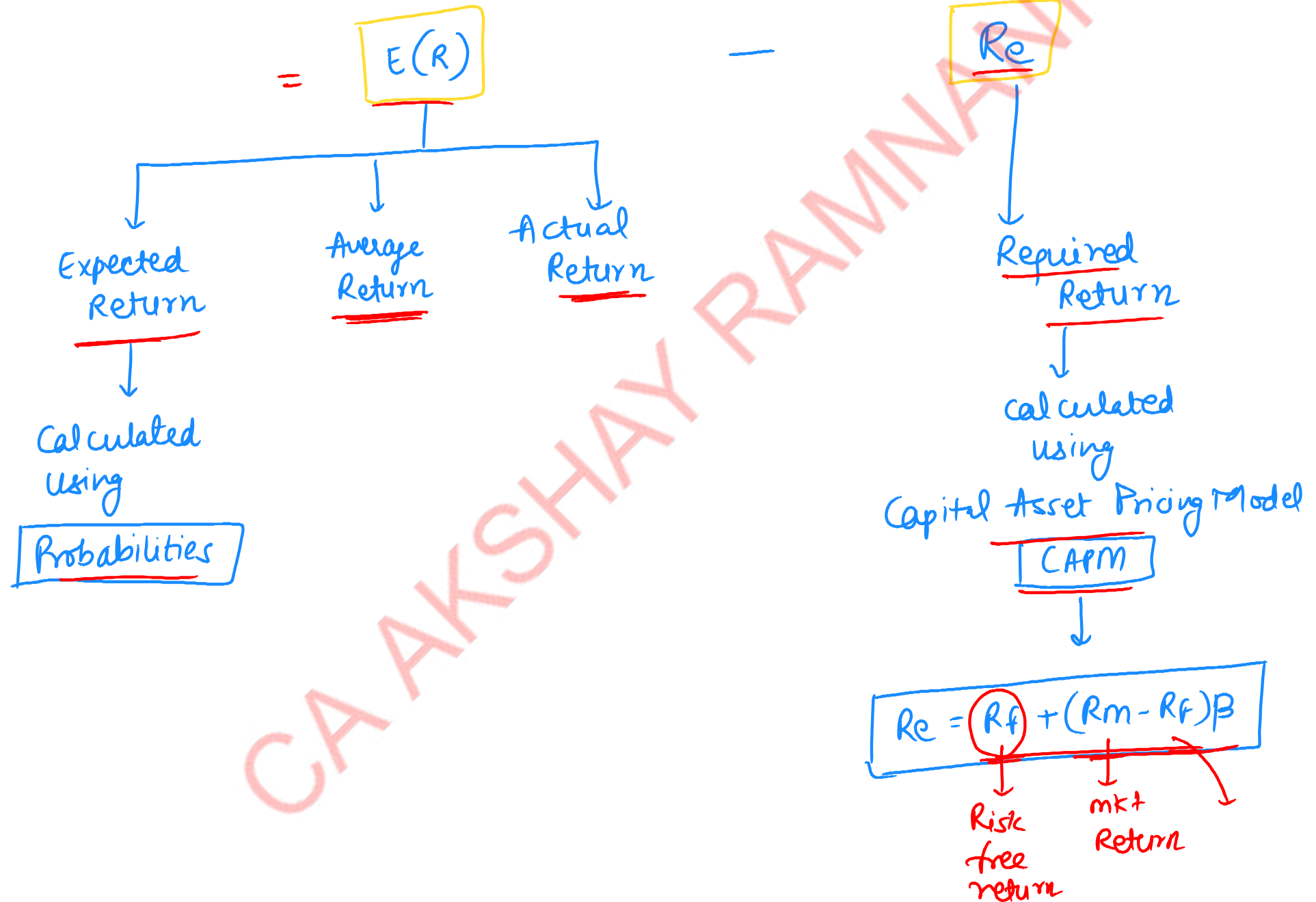
③ Reward to variability.

② more helpful in evaluating diversified portfolio.

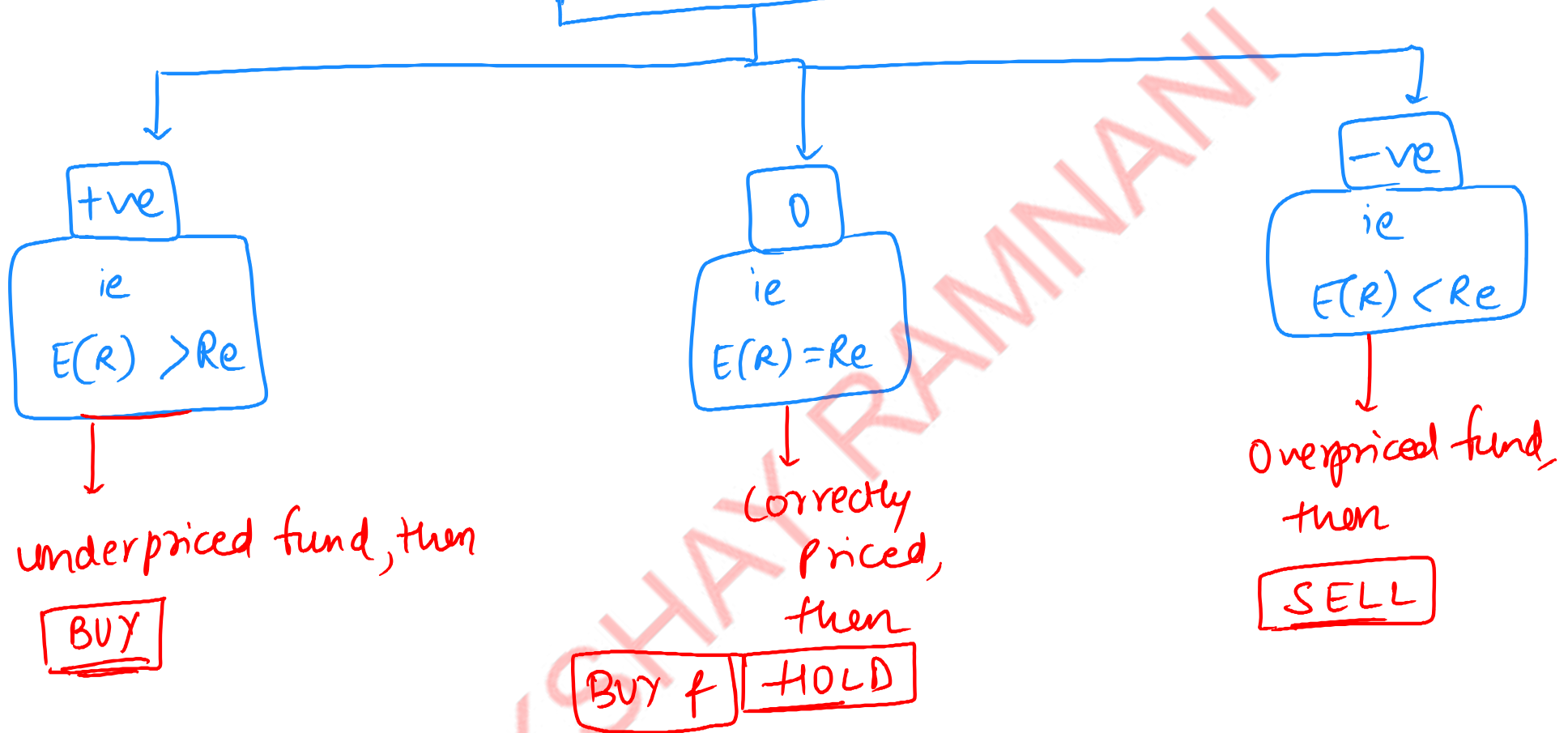
③ Reward to volatility.

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Jensen's Alpha → select अच्छे में से अच्छा !



Jensen's Alpha



Q1

	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>
① Sharpe Ratio					
<u>$E(R_p)$</u>	19	15	15	17.50	17.10
<u>R_f</u>	9	9	9	9	9
(S.D.) <u>σ_p</u>	2.50	2.0	0.80	2.0	1.80
Sharpe Ratio $\frac{E(R) - R_f}{\sigma_p}$	4.00	3.00	7.50	4.25	4.50
RANKING	(IV)	(V)	(I)	(III)	(II)

	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>
② Treynor Ratio					
<u>$E(R)$</u>	19	15	15	17.50	17.10
<u>R_f</u>	9	9	9	9	9
<u>β_p^*</u>	0.800	0.500	0.975	0.750	0.600

correlation(<u>r</u>) <u>σ_m</u> <u>σ_p</u> CN $\beta_p = r \cdot \frac{\sigma_p}{\sigma_m}$ Treynor Ratio $\frac{E(R) - R_f}{\beta_p}$ RANKING	0.840	0.540	0.170	0.150	0.150
	1.20	1.20	1.20	1.20	1.20
	2.50	2.00	0.80	2.00	1.80
	<u>1.75</u>	<u>0.90</u>	<u>0.65</u>	<u>1.25</u>	<u>0.90</u>
	5.71	6.67	9.23	6.80	9.00
	<u>✓</u>	IV	<u>I</u>	III	II

③ Jensen's Alpha	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>
<u>E(R)</u>	19	15	15	17.50	17.10

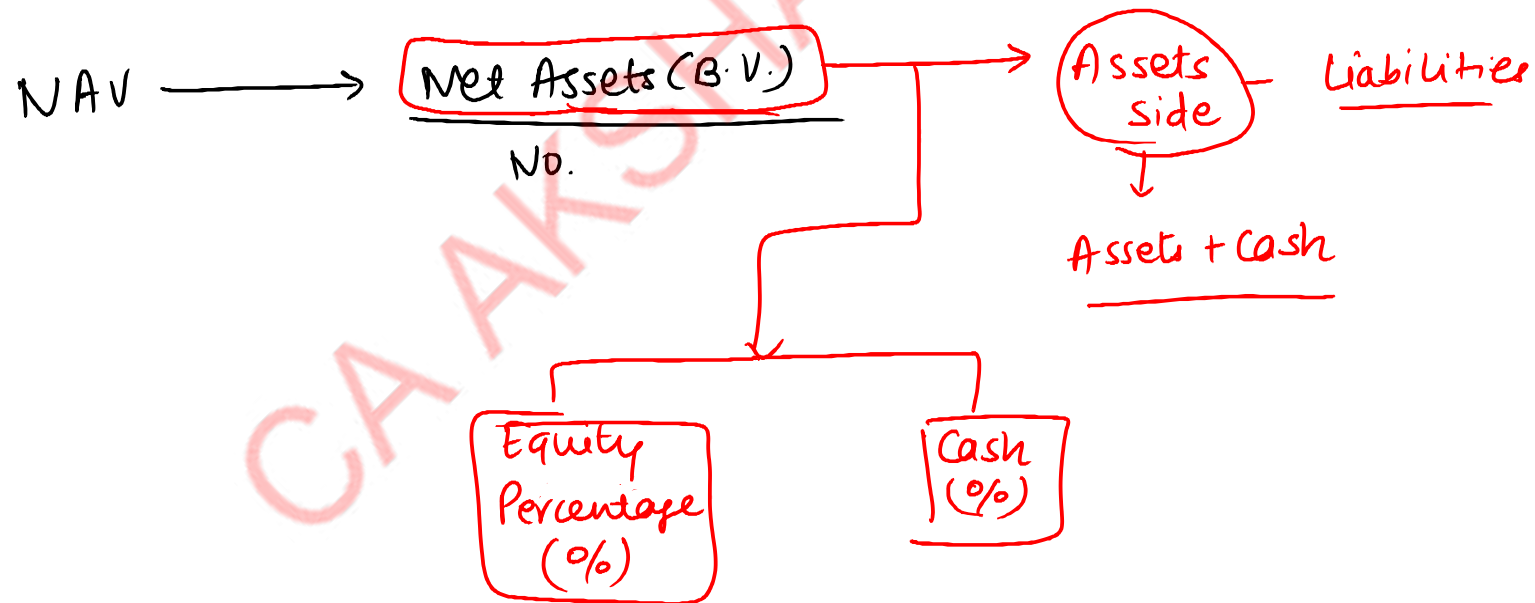
<u>Re</u>					
<u>Rf</u>	9	9	9	9	9
<u>Rm</u>	14	14	14	14	14
<u>β_p</u>	1.75	0.90	0.65	1.25	0.90
<u>$R_e = R_f + (R_m - R_f) \beta$</u>	17.75	13.50	12.25	16.25	13.50
Tensen's Alpha = $E(R) - R_e$	<u>1.25</u>	<u>1.50</u>	<u>2.75</u>	<u>2.25</u>	<u>3.60</u>
RANKING	<u>✓</u>	IV	II	III	<u>I</u>

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Q2

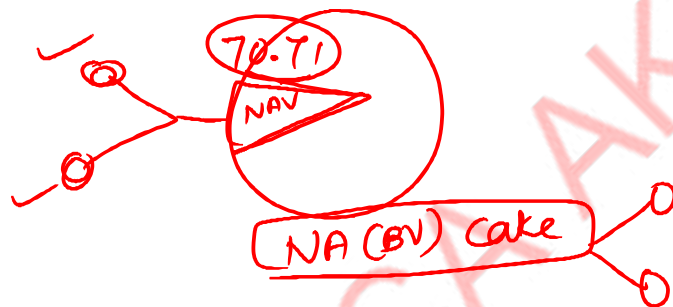


Basic B/S			
<u>Liabilities</u>		<u>Assets</u>	
<u>Capital</u>	xx	<u>Assets</u>	xx
<u>Liab.</u>	xx	<u>Cash</u>	xx
	✓		✓



<u>Liabilities</u>		<u>Assets</u>	
Capital	95/-	Assets	100/-
Liabilities	10/-	Cash	5/-
	105		105

NAV → Net Assets (BV) → $(100 + 5) - 10 = 95$



5
Cash
↓

$$\frac{5}{95} \times 100 = 5.26\%$$

90?

"Equity"

$$\frac{90}{95} \times 100 = 94.74\%$$

Answer:-

Particulars	① m.f.	② m.f.
① NAV (31.12.14)	70.71	62.50
② Equity balance (%)	<u>99%</u>	<u>96%</u>
③ Equity balance [① × ②]	₹ 70 /unit	₹ 60 /unit
④ Cash Balance [① - ③]	₹ 0.71 /unit	₹ 2.50 /unit

Particulars	① mf	② mf.
① Sharpe Ratio $\left[\frac{E(R) - R_f}{\sigma} \right]$	2	3.30
② σ (S.D.)	11.25	5
③ $\sigma_{\text{total}} [② \times ①]$		16.50

<u>③</u> $E(R) - R_f$ [② x ①]	<u>22.50</u>	<u>18.50</u>
<u>④</u> Treynor Ratio $\left[\frac{E(R) - R_f}{\beta} \right]$	15	15
<u>⑤</u> Beta [$\frac{③}{④}$]	1.50	1.10
<u>Revised Equity Value :-</u> (%)	if share mkt ↓ by 1% Equity (share price) ↓ by 1.50% ⇓ mkt ↓ 5% Equity ↓ 5×1.50 = 7.50%	if share mkt ↓ 1% Equity (share price) ↓ 1.10% ⇓ mkt ↓ 5% Equity ↓ 5×1.10 = 5.50%

Revised Cash Balance :-

① Cash Balance

② Annual average cost (imp)

③ Monthly average cost $\left[\frac{②}{12m} \right]$

④ Revised Cash Balance
after one month

$[① - ③]$

①	②
₹ <u>0.71</u> /unit	₹ <u>2.50</u> /unit
₹ 3/unit	₹ 3/unit
₹ <u>0.25</u> /unit	₹ <u>0.25</u> /unit
₹ 0.46 /unit	₹ 2.25 /unit

NAV after one month :-

Particulars	(J)	(K)
① Revised Cash Balance	<u>0.46</u>	<u>2.25</u>
② Equity Value (original)	70	60
③ Diminution (%)	7.50%	5.50%
④ Revised Equity value	64.75	56.70
⑤ NAV [① + ④]	₹ 65.21 /unit	₹ 58.95 /unit

DONE

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CONSTANT PROPORTION PORTFOLIO

Portfolio Value $\rightarrow$ [Total Amount available is invested in]

Conservative Portfolio

Risk free securities

$\beta = 0$

Aggressive Portfolio

shares

$\beta = +ve$

Market $\uparrow \Rightarrow$ shares $\uparrow$

Market $\downarrow \Rightarrow$ shares $\downarrow$

Index: $\uparrow \Rightarrow$ shares $\uparrow$

SENSEX
NIFTY

Index
SENSEX
NIFTY

↓ ⇒ shares ↓

PORTFOLIO VALUE

Balancing
Figure

⇓

Remaining Amount

=

Amount Invested
in Risk free
securities

Amount
invested
in
shares

$$= \text{multiplier} \times \left\{ \text{Portfolio Value} - \text{Floor Value} \right\}$$

$$\text{Floor Value} = \text{Portfolio Value} - \text{maximum decline possible in shares (\%)} \downarrow$$

maximum decline
possible in market
(%)

(1/2)

↓

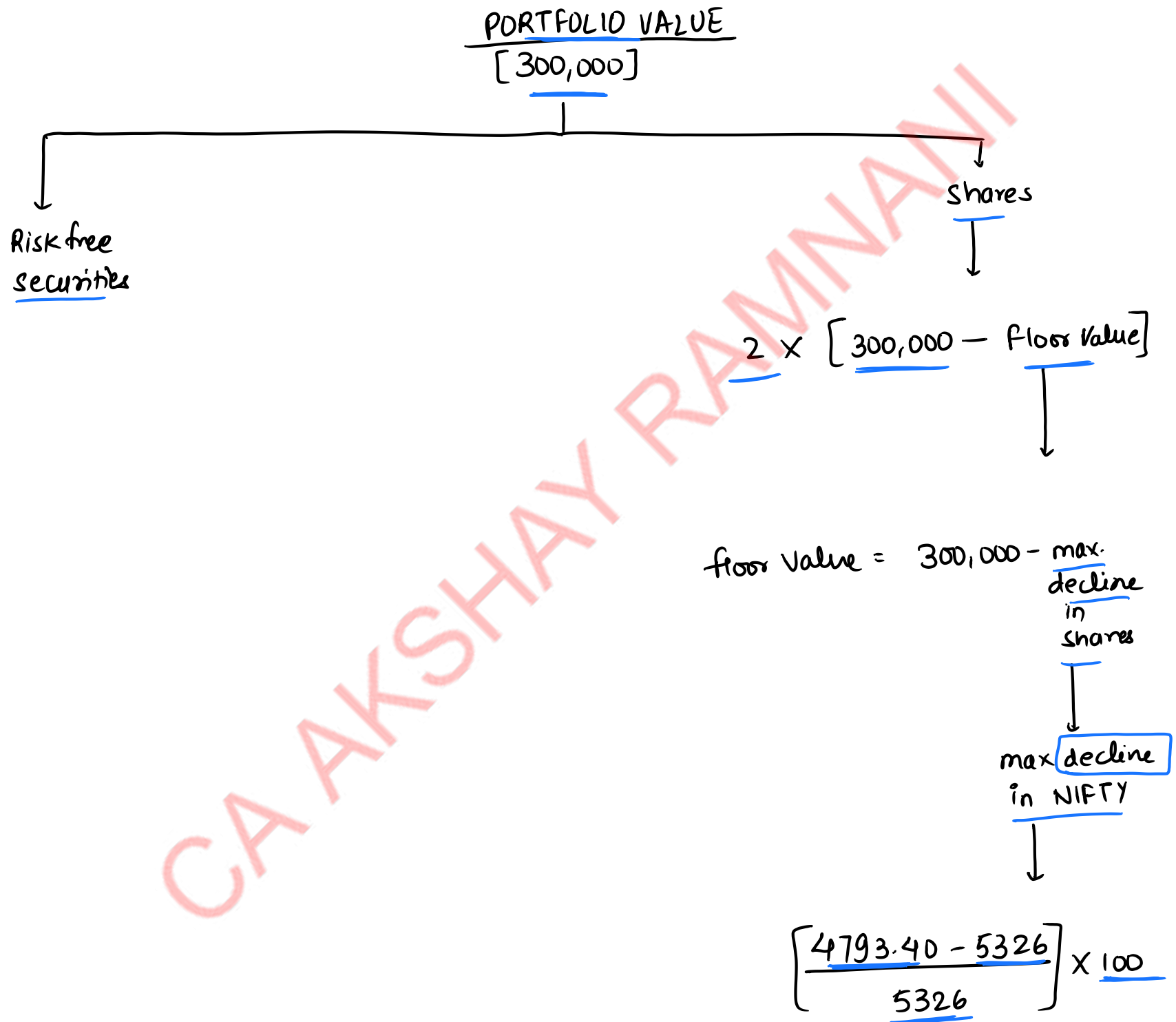
minimum value in future

$$\left\{ \frac{\text{market}_t - \text{market}_0}{\text{market}_0} \right\} \times 100$$

(-t=0)

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Question :-

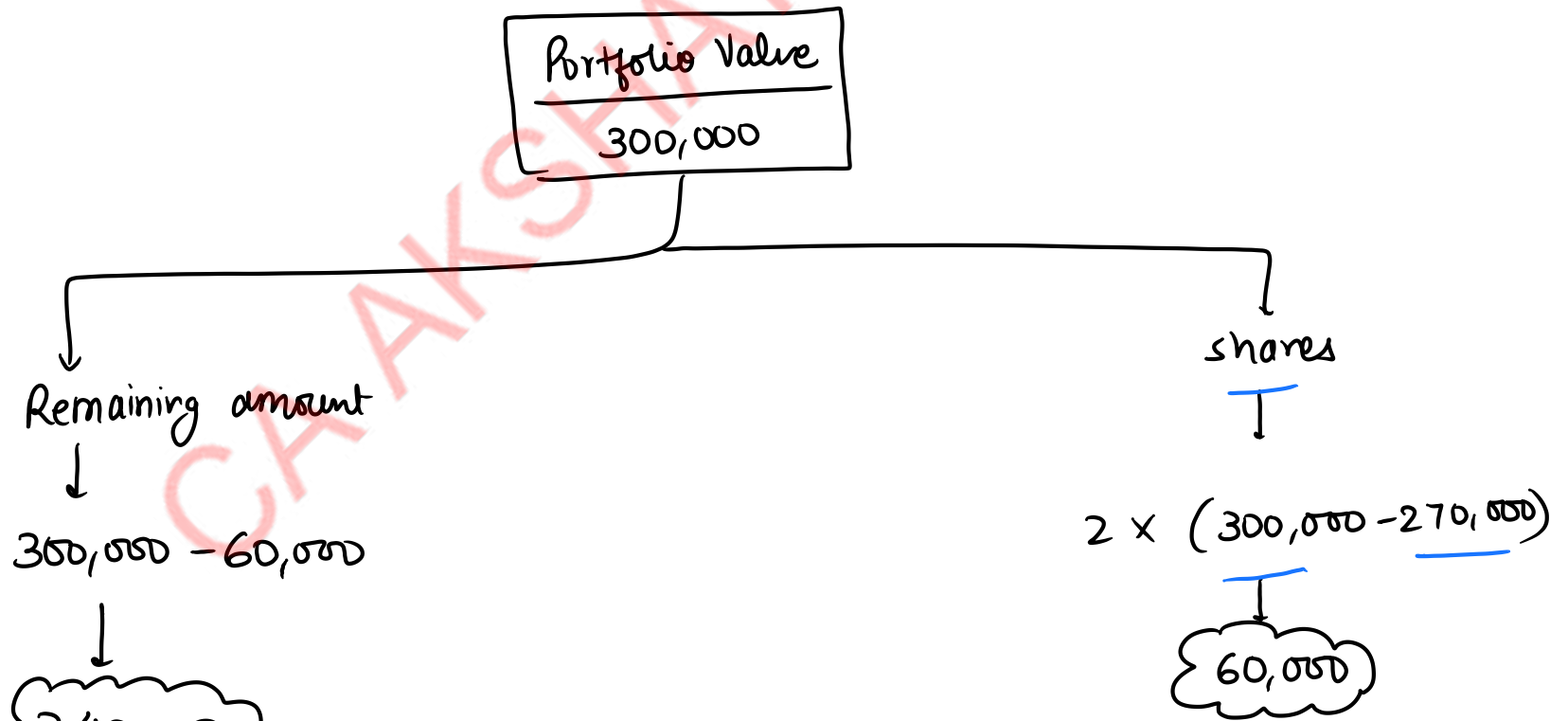


↓
10%

$$\text{floor value} = \underline{300,000} - [\underline{10\% \text{ of } 300,000}]$$

$$= \underline{300,000} - \underline{30,000}$$

$$= \underline{270,000}$$



240,000
↑
Risk free securities

subject to
change

{Portfolio Value}

[Before Rebalancing]					[REQUIRED USING FORMULA] [After Rebalancing]		
Day	NIFTY Value	% Change	Equity Value (Aggressive Portfolio)	Risk Free Securities Value (Conservative Portfolio)	Total value of Constant Proportion Portfolio	Equity Value (Aggressive Portfolio)	Any Rebalancing Action?
0	5326.00	0.00	60000	240000	300000	60000	No
10th Day	5122.96	-3.81%	57713 [60,000 - 3.81%]	240000	297713	55426 $2 \times (300,000 - 270,000)$	Yes
			-2287	+ 2287	0		
			55426	242287	297713		
20th Day	5539.04	+ 8.12%	59928 [55426 + 8.12%]	242287	302215	64430 $2 \times (302215 - 270,000)$	Yes
			+ 4502	-4502	0		
			64430	237785	302215		



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