Q.12	pg
CW. 81	Calculation of Effective yield :-

Particulars	Scheme A	Scheme B	Scheme C
a) Initial Investment	1200000	400000	250000
b) NAV on entry date	10.25	10.15	10.00
c) No. of units (a÷b)	117073.17	39408.87	25000
d) Dividend	23000	6000	Nil
e) NAV @ end	10.20	10.25	9.90
f) Total NAV (c×e)	1194146	403941	247500
g) Capital Gain / (Loss) (f-a)	(5854)	3941	(2500)
h) Total Gain (d+g)	17146	9941	(2500)
i) Holding Period	122 days	92 days	31 days
j) EAY = $\frac{h}{a} \times 100 \times \frac{365}{i}$	4.27%	9.86%	(11.77)%

Self Note: Possibility h ki exam me thoda twist aaye Q. me.

① Agar Open ended fund h toh .... Entry Load de skta h Q. me .... hume adj krk NAV consider krna pdega.

Eg: Entry Load = 2% (Scheme A)

NAV = 10.25 + 2% of 10.25 = 10.455

∴ No. of units = 1200000/10.455 = 114777.62

② Agar close ended fund h toh .... NAV bajar ka lete h price jo ki diye hue NAV se kam/jada hota h i.e. either @ premium / discount.

Eg: Say @ premium of 2%.

NAV = 10.25 + 2% of 10.25 = 10.455

∴ No. of units = 1200000/10.455 = 114777.62

Q·16 | pg CW·82 — Highly Repetitive Sum

(i) No. of Units in each scheme -

Particulars	Amount Invested	NAV	No. of Units
MF x	200000	10·3	19417·47
MF y	400000	10·1	39603·96
MF z	200000	10·0	20000·00

(ii) Total NPV i.e. NAV -

Particulars	No. of Units	NAV on 31/3/18	Total NAV
MF x	19417·47	10·25	199029
MF y	39603·96	10·00	396040
MF z	20000·00	10·20	204000
			799069

(iii) Total yield -

Particulars	Capital Gain/(Loss)	Dividend	Total yield
MF x	(971)	6000	5029
MF y	(3960)	0	(3960)
MF z	4000	5000	9000
			10069

Total Investment = 200000 + 400000 + 200000 = 800000

∴ Return on Investment (R.O.I) = $\frac{10069}{800000} \times 100 = 1.26\%$

(iv) No. of days Investment held -

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

Particulars	Holding Period Yield	EAY	No. of days (n)
MF X	$\frac{5029 \times 100}{200000} = 2.5145\%$	9.66%	95 days
MF Y	$\frac{(3960) \times 100}{400000} = (0.99)\%$	(11.66)%	31 days
MF Z	$\frac{9000 \times 100}{200000} = 4.5\%$	24.15%	68 days

Date of original Investment:
MF X : 26th December, 2017
MF Y : 28th February, 2018
MF Z : 22nd January, 2018
Self practice : HW.Q.6,7,8] pg. 50, 51.

Q.15	pg
CW. 82	

$P_0 = 28 - 5\% = 26.60$
$P_1 = 28 + 3\% = 29.66$
$D = 2.80$

$$\text{Return} = \frac{(29.66 - 26.60) + 2.8}{26.60} \times 100 = 22.03\%$$

Self Practice : CW. Q.13] pg. 81, HW. Q.9] pg. 51

Part-2

⇒ Sums based on Back Calculation -

1st July, 2014 → 1000 units purchased @ 10 each investing ₹10000.
31st Mar, 2015 → (9 months)
Annualized return = 153.33%.
H.P.R. = 153.33 × 9/12 = 115%.
∴ Initial Investment of ₹10000 becomes (10000 + 115%) i.e. ₹21500.
This includes dividend of 10% of ₹10 × 1000 = ₹1000

So, value of 1000 original units = 21500 - 1000 = 20500

∴ NAV on 31st Mar, 2015 = $\frac{20500}{1000}$ = 20.5

Total no. of units held = 1000 + $\frac{₹1000}{20.5}$ = 1048.78 units

31st March, 2016 → (1 more year)

Dividend amount reinvested = 20% of 10 × 1048.78

= ₹2097.56

Units after reinvestment = 1129.61

∴ Additional units received by reinvesting dividend

= 1129.61 - 1048.78 = 80.83 units

NAV on 31/03/2016 = $\frac{2097.56}{80.83}$ = 25.95

31st March, 2017 → (Total Holding Period = 2.75 yrs)

EAY = 73.52%

HPY = 73.52 × 2.75 = 202.18%

∴ Ending value of 1129.61 units = 10000 + 202.18% of 10000

= 30218

∴ NAV on 31/03/2017 = $\frac{30218}{1129.61}$ = 26.75

Q.27	Pg
CW. 86	

Initial Investment = 1600000

Average Yield = 17.5%

HPY = 17.5 × 5 yrs = 87.5%

Value of Investment @ end = 1600000 + 87.5%

= 3000000

NAV @ the end = 100

∴ No. of units @ the end (31/03/21) = $\frac{3000000}{100}$ = 30000

Bonus on 30/09/19 = 1:4

∴ No. of units before bonus issue = $30000 \times 4/5 = 24000$

Bonus on 30/09/17 = 1:5

∴ No. of units before bonus issue = $24000 \times 5/6 = 20000$

∴ NAV on 01/04/2016 = $\frac{1600000}{20000} = ₹80$ p.u.

Q.28	Pg
CW. 86	

(i) Closing NAV = 24.95

Opening NAV = $\frac{24.95}{125\%} = 19.96$

(ii) No. of units purchased = $20800 \times \frac{24.95}{24.95 + 0.998} = 20000$

(iii) Original amount of investment = $(19.96 + 0.04) \times 20000$

$= 400000$

Self practice : CW. Q.26] pg. 86

HW. Q.17], Q.18] pg. 54

Extra Q.2] HW. Soln. pg. 160

-:- Performance Appraisal :- (ex-post)

Eg: $R_f = 6\%$, $R_m - R_f = 5\%$, $\sigma_m = 15\%$

Sharpe Ratio of market (SHm) = $\frac{R_m - R_f}{\sigma_m} = \frac{5}{15} = \frac{1}{3}$

Above information is for the year just ended.

3 similar funds

	A	B	C
A(R)	28%	11%	19%
β	2.2	0.9	1.4
σ	26%	10%	18%

Sharpe Ratio is also known as 'Reward to Variability Ratio'.

Q.1) Rank these funds as per sharpe ratio.

$SR_A = \frac{28-6}{26} = 0.8462$ → Rank 1

$SR_B = \frac{11-6}{10} = 0.5$ → Rank 3

$SR_C = \frac{19-6}{18} = 0.7222$ → Rank 2

Q.2) Rank the fund managers as per Treynor Ratio.

$\text{Treynor Ratio} = \frac{Ri - Rf}{\beta}$

Treynor Ratio is also known as 'Reward to Volatility Ratio'.

$TR_A = \frac{28-6}{2.2} = 10$ → Rank 1

$TR_B = \frac{11-6}{0.9} = 5.56$ → Rank 3

$TR_C = \frac{19-6}{1.4} = 9.29$ → Rank 2

Q.3) Rank the fund managers as per Jensen Alpha.

Jensen Alpha (α) = Actual Return - Expected Return
↳ Re

Fund Manager	A(R)	E(R) = 6 + 5β	α = A(R) - E(R)	Rank
A	28%	17%	11%	1
B	11%	10.5%	0.5%	3
C	9%	13%	6%	2

Part-3

Q.11	pg
CW. 80	

(i) No. of units alloted in each scheme -

Mutual Fund	Investment	NAV	No. of Units
MF A	200000	10	20000
MF B	500000	25	20000
MF C	400000	20	20000

(ii) Value of Investment on 31/03/2022 -

Mutual Fund	No. of Units (a)	NAV on 31/3/22 (b)	Value (a×b)
MF A	20000	10.5	210000
MF B	20000	22.8	456000
MF C	20000	20.8	416000
			1082000

(iii) Yield on each fund & Holding period of investments -

MF	Dividend Yield	Capital Gain Yield	Total Yield
A	2L × 3% = 6000	210000 - 200000 = 10000	16000
B	5L × 5% = 25000	456000 - 500000 = (44000)	(19000)
C	4L × 4% = 16000	416000 - 400000 = 16000	32000
			29000

MF	Holding Period Yield	EAY	No. of days
A	16000/200000 × 100 = 8%	9.733%	300 days
B	-19000/500000 × 100 = 3.8%	-11.185%	124 days
C	32000/400000 × 100 = 8%	15%	195 days

No. of days Investment held (n) = $\frac{HPY}{EAY} \times 365$

(iv) Date of original investment -

MF A → 4th June, 2021.

MF B → 27th NOV, 2021.

MF C → 17th Sept, 2021.

(v) Total Return on Investments = $\frac{\text{Total yield}}{\text{Initial Investmt}} \times 100$

$= \frac{29000}{200000 + 500000 + 400000} \times 100 = 2.636\%$.

(vi) If past performance of all 3 schemes will continue for next year, the investor should redeem MF A & MF B and invest in MF C. Expected return shall be 15%.

(vii) If MF charge 5% exit load, if investment is redeemed within 1 year, then investor should get redeemed units of MF B now & MF A after 65 days

Explanation:

→ MF 'B' - We invested 124 days before. So, 241 days left for completetion of year. If we shift from B to C now we will incur an exit load of 5% but will gain
$[15 - (-11.185)\%] \times 241/365 = 17.29\%$.
Gain (17.29%) > Loss (5%) ∴ Shift now.

→ MF A - We invested 300 days before. So, 65 days left for completion of year. If we shift from A to C now, we will incur an exit load of 5% but we will gain
$[15 - 9.733\%] \times 65/365 = 0.9380\%$.
Gain (0.9380) < Loss (5%) ∴ Don't shift now.
Shift after 65 days...