

8

MUTUAL FUNDS

Question 1

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.

Answer:

- (i) Returns for the year

(All changes on a Per-Unit Basis)

Change in Price:	₹ 48 - ₹ 45 ₹ 1.00
₹ 1.00	
Capital gains distribution	₹ 2.00
Total reward	₹ 6.00
Holding Period reward $\frac{₹ 6.00}{₹ 45} \times 100$	13.33%

- (ii) When all dividends and capital gains distribution are re-invested into additional units of the funds @ (₹ 46/unit)

Dividend + Capital Gains per unit = ₹ 1.00 + ₹ 2.00 = ₹ 3.00

Total received from 200 units = ₹ 3.00 × 200 = ₹ 600/-

Additional Units Acquired = $\frac{₹ 600}{₹ 46} = 13.04 \text{ Units}$

(iii) Total No. of Units = 200 units + 13.04 units = 213.04 units.

Value of 213.04 units held at the end of the year
= 213.04 units × ₹ 48 = ₹ 10225.92

(iv) Price Paid for 200 Units at the beginning of the year = 200 units × ₹ 45
= ₹ 9000.00

Holding Period Reward ₹ (10225.92 – 9000.00) = ₹ 1225.92

(v) Holding Period reward $\frac{₹ 1225.92}{₹ 9000} \times 100 = 13.62\%$

Question 2

M/s. Strong an AMC has floated a dividend bonus plan on 1st April, 2016 at a certain net asset value (NAV). The fund has a robust growth and has declared a bonus of 1:5 (1 bonus unit for 5 right units held) on 30th September, 2017 and a second bonus of 1:4 (1 bonus unit for 4 right units held) on 30th September 2019.

The fund, as on 31st March 2021, has generated an average yield of 17.5%.

Mr. Optimistic has made an investment of ₹ 16 lakhs in the plan before the declaration of the first bonus and remain invested thereafter.

The following information is also available:

Date	01.04.2016	30.09.2017	30.09.2019	31.03.2021
NAV (₹)	?	85	92	100

CALCULATE the opening NAV, which is required by Mr. Optimistic to calculate the capital appreciation.

(MTP 4 Marks Oct'22)

Answer:

Particulars	
(a) Amount invested by Mr. Optimistic as on 01/04/2016	₹ 16,00,000
(b) Gain during 5 years (16,00,000 × 17.5% × 5 years)	₹ 14,00,000
(c) Value of investment as on 31/03/2021 (a + b)	₹ 30,00,000
(d) NAV as on 31/03/2021	₹ 100 per Unit
(e) Total number of units as on 31/03/2021 (c/d)	30,000 Units
Total units before second bonus = $30,000 \times \frac{4}{5}$	24,000 Units
Total units before first bonus = $24,000 \times \frac{5}{6}$	20,000 Units
NAV as on 01/04/2016 = $\frac{16,00,000}{20,000}$	₹ 80 per Unit

Question 3

The Asset Management Company of the mutual fund (MF) has declared a dividend of 9.98% on the units under the dividend reinvestment plan for the year ended 31st March, 2021. The investors are issued additional units for the dividend at the rate of closing Net Asset Value (NAV) for the year as per the conditions of the scheme. The closing NAV was ₹ 24.95 as on 31st March, 2021. An investor Mr. X who is having 20,800 units at the year-end has made an investment in the units before the declaration of the dividend and at the rate of opening NAV plus an entry load of ₹ 0.04. The NAV has appreciated by 25% during the year.

Assume the face value of the unit as ₹ 10.00.

CALCULATE:

- (1) Opening NAV,
- (2) Number of the units purchased,
- (3) Original amount of the investment.

(MTP 4 Marks Oct'22)

Answer:

- (1) Let N be the opening NAV, then
 $N (1 + 0.25) = ₹ 24.95$
 $N = ₹ 19.96$
 i.e., beginning NAV = ₹ 19.96

- (2) Let X be the number of units purchased Then ending units = 20,800
 Accordingly,

$$20,800 = X + \frac{0.998X}{24.95}$$

$$20,800 = \frac{24.95X + 0.998X}{24.95}$$

$$X = 20,000$$

Thus, number of units to be purchased = 20,000

- (3) Original amount of investment

Initial NAV	₹ 19.96
Entry Load	₹ 0.04
	₹ 20.00
Number of funds purchased	20,000
Amount of investment	₹ 4,00,000

Question 4

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

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)

(MTP 8 Marks Mar'23, PYP 8 Marks Jul'21) (Same concept different figures Old & New SM)

Answer:

Calculation of effective yield on per annum basis in respect of three mutual fund schemes to Mr. K up to 31-03-2019:

Particulars	Scheme A	Scheme B	Scheme C
(a) Investments	₹ 5,00,000	₹ 10,00,000	₹ 5,00,000
(b) Opening NAV	₹ 10.50	₹ 10.00	₹ 10.00
(c) No. of units (a/b)	47,619.048	1,00,000	50,000
(d) Unit NAV on 31-3-2019	₹ 10.40	₹ 10.10	₹ 9.80
(e) Total NAV on 31-3-2019 (c x d)	₹ 4,95,238.099	₹ 10,10,000	₹ 4,90,000
(f) Increase/Decrease of NAV (e - a)	(₹ 4,761.901)	₹ 10,000	(₹ 10,000)
(g) Dividend Received	₹ 9,500	₹ 15,000	₹ 5,000
(h) Total yield (f + g)	₹ 4,738.099	₹ 25,000	(₹ 5,000)
(i) Number of Days	121	90	31
(j) Effective yield p.a. (h/a x 365/1 x 100)	2.859%	10.139%	(-)11.774%

Comments: Since the Effective Yield in Scheme C is negative and that of Scheme A is much lower than Scheme B, it is advised that Mr. K should redeem the investments in Scheme A and Scheme C and the proceeds should be invested in Scheme B in the next period.

EXAMINERS' COMMENTS ON THE PERFORMANCE OF EXAMINEES:

Overall, above average performance has been noticed in this question on Mutual Funds. Though in some cases students not carried out calculations upto 3 decimals as mentioned in the question. Even some students considered months instead of days. It seems that students have ignored the instructions given in the question and hence losing marks unnecessarily.

Question 5

The following are the details of three mutual funds of MFL:

	Growth Fund	Balanced Fund	Regular Fund	Market
Average Return (%)	7	6	5	9
Variance	92.16	54.76	40.96	57.76
Coefficient of Determination	0.3025	0.6561	0.9604	

The yield on 182 days Treasury Bill is 9 per cent per annum.

You are required to:

- Rank the funds as per Sharpe's measure.®
- Rank the funds as per Treynor's measure.
- Compare the performance with the market.

(MTP 8 Marks April'23, PYP 8 Marks Nov'20)

Answer:

	Growth Fund	Balanced Fund	Regular Fund	Market
Average Return (%)	7	6	5	9
Variance	92.16	54.76	40.96	57.76
Std. Deviation	9.60	7.40	6.40	7.60
Coefficient of Determination	0.3025	0.6561	0.9604	
Coefficient of Correlation	0.55	0.81	0.98	
Beta (β)	$\frac{9.60}{7.60} \times 0.55$ = 0.695	$\frac{7.40}{7.60} \times 0.81$ = 0.789	$\frac{6.40}{7.60} \times 0.98$ = 0.825	

(i) Ranking of Funds as per Sharpe Ratio

$$\text{Sharpe Ratio} = \frac{\text{Expected Return} - \text{Risk Free Rate of Return}}{\text{Standard Deviation}}$$

	Growth Fund	Balanced Fund	Regular Fund
Sharpe Ratio	$\frac{7 - 9}{9.60} = -0.208$	$\frac{6 - 9}{7.40} = -0.405$	$\frac{5 - 9}{6.40} = -0.625$
Ranking	1	2	3

(ii) Ranking of Funds as per Treynor Ratio

$$\text{Treynor Ratio} = \frac{\text{Expected Return} - \text{Risk Free Rate of Return}}{\text{Beta}}$$

	Growth Fund	Balanced Fund	Regular Fund
Treynor Ratio	$\frac{7 - 9}{0.695} = -2.878$	$\frac{6 - 9}{0.789} = -3.802$	$\frac{5 - 9}{0.825} = -4.85$
Ranking	1	2	3

(iii) Comparison with performance of market

Sharpe Ratio	$\frac{9 - 9}{7.60} = 0$
Treynor Ratio	$\frac{9 - 9}{1} = 0$

Thus, the performance of funds is very poor since all values are negative as compared to market performance.

Question 6

M/s. Strong an AMC has floated a dividend bonus plan on 1st April, 2016 at a certain net asset value (NAV). The fund has a robust growth and has declared a bonus of 1:5 (1 bonus unit for 5 right units held) on 30th September, 2017 and a second bonus of 1:4 (1 bonus unit for 4 right units held) on 30th September 2019.

The fund, as on 31st March 2021, has generated an average yield of 17.5%.

Mr. Optimistic has made an investment of ₹ 16 lakhs in the plan before the declaration of the first bonus and remain invested thereafter.

The following information is also available:

Date	01.04.2016	30.09.2017	30.09.2019	31.03.2021
NAV (₹)	?	85	92	100

You are required to advise to Mr. Optimistic the opening NAV, which is required by him to calculate the capital appreciation.

(MTP 8 Marks Oct'23)

Answer:

Particulars	
(a) Amount invested by Mr. Optimistic as on 01/04/2016	₹ 16,00,000
(b) Gain during 5 years $(16,00,000 \times 17.5\% \times 5 \text{ years})$	₹ 14,00,000
(c) Value of investment as on 31/03/2021 (a + b)	₹ 30,00,000
(d) NAV as on 31/03/2021	₹ 100 per Unit
(e) Total number of units as on 31/03/2021 (c/d)	30000 Units
Total units before second bonus = $30,000 \times 4/5$	24000 Units
Total units before first bonus = $24,000 \times 5/6$	20000 Units
NAV as on 01/04/2016 = $16,00,000/20000$	₹ 80 per Unit

Question 7

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 bands	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:

- Calculate the Net Asset Value of the fund
- Calculate the Net Asset Value per unit
- 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'21)

Answer:

- Calculation of NAV of the Fund

(in ₹ Crore)			
1	Value of Shares		
	Pharmaceutical Companies	$158 \times \frac{500}{300}$	263.333
	Construction Companies	$62 \times \frac{490}{275}$	110.473
	Service Sector Companies	$112 \times \frac{500}{285}$	196.491
	IT Companies	$68 \times \frac{515}{270}$	129.704
	Real Estate Companies	$20 \times \frac{440}{265}$	33.208
2	Investment in Bonds		
	Listed Bonds	$\frac{14}{8.842} \times 24$	38.00
	Unlisted Bonds		14.000
3	Cash and Cash Equivalents		3.00
			788.209
	Less: Expense Payable		7.000
	NAV of the Fund		781.209

(ii) NAV of the Fund per Unit

NAV of the Fund	₹ 781.209 crore
Number of Units	8.40 crore
NAV Per Unit (₹ 781.209 crore / 8.40 crore)	₹ 93.00

(iii) Net Return

Initial Cost Per Unit		
Investment in Shares	₹ 420 crore	
Bonds	₹ 38 crore	₹ 458 crore
Number of Units		8.40 crore
Cost Per Unit		₹ 54.52
Return		
Capital Gain	(₹ 93.00 – ₹ 54.52)	₹ 38.48
Dividend	₹ 4 × 2	₹ 8.00
		₹ 46.48
Annualized Return	$\frac{46.48}{54.52} \times \frac{1}{4}$	21.31%

Question 8

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 1-4-2018 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 31-3-2023.

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

Date	Dividend %	Bonus Ratio	Net Asset Value (₹)	
			Plan D	Plan B
30.09.2018	10	---	39.10	35.60
30.06.2019	---	1:5	41.15	36.25
31.03.2020	15	---	44.20	33.10
15.09.2021	13	---	45.05	37.25
30.10.2021	---	1:8	42.70	38.30
27.03.2022	16	---	44.80	39.10
11.04.2022	---	1.10	40.25	38.90
31.03.2023	---	---	40.40	39.70

Evaluate the Effective Yield Per Annum in respect of the above two plans.

Note:

1. Use following PV Factors:

PVIF (2%,5) = 0.9057, PVIF (4%,5) = 0.8219, PVIF (8%,5) = 0.6806, PVIF (13%,5) = 0.5428

Round off calculations up-to 2 decimal points.

(MTP 8 Marks April'24) (PYP 8 Marks May'19)

Answer:

(b) Plan – D

Date	Units held	Dividend		Reinvestment Rate	New Units	Total Units
		%	Amount			
01.04.2018						5235.60
30.09.2018	5235.60	10	5235.60	39.10	133.90	5369.50
31.03.2020	5369.50	15	8054.25	44.20	182.22	5551.72
15.09.2021	5551.72	13	7217.24	45.05	160.20	5711.92
27.03.2022	5711.92	16	9139.07	44.80	204.00	5915.92
31.03.2023	Maturity Value	(₹ 40.40 × 5915.92)				₹ 2,39,003.17
	Less: Cost of Acquisition					₹ 2,00,000.00
	Total Gain					₹ 39,003.17

$$\therefore \text{Approximate Effective Yield} = \frac{\text{₹ } 39,003.17}{\text{₹ } 2,00,000} \times \frac{1}{5} \times 100 = 3.90\%$$

Now more accurate effective yield can be computed by using the IRR method as follows:

$$\text{NPV at 4\%} = - \text{₹ } 2,00,000 + \text{₹ } 1,96,436.71 = - \text{₹ } 3,563.29$$

$$\text{NPV at 2\%} = - \text{₹ } 2,00,000 + \text{₹ } 2,16,465.17 = \text{₹ } 16,465.17$$

$$\text{IRR} = \text{LR} + \frac{\text{NPV at LR}}{\text{NPV at LR} - \text{NPV at HR}} (\text{HR} - \text{LR}) = 2\% + \frac{16465.17}{16465.17 - 3563.29} (4\% - 2\%)$$

$$= 3.64\%$$

Plan – B

Date	Particulars	Calculation Working	No. of Units	NAV (₹)
01.04.2018	Investment	₹ 2,00,000/35.60 =	5617.98	35.60
30.06.2019	Bonus	5617.98/5 =	1123.60	36.25
			6741.58	
30.10.2021	–	6741.58/8 =	842.70	38.30
			7584.28	
11.04.2022	–	7584.28/10 =	758.43	38.90

31.03.2023	Maturity Value	$8342.71 \times ₹ 39.70 =$	8342.71	3,31,205.59
	Less: Investment			2,00,000.00
	Gain			1,31,205.59

$$\therefore \text{Approximate Effective Yield} = \frac{1,31,205.59}{2,00,000} \times \frac{1}{5} \times 100 = 13.12\%$$

Now more accurate effective yield can be computed by using the IRR method as follows:

$$\text{NPV at } 13\% = - ₹ 2,00,000 + ₹ 1,79,778.39 = - ₹ 20,221.61$$

$$\text{NPV at } 2\% = - ₹ 2,00,000 + ₹ 2,25,418.52 = ₹ 25,418.52$$

$$\begin{aligned} \text{IRR} &= \text{LR} + \frac{\text{NPV at LR}}{\text{NPV at LR} - \text{NPV at HR}} (\text{HR} - \text{LR}) = 8\% + \frac{25,418.52}{25,418.52 - (-20,221.61)} (13\% - 8\%) \\ &= 10.78\% \end{aligned}$$

EXAMINERS' COMMENTS ON THE PERFORMANCE OF EXAMINEES:

Problem on Mutual Fund was well attempted by most of the examinees though some examinees calculated the Effective yield wrongly.

Question 9

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

Particulars	MF 'A'	MF 'B'	MF 'C'
Amount of Investment	2,00,000	5,00,000	4,00,000
NAV at the time of purchase	10.00	25.00	20.00
Dividend Yield up to 31.03.2022	3%	5%	4%
NAV as on 31.03.2022	10.50	22.80	20.80
Annualized Yield as on 31.03.2022	9.733%	-11.185%	15%

Assume 1 Year = 365 Days.

Mr. D has misplaced the documents of his investments. You are required to help Mr. D to find out the following:

- Number of units allotted in each scheme,
- Value of his investments as on 31.03.2022,
- Holding period of his investments in number of days as on 31.03.2022
- Dates of original investments
- Total Return on investments,

(vi) Assuming past performance of all three schemes will continue for next one year, what action the investor should take? What will be the expected return for the next one year after the above action?

(vii) Will your answer as above point no.

(vi) changes if the Mutual fund charges exit load of 5% if the investment is redeemed within one year? If so, advise the investor what and when the action to be taken to optimise the returns.

(PYP 8 Marks May'22)

Answer:

(i) Number of units in each Scheme

$$\text{MF 'A'} \quad \frac{\text{₹ } 2,00,000}{\text{₹ } 10.00} = 20,000$$

$$\text{MF 'B'} \quad \frac{\text{₹ } 5,00,000}{\text{₹ } 25.00} = 20,000$$

$$\text{MF 'C'} \quad \frac{\text{₹ } 4,00,000}{\text{₹ } 20.00} = 20,000$$

(ii) Value of Investment on 31.03.2022

MF 'A'	= 20,000 × ₹ 10.50	₹ 2,10,000
MF 'B'	= 20,000 × ₹ 22.80	₹ 4,56,000
MF 'C'	= 20,000 × ₹ 20.80	₹ 4,16,000
Total		₹ 10,82,000

(iii) Yield on each Fund

	Capital Yield	Dividend Yield	Total	Yield (%)
MF 'A'	₹ 2,10,000 - ₹ 2,00,000 = ₹ 10,000	₹ 6,000	₹ 16,000.00	8.00
MF 'B'	₹ 4,56,000 - ₹ 5,00,000 = - ₹ 44,000	₹ 25,000	₹ 19,000.00	-3.80
MF 'C'	₹ 4,16,000 - ₹ 4,00,000 = ₹ 16,000	₹ 16,000	₹ 32,000.00	8.00
Total			₹ 29,000.00	

No. of Days Investment Held

	MF 'A'	MF 'B'	MF 'C'
Period of Holding (Days)	$\frac{8.00}{9.733} \times 365$ = 300 Days	$\frac{-3.80}{-11.185} \times 365$ = 124 Days	$\frac{8.00}{15.00} \times 365$ = 195 Days

(iv) Date of Original investment 04.06.21 27.11.21 17.09.21

(v) Total Yield = $\frac{₹ 29,000.00}{₹ 11,00,000} \times 100 = 2.636\%$

(vi) If past of all three schemes will continue for next one year, the investor should redeem the units of MFs 'A' and 'B' and invest the proceeds in MF 'C'. The expected return next will be 15%.

(vii) If the Mutual funds are charging exit load of 5%, if investment is redeemed within one year, then investor should get redeemed units of MF 'B' now and units of MF 'A' after 65 days.

Question 10

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.

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

(PYP 8 Marks May'22)

Answer:

In order to find out the NAV, the cash balance at the end of the year is calculated as follows:

Particulars	₹
Cash balance in the beginning (₹ 100 lakhs - ₹ 99 lakhs)	1,00,000
Dividend Received	8,00,000
Interest on 5% Govt. Securities	20,000
Interest on 10% NCDs	50,000
Interest on 8% Debentures	80,000
Interim Dividend	2,50,000
	13,00,000
(-) Operating expenses	3,00,000
Net cash balance at the end	10,00,000
Calculation of NAV	₹
Cash Balance	10,00,000
5% Govt. Securities (at par)	4,00,000
27,500 equity shares ₹ 368 each	1,01,20,000
10% NCDs (Unlisted) at cost	5,00,000
8% Debentures @ 120%	12,00,000
Total Assets	1,32,20,000
No. of Units	10,00,000
NAV per Unit	₹ 13.22

(ii) Calculation of NAV, if dividend of 0.50 is paid-

Net Assets (₹ 1,32,20,000 - ₹ 5,00,000)	₹ 1,27,20,000
No. of Units	10,00,000
NAV per unit	₹ 12.72

(iii) Annualized Return

$$= \frac{13.22 - 10.00}{10.00} \times 100 = 32.20\%$$

Or

$$= \frac{(12.72 - 10.00) + 0.50}{10.00} \times 100 = 32.20\%$$

Question 11

Ms. Sreenidhi is learning the portfolio management techniques and wants to test one of the techniques she has developed on KIFS Equity Fund and compare the gains and losses from the technique with those from a passive buy and hold strategy.

The KIFS Equity Fund consists of equities only and the ending NAVs of the fund she constructed for the last 10 months are given below:

Month Ending	NAV (₹ / unit)
Jan-22	100
Feb-22	78
Mar-22	92
Apr-22	86
May-22	102
Jun-22	98
Jul-22	100
Aug-22	102
Sep-22	118
Oct-22	120

Assume

- Sreenidhi had invested a notional amount of ₹ 5 lakhs equally in the equity fund and a conservative portfolio (of bonds) in the beginning of January 2022 and the total portfolio was being rebalanced each time the NAV of the fund increased or decreased by 15% compared to the NAV of previous month.
- There is no income earned from the conservative portfolio during the period.
- There is no taxation and entry/exit loads.

You are required to determine:

- Value of the portfolio for each level of NAV following the Constant Ratio Plan.
- Whether there are any errors in the technique developed by Sreenidhi? If so briefly explain.

(PYP 8 Marks Nov'22)

Answer:

(i) Constant Ratio Plan:

Stock Portfolio NAV (₹)	Value of Conservative Portfolio (₹)	Value of aggressive Portfolio (₹)	Total Value of Constant Ratio Plan (₹)	Revaluation Action	Total No. of units in aggressive portfolio
100	2,50,000.00	2,50,000.00	5,00,000.00	-	2500
78	2,50,000.00	1,95,000.00	4,45,000.00	-	2500
	2,22,500.00	2,22,500.00	4,45,000.00	Buy 352.56 units	2852.56
92	2,22,500.00	2,62,435.52	4,84,935.52	-	2852.56
	2,42,467.76	2,42,467.76	4,84,935.52	Sell 217.04 units	2635.52
86	2,42,467.76	2,26,654.72	4,69,122.48	-	2635.52
102	2,42,467.76	2,68,823.04	5,11,290.80	-	2635.52
	2,55,645.40	2,55,646.40	5,11,290.80	Sell 129.19 units	2506.33
98	2,55,645.40	2,45,620.34	5,01,265.74	-	2506.33
100	2,55,645.40	2,50,633.00	5,06,278.40	-	2506.33
102	2,55,645.40	2,55,645.66	5,11,291.06	-	2506.33
118	2,55,645.40	2,95,746.94	5,51,392.34	-	2506.33
	2,75,696.17	2,75,696.17	5,51,392.34	Sell 169.92 units	2336.41
120	2,75,696.17	2,80,369.20	5,56,065.37		2336.41

Hence, the ending value of the mechanical strategy is ₹ 5,56,065.37 and buy & hold strategy is (₹2,50,000 + 2,500 × ₹ 120 = ₹ 5,50,000)

(ii) Though the value of portfolio as per technique is lesser than Buy & Hold Strategy but there is no error as if market has been bearish the value of much lesser under Buy & Hold Strategy.

Question 12

M/S. Corpus an AMC, on 1.04.2015 has floated two schemes viz. Dividend Plan and Bonus Plan. Mr. X, an investor has invested in both the schemes. The following details (except the issue price) are available:

Date	Dividend (%)	Bonus Ratio	NAV	
			Dividend Plan	Bonus Plan
01.04.2015			?	?
31.12.2016		1:4 (One unit on 4 units held)	47	40
31.03.2017	12		48	42

31.03.2018	10		50	39
31.12.2018		1:5 (One unit on 5 units held)	46	43
31.03.2019	15		45	42
31.03.2020	-	-	49	44

Additional details

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

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

Answer:

(i) Dividend Plan

- (a) Average Annual gain over a period of 5 Years ₹ 27748.60
- (b) Total gain over a period of 5 years (a*5) ₹ 138743
- (c) Initial Investment ₹ 920000
- (d) Total value of investment (b+c) ₹ 1058743
- (e) NAV as on 31.3.2020 ₹ 49
- (f) Number of units at the end of the period as on 31.03.2019 (d/e) 21607

	1	2	3	4 = (2*3)	5	6 = $\frac{(1*4)}{(4+5)}$	7
Period	Units held	Rate	Unit value	Dividend	NAV	New Units*	Balance Units Pre Dividend
31.03.2019	21607	0.15	10	1.5	45	697	20910
31.03.2018	20910	0.1	10	1	50	410	20500
31.03.2017	20500	0.12	10	1.2	48	500	20000

Issue Price as on 01.04.2015 Investment 920000/ Units purchased 20000 (c/i)

= ₹ 46

* Let the units issued be X

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

(ii) Bonus Plan

(a)	Average Yield	0.064
(b)	Investment	₹ 1000000
(c)	Gain over a period of 5 years (a*b*5)	₹ 320000
(d)	Market Value as on 31.03.2019 (b + c)	₹ 1320000
(e)	NAV as on 31.03.2020	₹ 44
(f)	Total units as on 31.03.2020 (d/e)	30000
(g)	No of units as on 31.03.2018 Pre bonus = $30000 \times 5 / (5 + 1)$	25000
(h)	No of units as on 31.12.2016 Pre bonus = $25000 \times 4 / (4 + 1)$	20000
(i)	Issue Price as on 01.04.2015 Investment 1000000/ Units purchased 20000 (b/h)	₹ 50

Question 13

Mr. S has invested in 3 different Mutual Fund Schemes. The following are the details of the same:

Particulars	Scheme A	Scheme B	Scheme C
Date of Investment	01-06-2022	01-07-2022	01-08-2022
Net Asset Value at Entry Date	₹ 11.00	₹ 10.50	₹ 12.00
Dividend received up-to 31-03-23 (₹)	12,500.00	17,000.00	4,000.00
Unit NAV at 31-03-23 (₹)	11.25	11.48	10.80
Increase/(Decrease) in NAV (₹)	22,727.27	93,333.33	(50,000.00)
Effective Rate of Yield per annum	4.2296%	14.6978%	(-) 13.8190%

Ignore Entry/Exit load expenditure.

Assume 365 days in a year. Round off the investment to nearest ₹ 100.

You are required to calculate:

(i) The amount of investments made initially by Mr. S in these schemes.

(ii) Number of units invested in the three schemes by Mr. S.

Advise also whether he can continue to hold this investment or can he redeem now.

(PYP 8 Marks Nov'23)

Answer:

(i) Calculation of amount of investment made initially by Mr. S:

Particulars	Scheme A	Scheme B	Scheme C
(a) Period of Investment	304 days	274 days	243 days
(b) Effective Yield p.a.	4.2296%	14.6978%	(-) 13.8190%
(c) Effective Yield for holding Period	3.5227%	11.0334%	(-) 9.2000%

(d) Dividend Received	₹ 12,500	₹ 17,000	₹ 4000
(e) Increase / Decrease of NAV	₹ 22,727.27	₹ 93,333.33	(₹ 50,000)
(f) Total Yield (d + e)	₹ 35,227.27	₹ 1,10,333.33	(₹ 46,000)
(g) Initial Investment (f/c)	₹ 10,00,000	₹ 10,00,000	₹ 5,00,000
(h) NAV on date of Investment	₹ 11.00	₹ 10.50	₹ 12.00

(ii) Units invested in three schemes by Mr. S

Particulars	Scheme A	Scheme B	Scheme C
Initial Investment	₹ 10,00,000	₹ 10,00,000	₹ 5,00,000
NAV on date of Investment	₹ 11.00	₹ 10.50	₹ 12.00
Units of Investment	90,909.09	95,238.10	41,666.67
Or	90,909	95,238	41,667

Advise: He Should continue to investment in Scheme B and get redeemed both schemes A and C and invest their proceeds in Scheme B.