

Mutual fund [8 to 16]

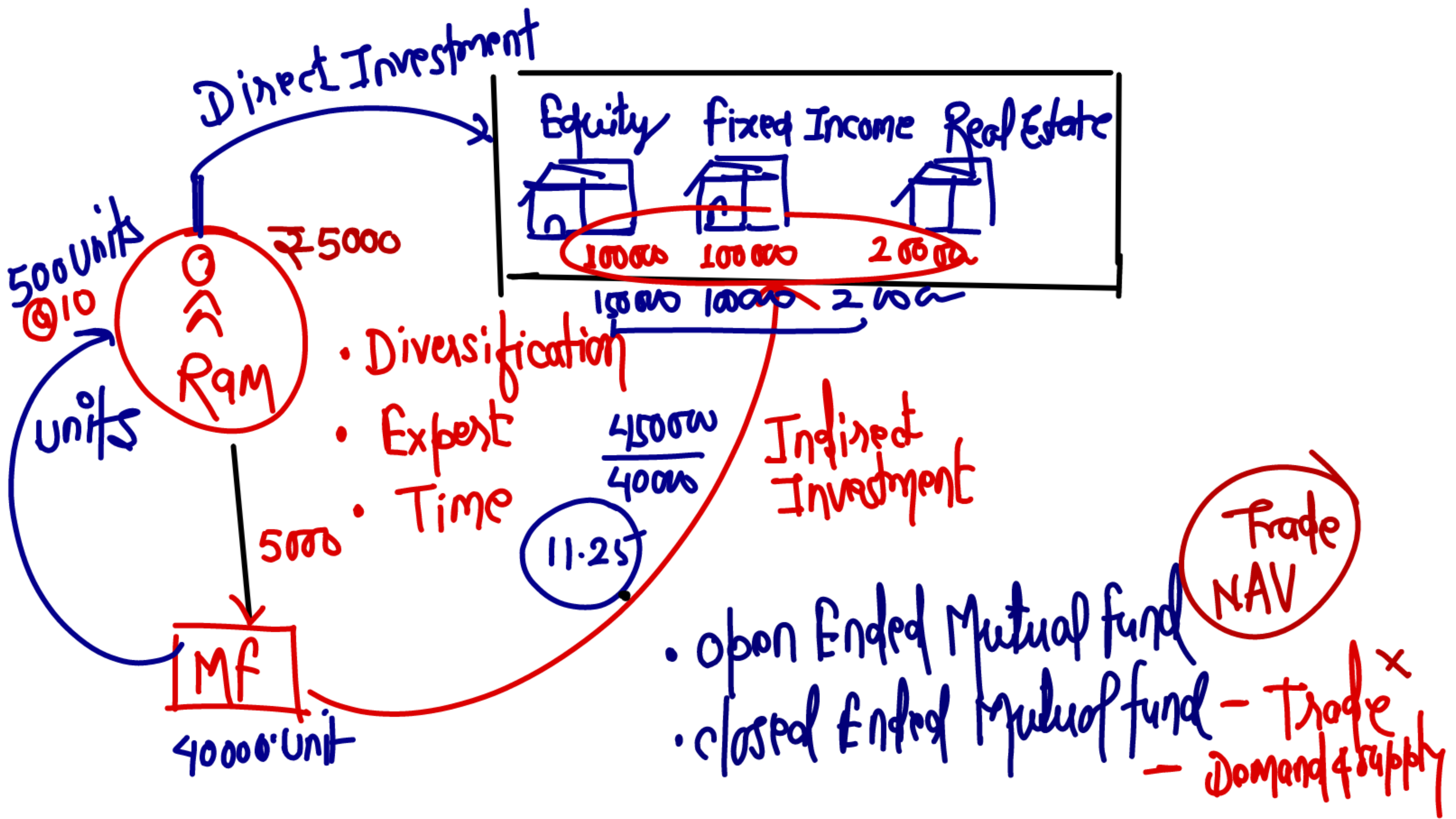
PART I Calculation of NAV

PART II Return Calculation (Imp)

PART III Hedge fund

PART IV performance Evaluation

PART V Residual.



PART I Calculation of NAV

Assets	xxx
(-) Outside liabilities	xxx
	<hr/>
Net Assets	xxx
÷ No. of units	xxx
NAV	xxx

Example: 01

On 01/04/2022, 1,00,000 units @ ₹ 10 each

Investment

RIL 4,000 shares of ₹ 100 each = 4,00,000

7% Bonds = 2,00,000

10% Debentures = 3,00,000

Cash = 1,00,000

₹ 10,00,000

On 31/03/2023

Share price of RIL = ₹ 135

7% Bonds = 110%

10% Debenture at PAR

Dividend received = ₹ 60,000

Expenses paid = ₹ 30,000

Interest received from bond & debentures.

Expenses payable = ₹ 2,500

Calculate NAV on 31/03/2023

Calculation of Cash (31/3/2023)

Opening Cash	1,00,000
(+) Dividend Recd	60,000
(+) Intt Recd	14,000
Bonds (2,00,000 × 7%)	14,000
Debenture (3,00,000 × 10%)	30,000
(-) Exp paid	30,000
Closing Cash	<u>1,74,000</u>

Calculation of NAV

Cash (w.N.I)	174000
RIL (4000 x 135)	540000
Bonds (200000 x 110%)	220000
Debtures	300000
(-) Expenses payable	2500
Net Assets	<hr/> 1231500
÷ No. of units	100000
NAV	₹ 12.315

Question: 01

Cinderella Mutual Fund has the following assets in Scheme Rudolf at the close of business on 31st March, 2014.

Company	No. of Shares	Market Price per Share
Nairobi Ltd.	25,000	₹ 20
Dakar Ltd.	35,000	₹ 300
Senegal Ltd.	29,000	₹ 380
Cairo Ltd.	40,000	₹ 500

The total number of units of Scheme Rudolf are 10 lacs. The Scheme Rudolf has accrued expenses of ₹ 2,50,000 and other liabilities of ₹ 2,00,000. Calculate the NAV per unit of the Scheme Rudolf.

(Study Material, PM & MTP April – 2021)

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Question: 02

A Mutual Fund Co. has the following assets under it on the close of business as on:

Company	No. of Shares	1 st February 2012 Market price per share ₹	2 nd February 2012 Market price per share ₹
L Ltd.	20,000	20.00	20.50
M Ltd.	30,000	312.40	360.00
N Ltd.	20,000	361.20	383.10
P Ltd.	60,000	505.10	503.90

Total No. of Units 6,00,000

(i) Calculate Net Assets Value (NAV) of the Fund.

(ii) Following information is given:

Assuming one Mr. A, submits a cheque of ₹ 30,00,000 to the Mutual Fund and the Fund manager of this company purchases 8,000 shares of M Ltd; and the balance amount is held in Bank. In such a case, what would be the position of the Fund?

(iii) Find new NAV of the Fund as on 2nd February 2012.

(Study Material & PM)

(Page No. 02)

① Calculation of NAV (1/2/2012)

Company	No.	MPS	Value
L Ltd	20000	20	400000
M Ltd	30000	312.40	9372000
N Ltd	20000	361.20	7224000
P Ltd	60000	505.10	30306000
Net Asset			47302000
- % No. of units			600000
NAV			<u>78.837</u>

(ii) Calculation of NAV(1/2)

$$\text{No. of New Units} = \frac{\text{₹ } 30,00,000}{78.837} = 38,053.198 \text{ units}$$

		MPS	Value
L	20,000	20	
M	38,000	312.40	
N	20,000	361.20	
P	60,000	505.16	
Bank	30,00,000 - (80,000 × 312.40)	-	5,00,800
			50,30,200

Net Assets

$$\div \text{No. of Units } (60,000 + 38,053.198) \quad \frac{50,30,200}{63,8053.198}$$

NAV 78.837

Question: 03

On 1st April 2009 Fair Return Mutual Fund has the following assets and prices at 4.00 p.m.

Shares	No. of Shares	Market Price Per Share (₹)
A Ltd.	10,000	19.70
B Ltd.	50,000	482.60
C Ltd.	10,000	264.40
D Ltd.	1,00,000	674.90
E Ltd.	30,000	25.90
No. of units of funds		8,00,000

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Please calculate:

- (a) NAV of the Fund on 1st April 2009.
- (b) Assuming that on 1st April 2009, Mr. X a HNI, send a cheque of ₹ 50,00,000 to the Fund and Fund Manager immediately purchases 18000 shares of C Ltd. and balance is held in bank. Then what will be position of fund.
- (c) Now suppose on 2 April 2009 at 4.00 p.m. the market price of shares is as follows:

Shares	₹
A Ltd.	20.30
B Ltd.	513.70
C Ltd.	290.80
D Ltd.	671.90
E Ltd.	44.20

Then what will be new NAV.

(Study Material, PM & RTP November – 2019)

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Question: 08

SG Mutual Fund Company has the following assets under it on the close of business as on:

		1st August 2017	2nd August 2017
Company	No. of Shares	Market price per share (₹)	Market price per share (₹)
Q Ltd.	2,000	200.00	205.00
R Ltd.	30,000	312.40	360.00
S Ltd.	40,000	180.60	191.55
T Ltd.	60,000	505.10	503.90

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Total No. of Units issued by the Mutual Fund is 6,00,000.

(i) Calculate Net Assets Value (NAV) of the Fund.

(ii) Following information is also given:

Assuming that Mr. Zubin, an investor, submits a cheque of ₹ 30,00,000 to the Mutual Fund and the Fund Manager of this entity purchases 8,000 shares of R Ltd; and the balance amount is held in Bank. In such a case, what would be the position of the Fund?

(iii) Calculate new NAV of the Fund as on 2nd August 2017.

(Exam May – 2018)

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Public Offer Price (POP) & Redemption Price

front-End

Entry Load = 1%



NAV = ₹ 10.75

Exit Load = 1%
Back-End Load

(Buyer)



Unit Holders

$$\begin{aligned} \text{POP} &= 10.75 + 1\% \\ &= ₹ 10.86 \end{aligned}$$

(Seller)

Redemption Price

$$= 10.75 - 1\% = ₹ 10.64$$

Eg

NAV = ₹ 10.80 ✓

~~POP = ₹ 11.25~~

4%

Calculate Entry load in %

Load (%)

$$\frac{11.25 - 10.80}{10.80} \times 100 = 4.17\%$$

Question: 04

The unit price of Equity Linked Savings Scheme (ELSS) of a mutual fund is ₹ 10/-. The public offer price (POP) of the unit is ₹ 10.204 and the redemption price is ₹ 9.80.

Calculate:

- (i) Front-end Load (2.04%)
- (ii) Back end Load (2%)

(Study Material, PM & Exam May – 2018)

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Question: 05

A mutual fund made an issue of 10,00,000 units of ₹ 10 each on January 01, 2008. No entry load was charged. It made the following investments:

Particulars	₹
50,000 Equity shares of ₹ 100 each @ ₹ 160	80,00,000
7% Government Securities	8,00,000
9% Debentures (Unlisted)	5,00,000
10% Debentures (Listed)	<u>5,00,000</u>
	<u>98,00,000</u>

During the year, dividends of ₹ 12,00,000 were received on equity shares. Interest on all types of debt securities was received as and when due. At the end of the year equity shares and 10% debentures are quoted at 175% and 90% respectively of face value. Other investments are at par.

Find out the Net Asset Value (NAV) per unit given that operating expenses paid during the year amounted to ₹ 5,00,000. Also find out the NAV, if the Mutual fund had distributed a dividend of ₹ 0.80 per unit during the year to the unit holders.

(Study Material & PM)

(Page No.06)

W.N.1 Calculation of Cash

Opening Cash	2,00,000
(100,00,000 - 98,00,000)	
Dividend Recd	12,00,000
Int Recd	
(56,000 + 45,000 + 50,000)	1,51,000
(-) Exp paid	<u>5,00,000</u>
Cash	<u><u>1,05,000</u></u>

Calculation of NAV

Cash (w/o No. 1)	1051000
(+) Equity (50000 × 100) 175%	8750000
(+) Govt. Securities	800000
(+) 9% Debentures	500000
(+) 10% Debentures (500000 × 90%)	450000
	<hr/>
Net Assets	11551000
÷ No. of units	1000000
NAV	₹ 11.551

If MF distributes dividend

Net Assets	11551000
(-) Dividend paid (0.8 × 1000000)	₹ 800000
	<hr/>
Net Assets	
÷ No. of units	1000000
NAV	₹ 10.751

(11.551 - 0.80)

Question: 06

A mutual fund made an issue of New Fund Offer (NFO) on 01/01/2021 of 10.00 Lakh Units of ₹ 10 each. No entry load was charged. It made the following investments:

Particulars	(₹)
25,000 Equity Shares of XYZ Ltd., ₹ 100 each @ ₹ 320	80,00,000
5% Government Securities	4,00,000
10% NCDs Unlisted	5,00,000
8% Listed Debentures	10,00,000

During the year, dividends of ₹ 8.00 lakhs were received on equity shares. Interest on all types of debt securities were received. On 31st December 2021 equity shares were appreciated by 15% while listed debentures were quoted at 20% premium. XYZ Ltd., on 15th December 2021 in its AGM declared the interim dividend of 10% and bonus shares at 1:10 with the record date of 28th December 2021.

W.N.1 Calculation of Cash

Opening Cash (10000000 - 9900000)	1000000
Dividend	800000
Intt (20000 + 50000 + 80000)	150000
Interim dividend (25000 x 100) x 10%	250000
(-) Expenses paid	300000
Cash	<u><u>1000000</u></u>

Calculation of NAV

$$\text{Equity} \left[25000 + \left(25000 \times \frac{1}{10} \right) \right] \times (320 \times 1.15) \quad 101200000$$

$$\text{Cash (w.N.I)} \quad 1000000$$

$$\text{Govt Securities} \quad 400000$$

$$\text{NCD} \quad 500000$$

$$\text{listed debentures} \quad 1200000$$

$$13220000$$

$$1000000$$

$$13.22$$

$\frac{\text{Net Assets}}{\text{No. of units}}$
NAV

- (i) Find out the NAV per unit as on 31st December given that the operating expenses paid during the year amounting to ₹ 3,00,000. ✓
- (ii) Find out the NAV, if the MF had distributed a dividend of, ₹ 0.50 per unit during the year to the investors. ✓
- (iii) If you are the investor, find out what is the annualized return you have got.

(Exam May - 2022)
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$$\begin{array}{r}
 \text{② Net Assets} = 13220000 \\
 (-) \text{ Dividend} \\
 \quad (1000000 \times 0.5) \quad 500000 \\
 \hline
 \text{Net Asset} \quad 12720000 \\
 \div \text{No.} \quad 1000000 \\
 \hline
 \text{NAV} \quad 12.72
 \end{array}$$

③ Calculation of Return

$$\text{Return} = \frac{13.22 - 10}{10} \times 100 = 32.22\%$$

$$\text{Alternative Return} = \frac{(12.72 - 10) + 0.50}{10} \times 100 = 32.22\%$$

Question: 07

Based on the following information, determine the NAV of a regular income scheme on per unit basis:

Particulars	₹ Crores
Listed shares at Cost (ex-dividend)	20
Cash in hand	1.23
Bonds and debentures at cost	4.3
Of these, bonds not listed and quoted	1
Other fixed interest securities at cost	4.5
Dividend accrued	0.8
Amount payable on shares	6.32
Expenditure accrued	0.75
Number of units (₹ 10 face value)	20 lacs
Current realizable value of fixed income securities of face value of ₹ 100	106.5
The listed shares were purchased when Index was	1,000
Present index is	2300
Value of listed bonds and debentures at NAV date	8

Calculation of NAV (Crores)

Cash	1.23
listed shares ($\frac{20}{1000} \times 2300$)	46.00
listed bonds	8.00
Unlisted bonds (1 x 80%)	0.80
fixed Interest securities	4.50
Dividend Accrued	0.80
Amount payable on shares	(6.32)
Expenditure accrued	(0.75)
Net Assets	54.26
\div No. of units	0.20 cr.
NAV	₹ 271.30

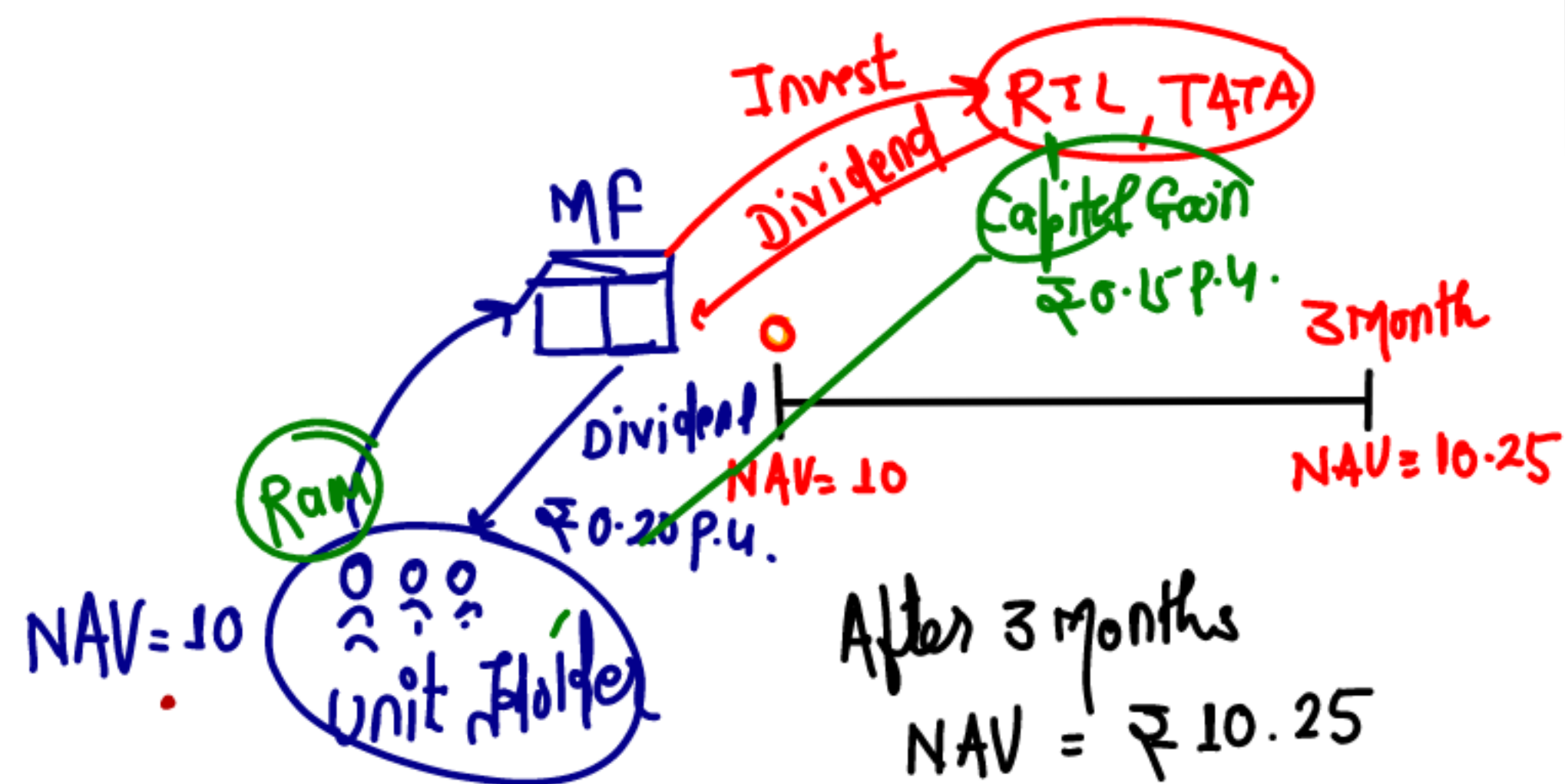
There has been a diminution of 20% in unlisted bonds and debentures. Other fixed interest securities are at cost.

(SM, PM & MTP April – 2022)

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$$\left[\frac{4.5}{100} \times 106.50 \right]$$

PART II Return Calculation



$$\text{Holding period Return (HPR)} = \frac{\text{Change in NAV} + \text{Dividend Income} + \text{Capital Gain}}{\text{Beginning NAV}} \times 100$$

$$\text{Effective Annual Return} = \text{HPR} \times \frac{360}{\text{period}}$$

Question: 11

A mutual fund that had a net asset value of ₹ 20 at the beginning of month - made income and capital gain distribution of ₹ 0.0375 and ₹ 0.03 per share respectively during the month, and then ended the month with a net asset value of ₹ 20.06. Calculate monthly return.

(Study Material & PM)

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0.6375% P.M.
7.65% P.Q.

Question: 12

An investor purchased 300 units of a Mutual Fund at ₹ 12.25 per unit on 31st December, 2009. As on 31st December, 2010 he has received ₹ 1.25 as dividend and ₹ 1.00 as capital gains distribution per unit.

Required :

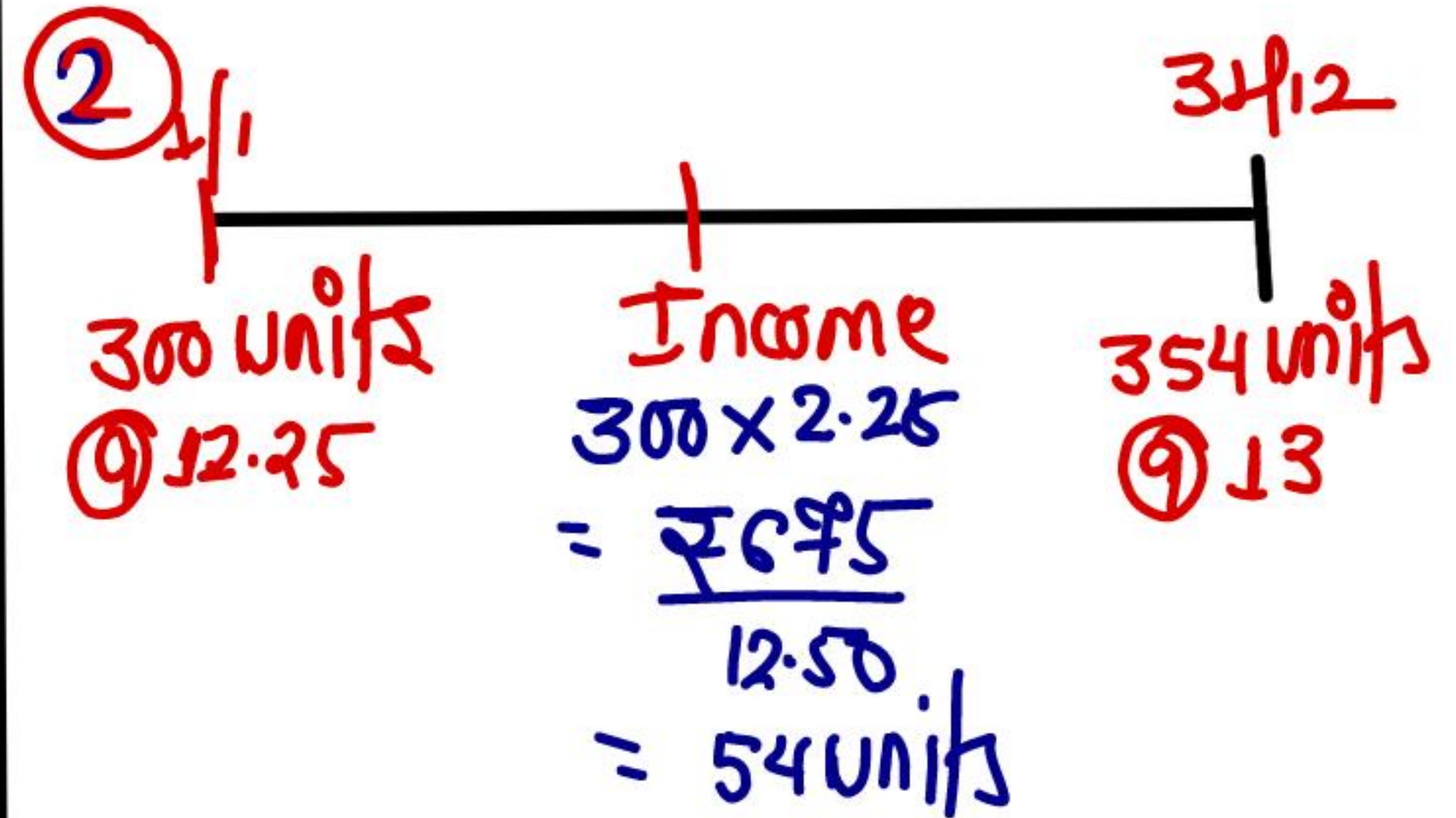
- (i) The return on the investment if the NAV as on 31st December, 2010 is ₹ 13.00.
- (ii) The return on the investment as on 31st December, 2010 if all dividends and capital gains distributions are reinvested into additional units of the fund at ₹ 12.50 per unit.

(Study Material & PM)

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① Return on Investment

$$ROI = \frac{(13 - 12.25) + 1.25 + 1.00}{12.25} \times 100$$
$$= 24.49\% \text{ p.a.}$$



② Dividend Reinvestment plan

$$\text{Investment} = 300 \text{ units} \times 12.25 = ₹ 3675$$

$$\text{Income} = 300 \text{ units} \times 2.25 = 675$$

$$\text{Additional units} = \frac{675}{12.50} = 54 \text{ units}$$

$$\begin{aligned} \text{Investment Value (31 Dec)} &= 354 \text{ units} \times 13 \\ &= ₹ 4602 \end{aligned}$$

$$\text{ROI} = \frac{4602 - 3675}{3675} \times 100 = 25.22\%$$

Question: 13

SBI mutual fund has a NAV of ₹ 8.50 at the beginning of the year. At the end of the year NAV increases to ₹ 9.10. Meanwhile fund distributes ₹ 0.90 as dividend and ₹ 0.75 as capital gains.

- (i) What is the fund's return during the year?
- (ii) Had these distributions been re-invested at an average NAV of ₹ 8.75 assuming 200 units were purchased originally. What is the return?

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(Study Material & PM)

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Question: 16

A Mutual Fund having 300 units has shown its NAV of ₹ 8.75 and ₹ 9.45 at the beginning and at the end of the year respectively. The Mutual Fund has given two options:

- (i) Pay ₹ 0.75 per unit as dividend and ₹ 0.60 per unit as a capital gain, or
- (ii) These distributions are to be reinvested at an average NAV of ₹ 8.65 per unit.

What difference it would make in terms of return available and which option is preferable?

(SM, PM & Exam November – 2018)

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Question: 21

Orange purchased 200 units of Oxygen Mutual Fund at ₹ 45 per unit on 31st December, 2009. In 2010, he received ₹ 1.00 as dividend per unit and a capital gains distribution of ₹ 2 per unit.

Required:

- (i) Calculate the return for the period of one year assuming that the NAV as on 31st December 2010 was ₹ 48 per unit.
- (ii) Calculate the return for the period of one year assuming that the NAV as on 31st December 2010 was ₹ 48 per unit and all dividends and capital gains distributions have been reinvested at an average price of ₹ 46.00 per unit.

Ignore taxation.

(Practice Manual & RTP May – 2020)

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Question: 10

The following particulars relating to Vishnu Fund Schemes:

Particulars	Value ₹ in Crores
1. Investment in Shares (at cost)	
a. Pharmaceuticals companies	79
b. Construction Industries	31
c. Service Sector Companies	56
d. IT Companies	34
E. Real Estate Companies	10
2. Investment in Bonds (Fixed Income)	
a. Listed Bonds (8000, 14% Bonds of ₹ 15,000 each)	12
b. Unlisted Bonds	7
3. No. of Units outstanding (crores)	4.2
4. Expenses Payable	3.5
5. Cash and Cash equivalents	1.5
6. Market expectations on listed bonds	8.842%

Particulars relating to each sector are as follows:

Sector	Index on Purchase Date	Index on Valuation Date
Pharmaceutical companies	260	465
Construction Industries	210	450
Service Sector Companies	275	480
IT Companies	240	495
Real Estate Companies	255	410

The fund has incurred the following expenses:

Consultancy and Management fees	₹ 480 Lakhs
Office Expenses	₹ 150 Lakhs
Advertisement Expenses	₹ 38 Lakhs

You are required to calculate the following:

- Net Asset Value of the fund
- Net Asset Value per unit
- If the period of consideration is 2 years, and the fund has distributed ₹ 3 per unit per year as cash dividend, ascertain the Net return (Annualized).
- Ascertain the Expenses ratio.

(Exam May-2019)

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① Calculation of Net Asset Value

Equity (Cr.)

- Pharma $\left(\frac{79}{260} \times 465\right) = 141.288$
- Construction $\left(\frac{31}{210} \times 450\right) = 66.428$
- Service Sector $\left(\frac{56}{275} \times 480\right) = 97.745$
- IT $\left(\frac{34}{240} \times 495\right) = 70.125$
- Real Estate $\left(\frac{10}{255} \times 410\right) = 16.078$

Bonds

Listed Bonds = $\frac{12 \times 14\%}{8.842\%} = 19.000$

Unlisted Bonds = 7.000

Cash = 1.50

(-) Expenses payable = (3.50)

Net Assets = 415.665 Cr.

② Calculation of NAV

Net Assets = 415.665

$\frac{0}{0}$ No. = 4.2

NAV = ₹ 98.97

③ Calculation of Annual Return

Beginning NAV

$$\begin{array}{r} \text{Equity (79 + 31 + 56 + 34 + 10)} = 210 \\ \text{Bonds (12 + 7)} = 19 \\ \hline \text{Net Assets} = 229 \\ \div \text{No. of units} = 4.2 \\ \hline \text{NAV} = 54.52 \end{array}$$

$$\text{HPR} = \frac{(98.97 - 54.52) + (3 \times 2)}{54.52} \times 100 = 92.53\%$$

$$\text{Annual Return} = 92.53 \times \frac{1}{2} = 46.265\%$$

(iv) Expenses Ratio

$$\text{Expenses Ratio} = \frac{\text{Expenses per unit}}{\text{Avg NAV per unit}} \times 100$$

$$\text{Expenses p.u.} = \frac{480 + 150 + 38}{420} = 1.590$$

$$\text{Avg NAV p.u.} = \frac{98.97 + 54.52}{2} = 76.745$$

$$\text{Exp. Ratio} = \frac{1.590}{76.745} \times 100 = 2.072\%$$

$$\text{Exp. Ratio (p.q)} = \frac{2.072}{2} = 1.035\% \text{ p.q.}$$

Question: 09

The following particulars relating to S fund schemes:

Particulars	Value ₹ in Crores
1. Investment in shares (at cost)	
a. Pharmaceuticals companies	158
b. Construction Industries	62
c. Service Sector Companies	112
d. IT Companies	68
e. Real Estate Companies	20
2. Investment in Bonds (Fixed Income)	
a. Listed Bonds (8000, 14% Bonds of ₹ 15,000 each)	24
b. Unlisted Bonds	14
3. No. of Units outstanding (crores)	8.4
4. Expenses Payable	7
5. Cash and Cash equivalents	3
6. Market expectations on listed bonds	8.842%

The fund has incurred the following expenses:

Consultancy and Management fees	₹ 520 Lakhs
Office Expenses	₹ 180 Lakhs
Advertisement Expenses	₹ 48 Lakhs

Particulars relating to each sector are as follows:

Sector	Index on Purchase date	Index on Valuation date
Pharmaceutical Companies	300	500
Construction Industries	275	490
Service Sector Companies	285	500
IT Companies	270	515
Real Estate Companies	265	440

Required:

- (i) Calculate the Net Asset Value of the fund
- (ii) Calculate the Net Asset Value per unit
- (iii) Determine the Net return (Annualized), if the period of consideration is 4 years, and the fund has distributed ₹ 2 per unit per year as cash dividend during the same period.

Note: Calculate figure in ₹ Crore upto 3 decimal points.

(RTP May – 2021 & Exam May – 2019)

(Page No.11)

iv) Exp. Ratio

Question: 14

The following information is extracted from Steady Mutual Fund's Scheme:

- Asset Value at the beginning of the month - ₹ 65.78
- Annualized return - 15 %
- Distributions made in the nature of Income & Capital gain (per unit respectively) - ₹ 0.50 and ₹ 0.32

You are required to:

- Calculate the month end net asset value of the mutual fund scheme (limit your answers to two decimals).
- Provide a brief comment on the month end NAV.

(Study Material & PM)
(Page No.18)

① Calculation of Month end NAV

$$HPR = 15 \times \frac{1}{12} = 1.25\%$$

$$HPR = \frac{\Delta \text{ in NAV} + \text{Income}}{\text{Opening NAV}}$$
$$0.0125 = \frac{(x - 65.78) + 0.82}{65.78}$$

$$0.82 = (x - 65.78) + 0.82$$

$$x = 65.78$$

② No change in NAV.

Question: 15

Mr. A has invested in three Mutual Fund Schemes as per details below:

Particulars	MF A	MF B	MF C
Date of investment	01/12/2009	01/01/2010	01/03/2010
Amount of investment	₹ 50,000	₹ 1,00,000	₹ 50,000
Net Assets Value (NAV) at entry date	₹ 10.50	₹ 10	₹ 10
Dividend received upto 31/03/2010	₹ 950	₹ 1,500	Nil
NAV as at 31/03/2010	₹ 10.40	₹ 10.10	₹ 9.80

Required:

What is the effective yield on per annum basis in respect of each of the three schemes to Mr. A upto 31/03/2010?

(Study Material & PM)

(Page No.19)

Calculation of Annual Return

	MFA	MF B	MF C
Investment	50000	100000	50000
NAV	10.50	10	10
No. of units	4761.905	10000	5000
Dividend	950	1500	0
closing NAV	10.40	10.10	9.80
Investment Value (31/3)	₹ 49524	101000	49000
Days of Investments	121	90	31 days

Annual Return

$$\text{MFA} = \frac{(49524 - 50000) + 950}{50000} \times \frac{365}{121} \times 100$$

$$= \underline{2.86\% \text{ p.a.}}$$

$$\text{MF B} = \frac{(101000 - 100000) + 1500}{100000} \times 100 \times \frac{365}{90}$$

$$= 10.14\%$$

$$\text{MF C} = \frac{49000 - 50000}{50000} \times 100 \times \frac{365}{31}$$

$$= -23.55\%$$

Question: 17

Mr. Sinha has invested in three Mutual fund schemes as per details below:

Particulars	Scheme X	Scheme Y	Scheme Z
Date of investment	01/12/2008	01/01/2009	01/03/2009
Amount of investment	₹ 5,00,000	₹ 1,00,000	₹ 50,000
Net Assets Value (NAV) at entry date	₹ 10.50	₹ 10.00	₹ 10.00
Dividend received upto 31/03/2009	₹ 9,500	₹ 1,500	Nil
NAV as at 31/03/2009	₹ 10.40	₹ 10.10	₹ 9.80

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You are required to calculate the effective yield on per annum basis in respect of each of the three schemes to Mr. Sinha upto 31/03/2009.

(Study Material & PM)

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Question: 18

Mr. Y has invested in the three mutual funds (MF) as per the following details:

Particulars	Scheme X	Scheme Y	Scheme Z
Amount of Investment (₹)	2,00,000	4,00,000	2,00,000
NAV at the time of purchase (₹)	10.30	10.10	10
Dividend Received up to 31.03.2018 (₹)	6,000	0	50,000
NAV as on 31.03.2018 (₹)	10.25	10	10.20
Effective yield per annum as on 31.03.2018 (percent)	9.66	-11.66	24.15

Assume 1 Year = 365 days

Mr. Y has misplaced the documents of his investment. Help him in finding the date of his original investment after ascertaining the following:

- (i) Number of units in each scheme;
- (ii) Total NAV;
- (iii) Total Yield; and
- (iv) Number of days investment held.

(SM, PM, MTP October – 2020 & Exam May – 2018)

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① No. of units

$$MF_X = \frac{200000}{10.30} = 19417.476 \text{ units}$$

$$MF_Y = \frac{400000}{10.10} = 39603.960 \text{ units}$$

$$MF_Z = \frac{200000}{10} = 20000 \text{ units}$$

② Total NAV

$$MF_X = 19417.476 \times 10.25 = 199029$$

$$MF_Y = 39603.960 \times 10 = 396040$$

$$MF_Z = 20000 \times 10.20 = 204000$$

Total NAV

799069

(iii) Total Return

$$\text{Total Return} = \frac{(799069 - 800000) + 11000}{800000} \times 100 = 1.26\%$$

(iv) No. of days

MF X

$$\text{HPR} = \frac{(199029 - 200000) + 6000}{200000} \times 100$$
$$= 2.5145\%$$

$$\text{Annual Return} = 2.5145 \times \frac{365}{x}$$

$$9.66 = 2.5145 \times \frac{365}{x}$$

$$x = \frac{2.5145 \times 365}{9.66} = 95 \text{ days}$$

MF Y =

MF Z =

Date of Investment

MF X

31/3/2018 - 95 days

Date of Investment
= 26/12/2017

MF Y

MF Z

Question: 19

Mr. K has invested in three Mutual Fund schemes as per details below:

	Scheme A	Scheme B	Scheme C
Date of Investment	01-12-2018	01-01-2019	01-03-2019
Amount of Investment	₹ 5,00,000	₹ 10,00,000	₹ 5,00,000
Net Asset Value at entry date	₹ 10.50	₹ 10.00	₹ 10.00
Dividend received up to 31-03-2019	₹ 9,500	₹ 15,000	₹ 5,000
NAV as at 31-3-2019	₹ 10.40	₹ 10.10	₹ 9.80

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You are required to calculate the effective yield on per annum basis in respect of each of the three schemes to Mr. K upto 31-03-2019, taking the year consisting of 365 days.

Provide a brief comment on the course of action he should take for future period.

(Calculation should be upto three decimal places)

(Exam July – 2021)

(Page No.24)

ICAI

Sun Moon Mutual Fund (Approved Mutual Fund) sponsored open-ended equity oriented scheme "Chanakya Opportunity Fund". There were three plans viz. 'A' – Dividend Re-investment Plan, 'B' – Bonus Plan & 'C' – Growth Plan.

At the time of Initial Public Offer on 1.4.1999, Mr. Anand, Mr. Bacchan & Mrs. Charu, three investors invested ₹ 1,00,000 each & chosen 'B', 'C' & 'A' Plan respectively.

The History of the Fund is as follows:

Date	Dividend%	Bonus Ratio	Net Asset Value per Unit (F.V. ₹ 10)		
			Plan A	Plan B	Plan C ✓
28.07.2003	20		30.70	31.40	33.42
31.03.2004	70	5 : 4	58.42	31.05	70.05
31.10.2007	40		42.18	25.02	56.15
15.03.2008	25		46.45	29.10	64.28
31.03.2008		1 : 3	42.45	20.05	60.12
24.03.2009	40	1 : 4	48.10	19.95	72.40
31.07.2009			53.75	22.98	82.07

On 31st July all three investors redeemed all the balance units.

10000

Calculate annual rate of return to each of the investors.

Consider:

1. Long-term Capital Gain is exempt from Income tax.
2. Short-term Capital Gain is subject to 10% Income tax.
3. STT Security Transaction Tax 0.2 per cent only on sale/redemption of units.
4. Ignore Education ~~Cess~~.

(Study Material & PM)

(Page no.30)

Plan A - Dividend Reinvestment Plan $\frac{₹100000}{10} = 10000 \text{ Units}$

Date	Dividend Rate	Dividend Amt	NAV	New Units	Balance (Units)
1/4/99	-	-	-	-	10000
28/7/03	20%	₹ 20000	30.70	651.47	10651.47
31/3/04	30%	₹ 74560.29	58.42	1276.28	11927.75
31/10/07	40%	₹ 47711	42.18	1131.13	13058.88
15/3/08	25%	32647.20	46.45	702.85	13761.72
24/3/09	40%	55046.90	48.10	1144.43	14906.15

31/7/2009

120 Months + 4 = 124 Months

31/7/2009

$$\begin{aligned} \text{Sales consideration } (14966.15 \times 53.75) &= ₹ 801206 \\ \rightarrow \text{STT @ } 0.2\% &= ₹ 1602 \end{aligned}$$

$$\begin{array}{r} \text{Net} \\ \text{Short Term Capital Gain Tax} \\ \hline ₹ 799603 \end{array}$$

$$\begin{array}{r} [(53.75 - 0.2\%) - 48.10] \times 1144.43 \times 10\% \\ \text{Redeemable Value (Net Amt Re)} \\ \hline ₹ 634 \\ \hline 798969 \end{array}$$

$$\text{HPR} = \frac{798969 - 100000}{100000} \times 100 = 698.97\%$$

$$\text{Annual Return} = 698.97 \times \frac{12}{124} = \underline{67.64\% \text{ P.A.}}$$

Effective yield
P.A.

Plan B Bonus Plan

Date	Bonus Ratio	Bonus Units	Balance (units)
1/4/99	-	-	10000
31/3/04	5:4	12500	22500
31/3/08	1:3	7500	30000
24/3/09	1:4	7500	37500

31/7/2009

Sale consideration (37500 × 22.98) = ₹ 861750

(-) STT @ 0.2%

= ₹ 1723

Net consideration ₹ 860027

(-) STCG [(22.98 - 0.2%) - 19.95] × 7500 × 10% = 2238

R.V.

857789

$$\text{HPR} = \frac{857789 - 100000}{100000} \times 100$$

$$= 757.79\%$$

$$\text{Annual Return} = 757.79 \times \frac{12}{124}$$

$$= 73.33\% \text{ p.a.}$$

Plan C Growth Plan

$$\text{Sales Consideration } (10000 \times 82.07) = 820700$$

(-) STT @ 0.2%

$$\begin{array}{r} 1641 \\ \hline 819059 \\ \hline \hline \end{array}$$

$$\text{HPR} = \frac{819059 - 100000}{100000} \times 100 = 719.06\%$$

$$\begin{aligned} \text{Effective yield (p.a)} &= 719.06 \times \frac{12}{124} \\ &= 69.59\% \text{ p.a.} \end{aligned}$$

Question: 25

A mutual fund company introduces two schemes i.e. Dividend plan (Plan-D) and Bonus plan (Plan-B). The face value of the unit is ₹ 10. On 1-4-2005 Mr. K invested ₹ 2,00,000 each in Plan-D and Plan-B when the NAV was ₹ 38.20 and ₹ 35.60 respectively. Both the plans matured on 31-3-2010.

Particulars of dividend and bonus declared over the period are as follows:

Date	Dividend	Bonus Ratio	Net Asset Value (₹)	
			Plan D	Plan B
30-09-2005	10		39.10	35.60
30-06-2006		1:5	41.15	36.25
31-03-2007	15		44.20	33.10
15-09-2008	13		45.05	37.25
30-10-2008		1:8	42.70	38.30
27-03-2009	16		44.80	39.10
11-04-2009		1:10	40.25	38.90
31-03-2010			40.40	39.70

What is the effective yield per annum in respect of the above two plans?

(Study Material & PM) (Page no.33)

No. of unit

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Question: 27

Cinderella Mutual Fund, an approved mutual fund, sponsored open-ended equity oriented scheme "Rudolf Opportunity Fund". There are three plans under the scheme viz. 'A' - Dividend Re-investment plan, 'B' - Bonus plan and 'C' - Growth plan.

At the time of initial public offer on 1-4-2009, Mr. Amit, Mr. Ashish and Mr. Arun, three investors invested ₹ 2,00,000 each at face value of ₹ 10 per unit and chosen plan 'B', 'C' and 'A' respectively.

The particulars of the fund over the period are as follows:

Date	Dividend %	Bonus Ratio	Net Asset Value per unit (₹)		
			Plan A	Plan B	Plan C
31.07.2013	10	-	30.70	31.20	35.40
31.03.2014	35	5:4	58.42	31.05	58.25
30.10.2017	20	-	42.18	26.45	56.45
15.03.2018	12.50	-	46.45	27.72	62.78
31.03.2018	-	1:3	45.20	20.05	67.12
25.03.2019	20	1:4	48.10	19.95	71.42

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31.07.2019	-	-	53.75	22.98	82.07
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On 31st July, 2019, all the three investors redeemed all the balance units.

1. Consider the following:

- (a) Long-term capital gain is exempt from Income-tax.
- (b) Short-term capital gain is subject to 10% Income-tax.
- (c) Security Transaction Tax is 0.2% only on sale/redemption of units.
- (d) Ignore Education Cess.

2. You are required:

- (i) To calculate the Effective Yield per annum (annual rate of return) of each of the investors.
- (ii) To suggest the name of investor with the highest Effective Yield per annum with the difference to his nearest investor. (Show your calculations up to two decimal points)

(Exam November – 2019) (Page no.35)

Question: 30

A mutual fund has two schemes i.e. Dividend plan (Plan-A) and Bonus plan (Plan-B). The face value of the unit is ₹ 10. On 01/04/2016 Mr. Anand invested ₹ 5,00,000 each in PlanA and Plan-B when the NAV was ₹ 46.00 and ₹ 43.50 respectively, Both the Plans matured on 31/03/2019.

Particulars of dividend and bonus declared over the period are as follows:

Date	Dividend (%)	Bonus ratio	Net Assets Value (₹)	
			Plan - A	Plan - B
30-06-2016	15%		46.80	44.00
31-08-2016		1 : 6	47.20	45.40
31-03-2017	10%		48.00	46.60
17-09-2017		1 : 8	48.40	47.00
21-11-2017	14%		49.60	47.20
25-02-2018	15%		50.00	47.80
31-03-2018		1 : 10	50.50	48.80
30-06-2018	12%		51.80	49.00
31-03-2019			52.40	50.00

You are required to calculate the Effective Yield Per annum in respect of the above two plans.

(Exam May – 2019) (Page no.41)

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Question: 31

A Mutual Fund Company introduces two schemes - Dividend Plan and Bonus Plan. The face value of the Unit is ₹ 10 on 1-4-2014. Mr. R invested ₹ 5 lakh in Dividend Plan and ₹ 10 lakh in Bonus Plan. The NAV of Dividend Plan is ₹ 46 and NAV of Bonus Plan is ₹ 42. Both the plans matured on 31-03-2019. The particulars of Dividend and Bonus declared over the period are as follows:

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Date	Dividend %	Bonus Ratio	NAV of Dividend Plan	NAV of Bonus Plan
			(₹)	(₹)
31.12.2014	12% ✓	-	47.0	42.0
30.09.2015	- ✓	1 : 4	48.0	43.0
31.03.2016	15%	-	49.5	41.5
30.09.2017	- ✓	1 : 6	50.0	44.0
31.03.2018	10%	-	48.0	43.5
31.03.2019	-	-	49.0	44.0

You are required to calculate the effective yield per annum in respect of the above two plans.

(Exam May - 2019) (Page no.43)

Question: 26

During the year 2017 an investor invested in a mutual fund. The capital gain and dividend for the year was ₹ 3.00 per unit, which were re-invested at the year end NAV of ₹ 23.75. The investor had total units of 26,750 as at the end of the year. The NAV had appreciated by 18.75% during the year and there was an entry load of ₹ 0.05 at the time when the investment was made.

The investor lost his records and wants to find out the amount of investment made and the entry load in the mutual fund.

(Exam November - 2018)

(Page no.35)

• Amount of Investment

$$23750 \text{ units } (20 + 0.05) = 476187.50$$

$$\text{Entry load } (23750 \times 0.05) = 1187.50$$

$$\text{Closing NAV} = 23.75$$

$$\text{Opening NAV} = \frac{23.75}{1.1875} = ₹ 20$$

Let Assume No. of units before dividend be x

$$x + \frac{3x}{23.75} = 26750$$

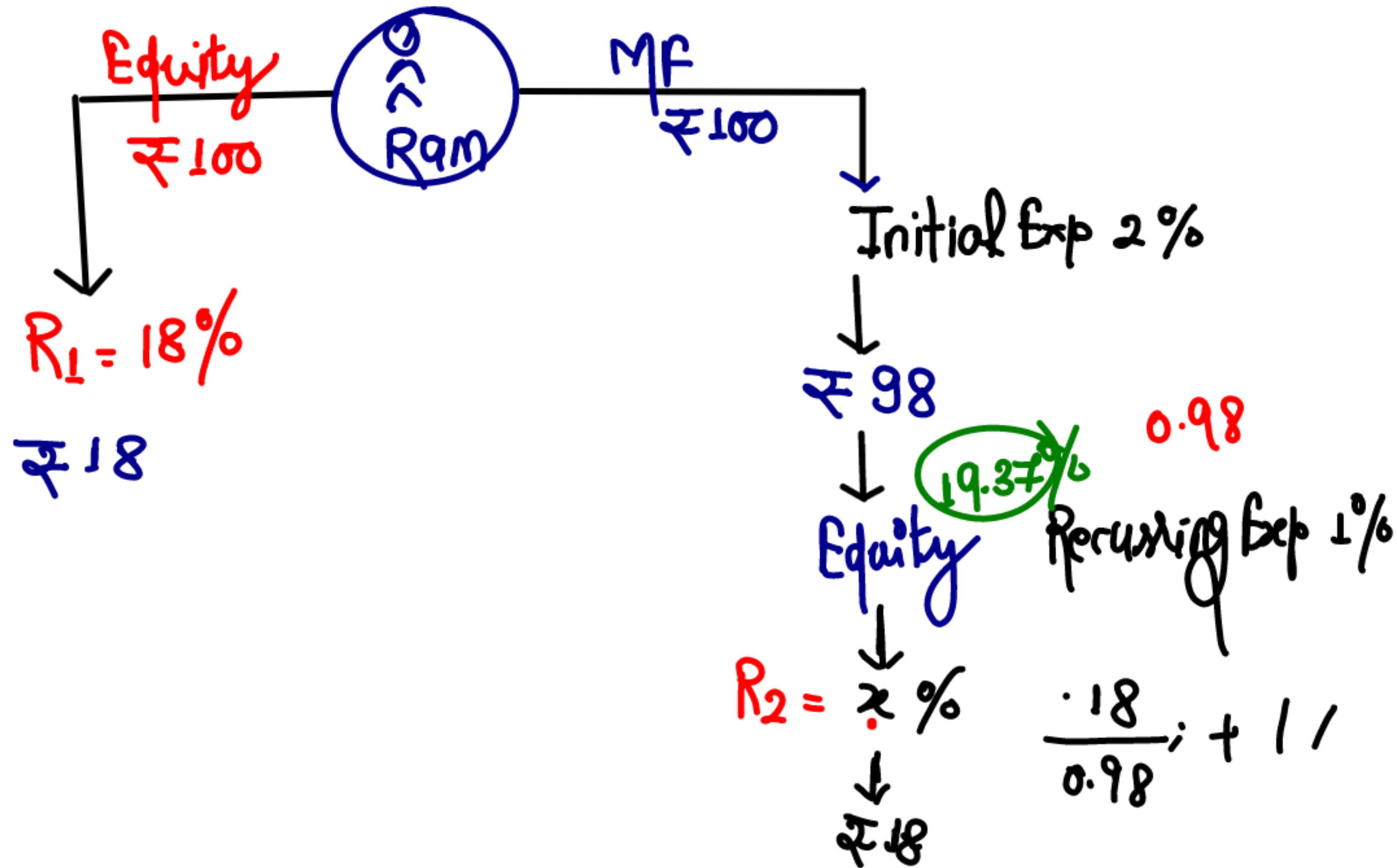
$$\frac{3x}{23.75} = 26750 - x$$

$$3x = 26750 \times 23.75 - 23.75x$$

$$3x + 23.75x = 26750 \times 23.75$$

$$x = \frac{26750 \times 23.75}{23.75 + 3} = 23750 \text{ units}$$

Indifference Return



$$R_2 = \frac{R_1}{1 - \text{Initial Exp}} + \text{Recurring Exp}$$

R_2 = Mutual fund return

R_1 = Equity return

$$R_2 = \frac{18}{1 - 0.02} + 1 = 19.37\%$$

Question: 32

$$R_1 = 16\%$$

Mr. A can earn a return of 16 per cent by investing in equity shares on his own. Now he is considering a recently announced equity based mutual fund scheme in which initial expenses are 5.5 per cent and annual recurring expenses are 1.5 per cent. How much should the mutual fund earn to provide Mr. A return of 16 per cent?

(Study Material & PM)

(Page no.44)

$$\begin{aligned} R_2 &= \frac{R_1}{1 - \text{Initial Exp}} + \text{Recurring Exp.} \\ &= \frac{16}{1 - 0.055} + 1.5 \\ &= 17.84\% \end{aligned}$$

Question: 33

Mr. Alex, a practicing Chartered Accountant, can earn a return of 15 percent by investing in equity shares on his own. He is considering a recently announced equity based mutual fund scheme in which initial expenses are 6 percent and annual recurring expenses are 2 percent.

- (i) How much should the mutual fund earn to provide Mr. Alex a return of 15 percent per annum?
- (ii) Mr. Alex's current Annual Professional Income is ₹ 40 Lakhs. His portfolio value is ₹ 50 Lakhs and now he is spending 10% of his time to manage his portfolio. If he spends this time on profession, his professional income will go up in same proportion. He is thinking to invest his entire portfolio into a Multi-cap Fund, assuming the fund's NAV will grow at 13% per annum (including dividend).

You are requested to advise Mr. Alex, whether he can invest the portfolio into Multi-cap Funds ? If so, what is the net financial benefit?

(Exam November – 2019)

(Page No.44)

① Mutual fund Return

$$R_2 = \frac{16}{1-0.06} + 2 = 19.02\%$$

② Calculation of Income

Option 1 Managed by Mr. Alex

professional Income	40.00 L
(+) Income from portfolio (50 x 15%)	<u>7.50 L</u>
	<u>47.50 L</u>

Option 2 Managed by MF

professional Income (40+4)	44.00
(+) Income from MF (50 x 13%)	<u>6.50</u>
	<u>50.50 L</u>

Mr. Alex should Invest into multicap fund
Net financial benefit (50.50L - 47.50L) = 3L

Question: 34

Mr. X earns 10% on his investments in equity shares. He is considering a recently floated scheme of a Mutual Fund where the initial expenses are 6% and annual recurring expenses are expected to be 2%. How much the Mutual Fund scheme should earn to provide a return of 10% to Mr. X?

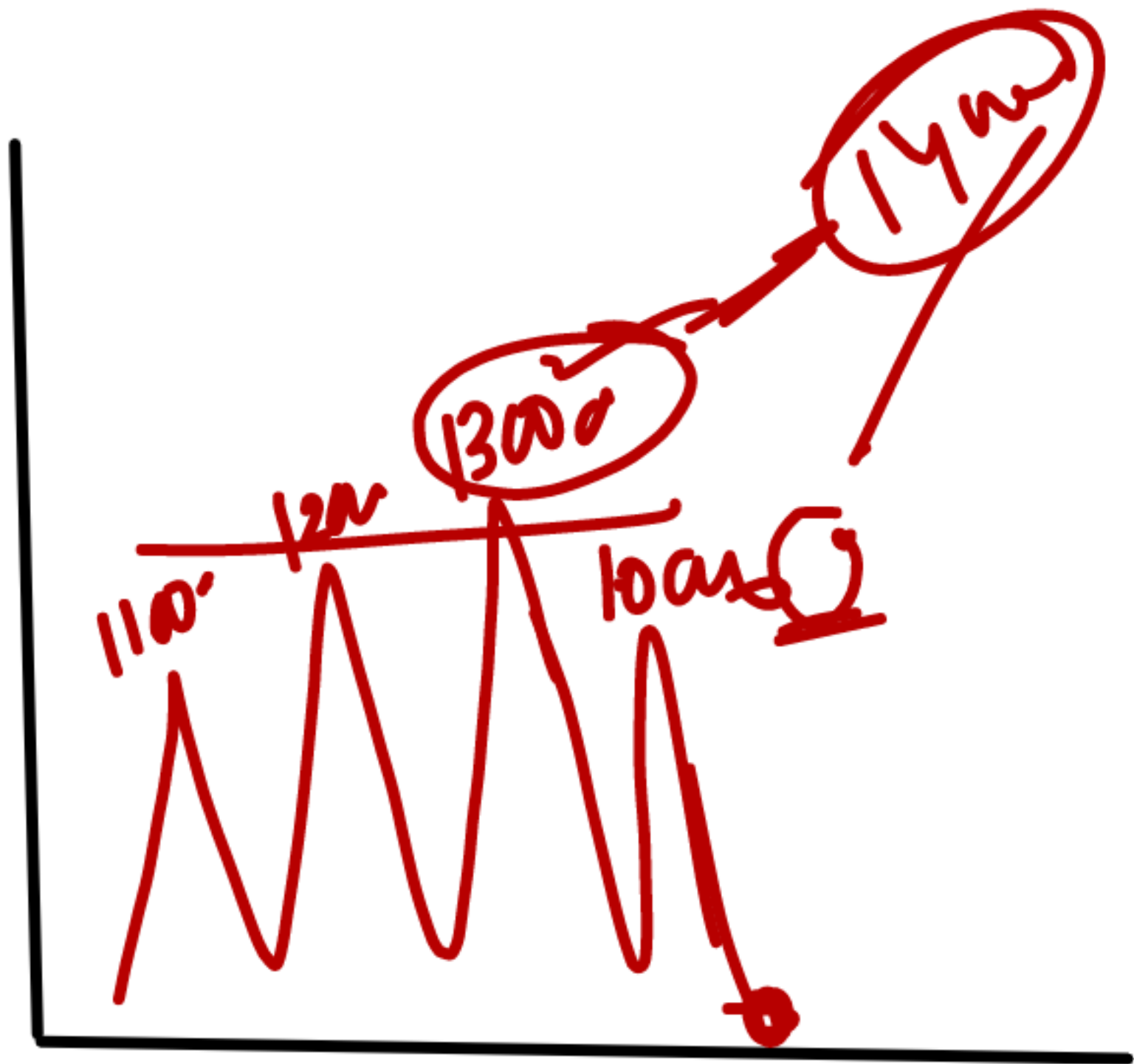
(Practice Manual)

(Page no.44)

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PART III Hedge fund



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Basic fee

~~10%~~

1%

10000

QUESTION - 35

ANP Plan, a hedge fund currently has assets of ₹ 20 crore. CA. X, the manager of fund charges fee of 0.10% of portfolio asset. In addition to it he charges incentive fee of 2%. The incentive will be linked to gross return each year in excess of the portfolio maximum value since the inception of fund. The maximum value the fund achieved so far since inception of fund about one and half year ago was ₹ 21 crores.

You are required to compute the fee payable to CA. X, if return on the fund this year turns out to be

- (a) 29%, (b) 4.5%, (c) -1.8%

(Study Material & PM)

Calculation of fee payable to CA

	29%	4.5%	-1.8%
Basic fee (20 cr. × 0.10%)	200000	200000	200000
Incentive	(20 × 1.29 - 21) 4.8 cr. × 2% 960000	(20 × 1.045 - 21) = 0	0
Total fee	1160000	200000	200000

PART IV performance Evaluation

MFA

portfolio

$$R_p = 15\%$$

$$\sigma_p = 5\%$$

$$\beta_p = 1.50$$

MFB

portfolio

$$R_p = 16\%$$

$$\sigma_p = 6.5\%$$

$$\beta_p = 1.55$$

$$R_f = 7\%$$

$$R_m = 12\%$$

Calculate

① Sharpe Ratio

② Treynor's Ratio

③ Jensen's Alpha

① Sharpe Ratio

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

$$A = \frac{15 - 7}{5} = 1.60 \quad \text{I}$$

$$B = \frac{16 - 7}{6.50} = 1.38 \quad \text{II}$$

② Treynor's Ratio

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

$$A = \frac{15 - 7}{1.5} = 5.33 \quad \text{II}$$

$$B = \frac{16 - 7}{1.55} = 5.81 \quad \text{I}$$

$$= \frac{0.16 - 0.07}{1.55} = 0.0581$$

③ Jensen's Alpha

$$\text{Jensen's Alpha} = R_p - E$$

$$A = 15 - [7 + (12 - 7)1.50]$$

$$= 0.5 \quad \text{II}$$

$$B = 16 - [7 + (12 - 7)1.55]$$

$$= 1.25 \quad \text{I}$$

$$\sigma_p = 5 \quad \beta = 1.5, \text{ Treynor Ratio} = 5.33$$

Eq 2

$$\sigma_p = 6.5\%$$

$$\beta = 1.55$$

$$\text{Treynor's Ratio} = 0.0581$$

$$\text{Sharpe Ratio} = ?$$

$$\text{Treynor's Ratio} = \frac{R_p - R_f}{\beta_p}$$

$$0.0581 = \frac{R_p - R_f}{1.55}$$

$$0.0900 = R_p - R_f$$

$$SR = \frac{0.0900}{0.065} = 1.39$$

Question: 36

The following are the data on five mutual funds:

Fund	Return R_P	Standard Deviation σ_P	Beta B_P
A	15	7	1.25
B	18	10	0.75
C	14	5	1.40
D	12	6	0.98
E	16	9	1.50

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You are required to compute reward to volatility ratio and rank these portfolio using:

- Sharpe method and
- Treynor's method

Assuming the risk free rate is 6%. R_F

(Study Material & PM)

(Page No. 47)

Question: 37

Five portfolios experienced the following results during a 7- year period:

$$\frac{2.5}{1.2} \times 0.84$$

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Portfolio	Average Annual Return (R_p) (%)	Standard Deviation (S_p)	Correlation with the market returns (r)
A	19.0	2.5	0.840
B	15.0	2.0	0.540
C	15.0	0.8	0.975
D	17.5	2.0	0.750
E	17.1	1.8	0.600
Market Risk (σ_m)		1.2	
Market Risk of Return (R_m)	14.0		
Risk-free rate (R_f)	9.0		

Rank the portfolios using (a) Sharpe's method, (b) Treynor's method and (c) Jensen's Alpha

(SM, PM & RTP November - 2021)

Question: 38

There are two Mutual Funds viz. D Mutual Fund Ltd. and K Mutual Fund Ltd. Each having close ended equity schemes.

NAV as on 31-12-2014 of equity schemes of D Mutual Fund Ltd. is ₹ 70.71 (consisting 99% equity and remaining cash balance) and that of K Mutual Fund Ltd. is 62.50 (consisting 96% equity and balance in cash).

Following is the other information:

Particular	Equity Schemes	
	D Mutual Fund Ltd.	K Mutual Fund Ltd.
Sharpe Ratio	2	3.3
Treynor Ratio	15	15
Standard deviation	11.25	5

There is no change in portfolios during the next month and annual average cost is ₹ 3 per unit for the schemes of both the Mutual Funds.

W.N.1 Proportion of Equity & Cash

	D MF	K MF
NAV	70.71	62.50
Equity	99%	96%
Equity p.u.	₹ 70	₹ 60
Cash p.u.	₹ 0.71	₹ 2.50

↓ 5%

If Share Market goes down by 5% within a month calculate expected NAV after a month for the schemes of both the Mutual Funds.

For calculation, consider 12 months in a year and ignore number of days for particular month.

(SM, PM, RTP November – 2020 & May – 2019)

(Page No. 49)

W.N.2 Calculation of Beta

$$\text{Sharpe Ratio} = \frac{R_p - R_f}{\sigma_p} \quad \text{DMF} \quad \text{KMF}$$
$$2 = \frac{R_p - R_f}{11.25} \quad 3.30 = \frac{R_p - R_f}{5}$$

$$R_p - R_f = 22.50 \quad 16.50$$

$$\text{Treynor's Ratio} = \frac{R_p - R_f}{\beta_p} \quad 15 = \frac{22.50}{\beta} \quad 15 = \frac{16.50}{\beta}$$

$$\beta = 1.5 \quad 1.10$$

Expected NAV

	<u>DMF</u>	<u>KMF</u>
Cash (opening)	0.71	2.50
(-) Exp. P. 4. $\left(\frac{3}{12}\right)$	0.25	0.25
①	<u>0.46</u>	<u>2.25</u>
Equity	₹ 70	₹ 60
Beta	1.50	1.10
Market down	5%	5%
Equity fall	7.5%	5.5%
Equity ② $(70 - 7.5\%) = 64.75$		56.70
NAV (1+2)	65.21	58.95

Question: 39

The following are the data on five portfolios:

Portfolio	Return	Standard Deviation	Beta
A	15	7	1.25
B	18	10	0.75
C	14	5	1.40
D	12	6	0.98
E	16	9	1.50

You are required to evaluate the Reward to Volatility of these portfolios using:

- ◆ Sharepe method and
- ◆ Treynor's method

Assuming the risk free rate is 6%.

(MTP October - 2020)

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$$B = \frac{\sigma_{A \text{ and } M}}{\sigma_M^2}$$

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$$\frac{R_p - R_f}{\beta}$$

Question: 40

Following is the information related to three mutual funds:

	R_p	R_p	R_p
Year	MF-A	MF-B	MF-C
2020	10%	5%	14%
2021	8%	10%	10%
2022	12%	8%	18%

Correlation between market and mutual fund:

	MF-A	MF-B	MF-C
Correlation with market	0.45	0.25	0.65

Variance of the market is 9% and rate of return of government bond is 7%.

You are required to Rank the Mutual fund using Sharpe's ratio and Treynor's ratio.

(Exam Nov-2022)

(Page No. 52)

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Question: 41

Following are the details of closed ended equity schemes of two mutual funds as on 31/08/2021:

Particulars	AJ Mutual Fund	RP Mutual Fund
NAV (p.u.)	₹ 80 (consisting 95% equity & remaining cash balance)	₹ 61 (consisting ₹ 60 equity & remaining cash balance)
Sharpe Ratio	1.5	3
Treynor Ratio	1.2	10
Standard Deviation	10	6

There is no change in portfolios during the September month.

Monthly cost is ₹ 0.50 per unit for each mutual fund scheme.

Share market rose by 2% in the month of September.

You are required to calculate Expected NAV p.u. as on 30/09/2021 for both the schemes.

Question: 43

On 1st April, an open ended scheme of mutual fund had 300 lakh units outstanding with Net Assets Value (NAV) of ₹ 18.75. At the end of April, it issued 6 lakh units at opening NAV plus 2% load, adjusted for dividend equalization. At the end of May, 3 Lakh units were repurchased at opening NAV less 2% exit load (adjusted for dividend equalization). At the end of June, 70% of its available income was distributed.

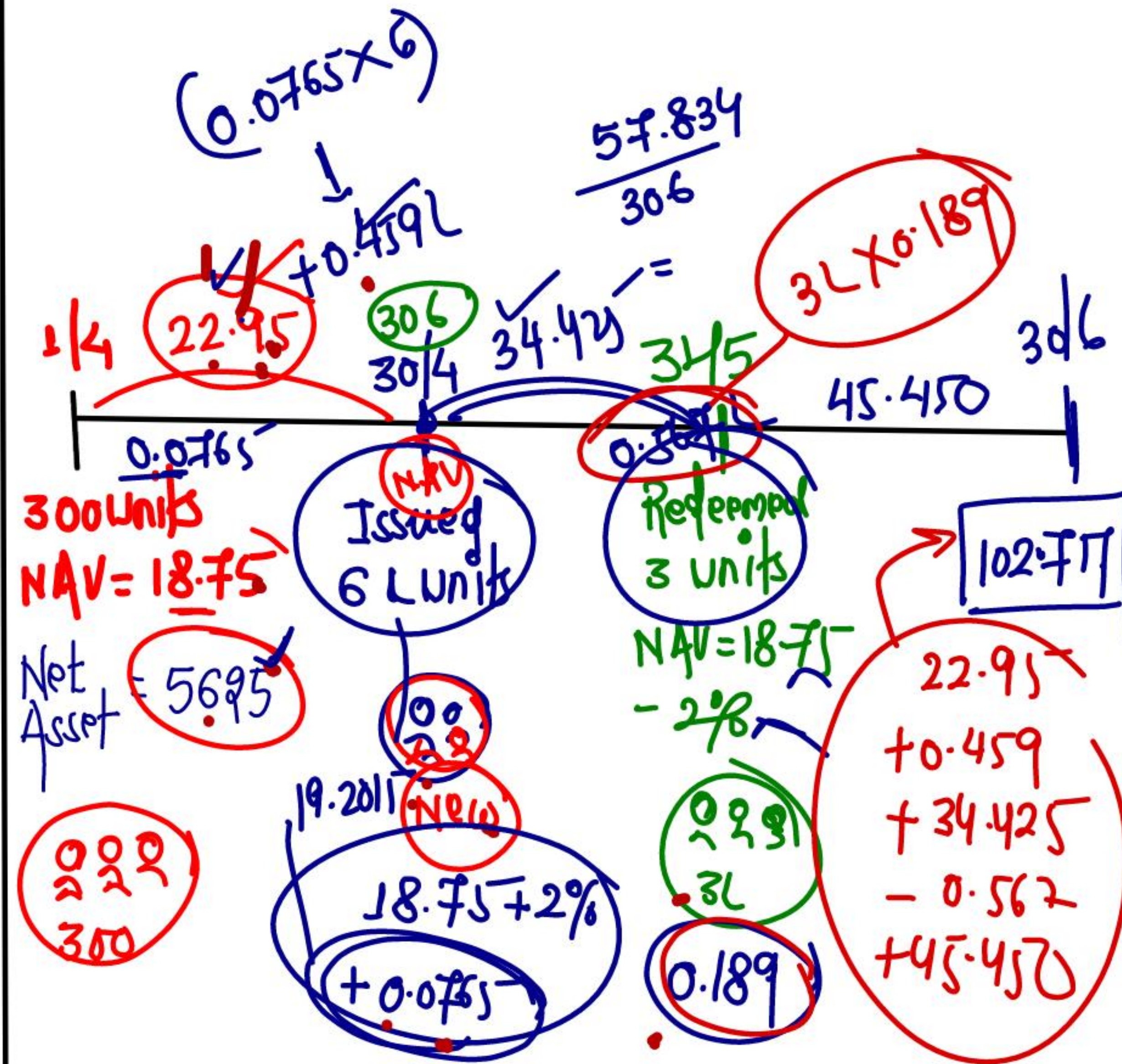
In respect of April-June quarter, the following additional information are available:

	₹ in lakh
Portfolio value appreciation	425.47
Income of April	22.950
Income for May	34.425
Income for June	45.450

You are required to calculate

- (i) Income available for distribution;
- (ii) Issue price at the end of April;
- (iii) repurchase price at the end of May; and
- (iv) net asset value (NAV) as on 30th June.

(SM, PM & RTP November – 2018) (Page No. 56)



① Income available for distribution (Laku)

	units	per unit	Total
April Income	300	0.0765	22.95
Issued New units (Dividend Equilization)	6	0.0765	0.459
April end	306	0.0765	23.409
May Income	306	0.1125	34.425
	306	0.1890	57.834
(-) Redeemed (Dividend Equilization)	3	0.1890	0.5670
May End	303	0.1890	57.267
June Income	303	0.150	45.450
	303	0.3390	102.717
(-) Dividend distribution (70%)	303	0.2373	71.9019
Income Available for distribution	303	0.1017	30.8157

② Issue price at the end of April

Opening NAV	18.75
(+) Load @ 2%	0.375
(+) Dividend Adjustment	0.0765
	<u>19.2015</u>

③ Repurchased price at the end of May

Opening NAV	18.75
(-) Load @ 2%	0.375
(+) Dividend Adjustment	0.1890
	<u>18.5640</u>

④ Calculation of NAV (June End)

Portfolio Value (1/4) (300 × 18.75)	=	5625
(+) Income (22.95 + 34.425 + 45.450)	=	102.825
(+) Portfolio Value appreciation	=	425.47
(+) Issue of New Units (6 × 19.2015)	=	115.209
(-) Redeemed of old units (3 × 18.5640)	=	55.692
(-) Dividend distribution	=	71.9019

		6140.912
		303
$\frac{\text{Net Assets}}{\text{No. of Units}}$	NAV	20.2670

H.W

Question: 44

On 1st April, an open ended scheme of mutual fund had 400 lakh units outstanding with Net Assets Value (NAV) of ₹19. At the end of April, it issued 5 lakh units at an opening NAV plus 2% load, adjusted for dividend equalization. At the end of May, 4 Lakh units were repurchased at the opening NAV less 2% exit load adjusted for dividend equalization. At the end of June, 60% of its available income was distributed.

In respect of April-June quarter, the following additional information is available:

Particulars	₹ in Lakhs
Portfolio value appreciation	515.67
Income of April	31.960
Income of May	46.125
Income for June	58.470

You are required to calculate:

- (i) Income available for distribution;
- (ii) Issue price at the end of April;
- (iii) Repurchase price at the end of May; and
- (iv) Net Asset Value (NAV) as on 30th June.

H.W

Question: 45

On 1st January, 2020, an open ended scheme of mutual fund had outstanding units of 300 lakhs with a NAV of ₹ 20.25. At the end of January 2020, it had issued 5 lakhs units at an opening NAV plus a load of 2%, adjusted for dividend equalization. At the end of February 2020, it had repurchased 2.5 lakhs units at an opening NAV less 2% exit load adjusted for dividend equalization. At the end of March 2020, it had distributed 70 per cent of its available income.

In respect of January - March quarter, the following additional information is available:

Value appreciation of the portfolio	₹ 460 lakhs
Income for January	₹ 24 lakhs
Income for February	₹ 36 lakhs
Income for March	₹ 47 lakhs

You are required to calculate:

- (i) Income available for distribution
- (ii) Issue price at the end of January
- (iii) Repurchase price at the end of February
- (iv) Closing Value of Net Assets at the end of March.

Question: 47

On 1st January, 2020, an open ended scheme of mutual fund had outstanding units of 300 lakhs with a NAV of ₹ 20.25. At the end of January 2020, it had issued 5 lakhs units at an opening NAV plus a load of 2%, adjusted for dividend equalization. At the end of February 2020, it had repurchased 2.5 lakhs units at an opening NAV less 2% exit load adjusted for dividend equalization. At the end of March 2020, it had distributed 70 per cent of its available income.

In respect of January - March quarter, the following additional information is available:

Value appreciation of the portfolio	₹ 460 lakhs
Income for January	₹ 24 lakhs
Income for February	₹ 36 lakhs
Income for March	₹ 47 lakhs

You are required to calculate:

- (i) Income available for distribution
- (ii) Issue price at the end of January
- (iii) Repurchase price at the end of February
- (iv) Closing Value of Net Assets at the end of March.

(Exam January – 2021) (Page No. 47)

Hw

Question: 4 (b)

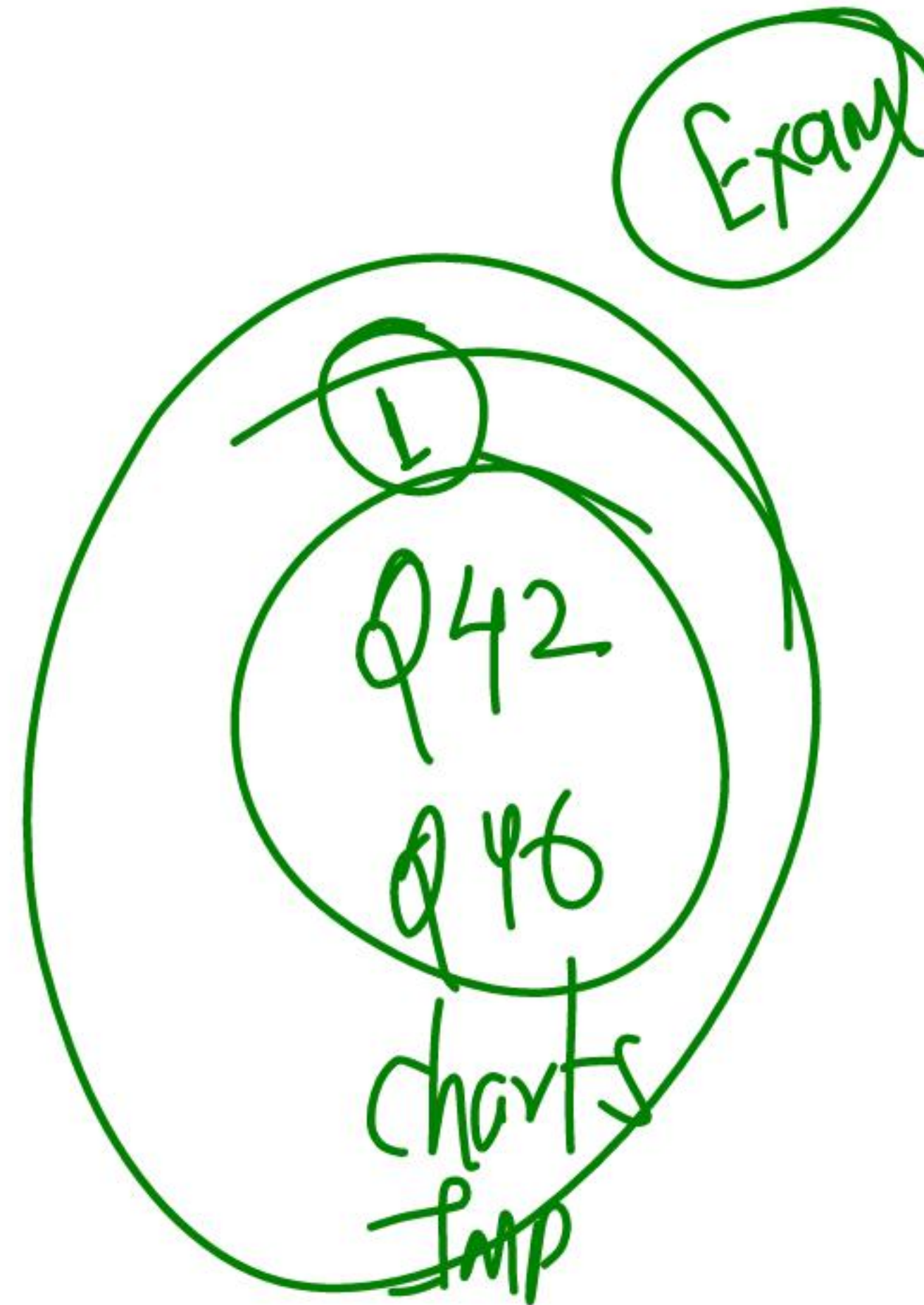
Mr. Potential has made investments in two mutual funds. The following information is available:

Mutual Fund	Smart	Growth
Jensen Alpha	1.10%	1.50%
Treynor's Ratio	0.0714	0.0775
Actual Return	8.50%	9.10%
Risk Premium	4%	

You are required to calculate:

- (i) Beta (β) for both the funds
- (ii) Risk free Rate
- (iii) Security Market Line

(Marks 8)



Q5 (6)

Question: 42

On 1-4-2012 ABC Mutual Fund issued 20 lakh units at ₹ 10 per unit. Relevant initial expenses involved were ₹ 12 lakhs. It invested the fund so raised in capital market instruments to build a portfolio of ₹ 185 lakhs. During the month of April 2012 it disposed off some of the instruments costing ₹ 60 lakhs for ₹ 63 lakhs and used the proceeds in purchasing securities for ₹ 56 lakhs. Fund management expenses for the month of April 2012 was ₹ 8 lakhs of which 10% was in arrears. In April 2012 the fund earned dividends amounting to ₹ 2 lakhs and it distributed 80% of the realized earnings. On 30-4-2012 the market value of the portfolio was ₹ 198 lakhs.

Mr. Akash, an investor, subscribed to 100 units on 1-4-2012 and disposed off the same at closing NAV on 30-4-2012. What was his annual rate of earning?

(SM, PM & RTP May - 2020)

(Page No. 54)

W.N.L Closing Cash

	Rs. in Lacs.
Cash (1/4/2012) [200 - 12 - 185]	3.00
(+) Sale of Stocks	63.00
purchased of stocks	(56.00)
fund management exp paid (8 x 90%)	(7.20)
Dividend Income	2.00
Distribution of Earnings	
Capital Gain (63 - 60) x 80%	(2.40)
Dividend Income (2 x 80%)	(1.60)
closing cash	<u>0.80</u>

W.N. 2 Closing NAV

Closing Cash (W.N. 1)	0.80
(+) Value of share portfolio	198.00
(-) Outstanding mgt Exp	0.80
	<hr/>
Net Assets	198
	20
\div No. of units	9.90
NAV	

Calculation of Annual Rate of Return

$$\text{Dividend p.u.} = \frac{1.60}{20} = 0.08$$

$$\text{Capital Gain p.u.} = \frac{2.40}{20} = 0.12$$

$$\text{HPR} = \frac{\text{change in NAV} + \text{Income p.u.}}{\text{opening NAV}} \times 100$$

$$= \frac{(9.90 - 10) + 0.08 + 0.12}{10} \times 100$$

$$= 1\%$$

$$\text{Annual Return} = 1 \times \frac{12}{1} = 12\% \text{ p.a.}$$

H.W.
H.W. COPY

Question: 46

A mutual fund raised ₹ 150 lakhs on April 1, 2018 by issue of 15 lakh units at ₹ 10 per unit. The fund invested in several capital market instruments to build a portfolio of ₹ 140 lakhs, Initial expenses amounted to ₹ 8 lakhs. During the month of April, the fund sold certain instruments costing ₹ 44.75 lakhs for ₹ 47 lakhs and used the proceeds to purchase certain other securities for ₹ 41.6 lakhs. The fund management expenses for the month amounted to ₹ 6 lakhs of which ₹ 50,000 was in arrears. The fund earned dividends amounting to ₹ 1.5 lakhs and it distributed 80% of the realized earnings. The market value of the portfolio on 30th April, 2018 was ₹ 147.85 lakhs.

An investor subscribed to 1000 units on April 1 and disposed it off at closing NAV on 30th April. Determine his annual rate of earnings.

(Exam November – 2018 & MTP March – 2021)

(Page No. 62)

FAMA Net Selectivity

$$\text{Alpha} = R_p - K_e$$

$$\sigma_p = 6.5 \quad R_p = 15\%$$



$$B_p = 0.9$$

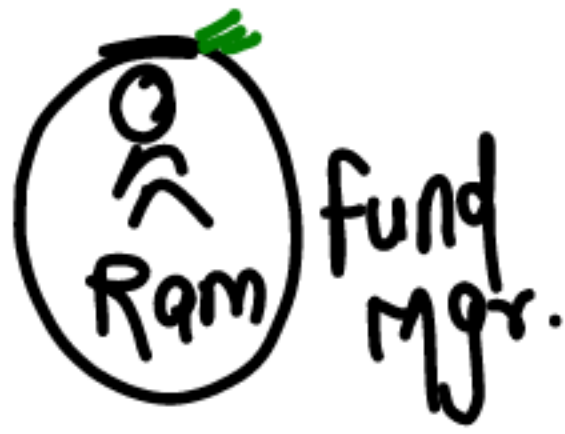
$$R_f + (R_m - R_f) \beta_p$$

SML

$$\sigma_m = 5\%$$

$$R_m = 12\%$$

$$R_f = 6\%$$



Calculation of Alpha

$$\text{SML } K_e = 6 + (12 - 6) \cdot 0.9$$

$$= 11.40\%$$

$$\text{Alpha} = R_p - \text{SML}$$

$$= 15\% - 11.40\% = \underline{3.6\%}$$

Calculation of Return as per Capital Market Line

CML

$$\text{Return} = R_f + \left(\frac{R_m - R_f}{\sigma_m} \right) \sigma_p$$

$$= 6 + \left(\frac{12 - 6}{5} \right) 6.5$$

$$= 13.8\%$$

Return due to skill used by Mgr.

$$\text{Return} = R_p - \text{CML}$$

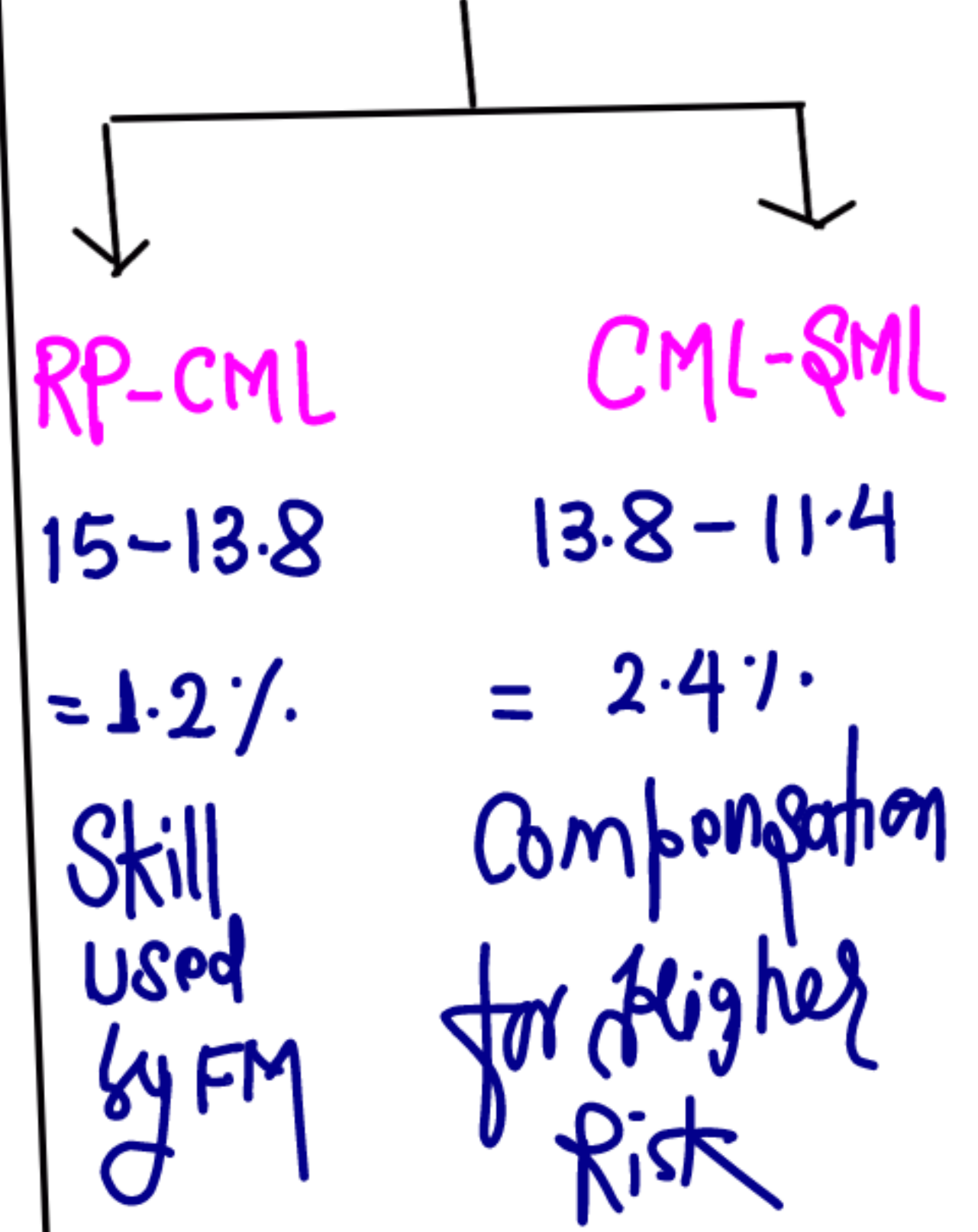
$$= 15\% - 13.8\% = 1.2\%$$

Return for Compensation of UR

$$\text{Return} = \text{Alpha} - 1.2$$

$$= 3.6 - 1.2 = 2.4\%$$

Rp - SML



Question: 52

The returns of a portfolio A and market portfolio for the last 12 months are indicated as follows:

Month	Portfolio A	Market Portfolio
January	-0.52	0.82
February	2.20	0.04
March	2.17	2.80
April	4.17	1.72
May	2.04	0.27
June	3.00	0.39
July	1.99	1.95
August	4.00	0.64
September	-1.38	1.53
October	2.67	2.70
November	3.99	2.52
December	1.86	2.09
Standard Deviation (σ)	1.6223	0.9498

- (i) You are required to find out the monthly returns attributable to the sheer skill of the Portfolio Manager.
- (ii) What part of the monthly return is attributable to the higher risk assumed by the Portfolio Manager?

Assume that the risk-free rate of return is 12% per annum and the portfolio is fully diversified.

(Exam November - 2019)

(Page No.88)

Calculation of Monthly Return

Month	A	Market
1	-0.52	0.82
2	2.20	0.04
3	2.17	2.80
4	4.17	1.72
5	2.04	0.27
6	3.00	0.39
7	1.99	1.95
8	4.00	0.64
9	-1.38	1.53
10	2.67	2.70
11	3.99	2.52
12	1.86	2.09
	26.19	17.47

$$R_p = \frac{26.19}{12} = 2.1825\%$$

$$R_m = \frac{17.47}{12} = 1.4558$$

① Monthly Return attributable to the sheer skill of PM

$$\text{Return} = R_P - \text{CML}$$

$$\text{CML} = R_f + \left(\frac{R_M - R_f}{\sigma_M} \right) \sigma_P$$

$$= 1 + \left(\frac{1.4558 - 1}{0.9498} \right) 1.6223 = 1.7785$$

$$\text{Return} = 2.1825 - 1.7785 = 0.404\%$$

② Return due to Higher Risk assumed by PM

$$\text{SML} = R_f + (R_M - R_f)\beta$$

Since portfolio is fully diversified then β_P should be 1

$$= 1 + (1.4558 - 1) 1 = 1.4558$$

$$\begin{aligned} \text{Return due to Higher Risk} &= \text{CML} - \text{SML} \\ &= 1.7785 - 1.4558 = 0.3227\% \end{aligned}$$

Tracking Error

Eg

	<u>RP</u>	<u>Bench Mark</u>	<u>Active Return (%)</u>
1	12%	10%	2%
2	11%	10%	1%
3	15%	16%	-1%
4	10%	7%	3%
5	13%	14%	-1%

- ① Calculate Average Active Return
- ② Calculate Tracking Error
- ③ Calculate Information Ratio

Calculation of T.E.

YEAR	x	$(x - \bar{x})$	$(x - \bar{x})^2$
1	2	1.2	1.44
2	1	0.2	0.04
3	-1	-1.8	3.24
4	3	2.2	4.84
5	-1	-1.8	3.24
$\Sigma x = \underline{4}$		$\Sigma (x - \bar{x})^2 =$	$\underline{12.8} \text{ (V.)}^2$

$$\bar{x} = \frac{4}{5} = 0.8\%$$

$$\begin{aligned} \text{T.E.} &= \sqrt{\frac{\Sigma (x - \bar{x})^2}{n-1}} \\ &= \sqrt{\frac{12.8}{5-1}} = 1.789\% \end{aligned}$$

$$\begin{aligned} \text{or T.E.} &= \sqrt{\frac{\Sigma (x - \bar{x})^2}{n}} \\ &= \sqrt{\frac{12.8}{5}} = 1.6\% \end{aligned}$$

$$\begin{aligned} \text{Information Ratio} &= \frac{\text{Avg Active Return} \uparrow}{\text{T.E.} \downarrow} \\ &= \frac{0.8}{1.789} = \\ &0.447 \quad \text{Higher is better} \end{aligned}$$

Question: 5 (b)

Mr. Potential has made investments in two mutual funds. The following information is available:

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Jensen Alpha	1.10%	1.50%
Treynor's Ratio	0.0714	0.0775
Actual Return	8.50%	9.10%
Risk Premium	4%	

You are required to calculate:

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- (ii) Risk free Rate
- (iii) Security Market Line

(Marks 8)

May 2023