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Q1) Loan Amount = 20000

Installment = 427.90

No. of years = 5

$\therefore i = ?$

$20000 = 427.9\ a_{\overline{5\times12}|}\ @\ i^{(12)}/12$

$\frac{20000}{427.9} = \frac{1-v^{60}}{i}$

$\frac{i^{(12)}}{12} = 0.85034\%$

$\therefore \boxed{i = 10.8\%}$

Flat Rate = $\frac{\text{Total Repaid} - \text{Original Amount}}{\text{Term of Loan} \times \text{Original Amount}}$

$= \frac{(427.9)(12) - 20000}{5 \times 20000}$

$= 0.05675$

$= 5.675\%$

APR = $5.674 \times 2 = 11.348\%$

ii) NPV after 1 year

$= 427.9\ a_{\overline{47}|}^{(12)}\ @\ 10.8\%$

$= 10775.83$

Term of Loan

$10775.83 = 274.49\ a_{\overline{n}|}\ @\ \frac{i^{(12)}}{12}$

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$= 0.858834$.

$\frac{16775.83}{274.49} = \frac{(1-0.085)^{-n}}{0.008584}$

$\therefore$ n = 7.2 years

Interest

$(427.9 \times 12) + 274.49 \times 12 \times 7.2) + \text{Loan}$

$= 9015.43$

Interest in loan I = 5674

Increased by ₹ = 9015.43 − 5674 = 3341.43

Q2) i) a) Discounted Payback Period — It refers to the time at which the net present value turn from positive to negative the initial outlay had been recovered with the help of interest rate.

b) Payback Period - It refers to the time at which income value increases from outlays without considering the effect of interest.

ii) NPV is the difference b/w the PV of all the outlays and PV of all future incomes hence showing us the feasibility of the project whereas DPP and PP just shows us the time it will take to recover the investment

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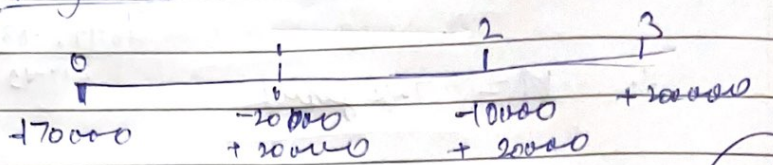
(iii) Project A



$i = 6\%$

$NPV = 1000\left(-170 + 10v^2 + 200v^3\right)$

$= 68220.85$

IRR

$PV = 0$

$\therefore 1000\left(-170 + 10v^2 + 200v^3\right) = 0$

$i = 7.423\%$

Project B

$NPV = -200000 + 14000\, a_{\overline{6}|}\ @\ 6\% + 200000v^6$

$= 1000\left(-200 + 14(4.9173) + 200(1.06)^{-6}\right)$

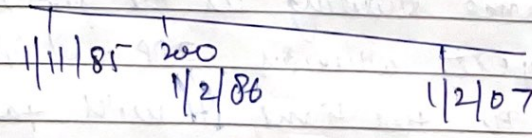
$= 88340.65$

IRR $\quad PV = 0$

$0 = -200 + 14\, a_{\overline{6}|} + 200v^6$ (1000)

$i = 7\%$

(13)



Amount $= 200 \times v^{0.25} \times a_{\overline{21}|} = 2161.36$

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320/4 320/4 320/4 320/4 1/12/81

1/1/85 1/1/86 1/4/86 1/7/86 1/10/86 1/1/87

Annuity 2

$= 320 \times (1+i)^{1/12} \; a_{\overline{16.25}|}^{(4)}$

$= 2957.87$

1/1/85 1/8/88 1/8/04

Annuity 3

$= 180 \; a_{\overline{18.75}|}^{(12)}$ @ 8%

$= 1700.67$

Sum of all the 3 annuities

$= 6899.9$

New Annuity

$6899.9 = x(1+i)^{1/4} \; a_{\overline{21.75}|}^{(2)}$

$x = 656.56$

Q4) $PV = 1 + 2v + 3v^3 + 4v^3 \cdots nv^{n-1}$

$= (1+i)\left(\frac{\ddot{a}_{\overline{n}|} - nv^n}{i}\right)$

$= \frac{\ddot{a}_{\overline{n}|} - nv^n}{i/1+i}$

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$$I\ddot{a}_{\overline{n}|} = \frac{\ddot{a}_{\overline{n}|} - nv^n}{d}$$

Q5) TWRR of Property Fund

$$(1+i) = \frac{16.4}{12.4}$$

$$i = 32.258\%$$

TWRR of Equity Fund

$$(1+i) = \frac{15.5}{12.1}$$

$$i = 28.099\%$$

Bought 10 units each quarter

$$124(1+i) + 131(1+i)^{3/4} + 148(1+i)^{1/2} + 158(1+i)^{1/4}$$
$$= 4 \times 164 = 656$$

$$i = 29.32\%$$

Investor bought R100 worth units

$$\text{i.e. } 3^{\text{rd}} \text{ Q}$$

$$\therefore i = 29.79\%$$

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Investor bought 10 units of equity fund

$$92(1+i) + 92(1+i)^{3/4} + 103(1+i)^{1/2} + (131)(1+i)^{0.4} = 4 \times 185 = 740$$

$\therefore$ $i = 67.31\%$

Investor put Rs 100 per quarter

$$400 \; s_{\overline{17}|}(4) = 100 \times 15.5 \left(\frac{1}{12.1} + \frac{1}{9.2} + \frac{1}{10.3} + \frac{1}{13.1} \right)$$

$i = 70.88\%$

x = installment amount

i) $160000 = x \; a_{\overline{4d}|} \; @ \; 8\%$

$x = 23844.65$

ii) Loan outstanding after 4th payment

$= 23844.65 \times a_{\overline{4}|} \; @ \; 8\%$

$= 110231.43$

Annual Repayment @ 10% is

y = Installment amount

$110231.43 = y \times a_{\overline{4}|} \; @ 10\%$

$y = 25309.722$

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Loan outstanding after 7th payment

25309.722 × a_{3} @ 10%

= 62942.74

Intall amount @ 9% = Z

62942.74 = Z a_{3} @ 9%.

Z = 24865.78

Total repayment amount

(4 × 23444.01) + (3 × 25309.72) + (3 × 24865.78)

= 245905.91

245905.907 = 160000 (1+i)^{6}

5.369114

Q7) i) Government securities are believed to be more secured as they regardless of the market conditions they provide fixed returns. These are most secured until the property which was pawned in 2008.

a) Loan by tender ~~could~~ ~~function~~ is a bidding process in which large institutional investor

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buys newly issued govt. securities ⓓ and investors provides competition to each other by ~~bidding~~ providing the ~~minimum~~ highest amount to transfer

b) As broker

A → Can choose the highest amount to sell the securites

D → Securities might be concentrated to some investors only

Investor

A → Most secured type of security

D → might Not be able to buy the security

c) Fixed Deposit → As interest rates changes frequently

Stocks → The fluctuate very much and react to every small news

08)

0	1	2	3
-2.7L	-20L	-20L	-20L +40L

P(1) = 0.25
P(2) = 0.2
P(3) = 0.1

50000 / bond

10 years

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i) NPV,

Present value of outlays = PV of inflows

$= 27v - 20La_{\overline{3}|}@i + 0.1v^3 + 0.1v^3 + 0.1v^4 + 0.1v^5 + 0.1v^6 + 0.1v^7 + 0.1v^8 + 0.1v^9 + 0.1v^{10}$

$\therefore i = 9.3\%$.

ii) $0.1v^3 + 0.85a_{\overline{10}|}v^3 = 27 - 0.2a_{\overline{3}|}$ @ 10%.

$= 4.19 - 3.19 = 1.0089$

NPV is +ve ∴ investment can be made in project

Q9) i) ~~TWRR~~ TWRR of the fund is

$(1+i)^3 = \frac{33}{30.5} \times \frac{38.65}{39} \times \frac{45.6}{41.05} \times \frac{47}{45.6 - 2.5}$

$i = 7.095\%$.

MWRR

$47 = 30.5(1+i)^3 + 6(1+i)^{2.25} + 4.5(1+i)^{1.5} - 2.5(1+i)^{0.5}$

$i = 7.206\%$.

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TWRR is concerned with the time of income and take outflows and funds into the consideration. It is not affected by the quantity of money but MWRR is affect by the quantity of money

10) Loan amount = $180000\left(a_{\overline{18}|}@12\%\right) + 20000\left(\frac{Ia}{I}_{\overline{12}|}\right)$

= 204082

Total cost = 80% of 71 + ~~xxxxx~~

= $\frac{80}{100} \times 46 = 2040$ ₹2

Total cost = 2550727.5

loan after t=8

$340000 \times a_{\overline{7}|}@12\% + 200000\left(\frac{Ia}{I}_{\overline{7}|}\right)$

= 517692 + 324160

= 1875852

11) TWRR

$x =$ ____

$(1+i)^2 = \frac{500}{480} \times \frac{590}{540} \times \frac{x}{540}$

$(12)^2 = 1.44$

$\therefore x = 655.78$

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ii) NOW

$460(1+i')^2 + 40(1+i')^{1.75} - 10(1+i') = 655.78$

$\therefore \quad i = 19.85\%$

iii) Effective interest Rate of 2015

$460(1+i) + 40(1+i)^{0.75} = 640$

$\therefore \quad i = 20.44\%$

Effective interest of 2015

$(1+i)^2 \; 550 = 655.78$

$i = 19.23\%$

NOW

$(1+i)^2 = 1.1923 \times 1.2044$

$= 19.33\%$

Q12) a) $-800(1+i)^{-t} - 50(1+i)^{t-1} + 100 \; \underset{t=4}{5} = 0$

$\boxed{t = 17.77}$

b) Accumulated profit after 22 years

$\therefore \$00 \; \underset{0.25}{5} \; @ \; 6\% = 48$

$\boxed{480000}$

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$100\,s_{\overline{17}|} = 102.97$

$-800(1+i)^t - 50(1+i)^{t-1} + 102.97\, s_{\overline{t-7}|} @ 7\% \geq 0$

$t = 18$ years

$-800(1+i)^{18} - 50(1+i)^{17} + 102.97\, s_{\overline{10}|}$

$= 9.77$

Level A_{12} = 462790

Q13) i) $x_{/12}$ = installment amount @ 7%.

$x\, a_{\overline{25}|}^{(12)} = 9880$

$x = 821.76$

$x/12 = 68.48$ → Monthly Installment

ii) Loan outstang after 10/03/29

$821.76\, a_{\overline{11.33}|}^{(12)} = 648600$

iii) Loan outstang on 10th sept 2016

$827.76\, a_{\overline{13.83}|}^{(12)} = 26.88$

$I_n = 301.56$

Capital payment on 12th mn = 576.20

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iii) $100\,s_{\overline{17}|} = 102.971$

$-800(1+i)^t - 50(1+i)^{t-1} + 102.97\, s_{\overline{t-7}|} @ 7\% \geq 0$

$t = 18$ years

$-800(1+i)^{18} - 50(1+i)^{17} + 102.97\, s_{\overline{10}|}$

$= 9.77$

Level A_{22} = 462790

Q13) i) $x_{/12}$ = installment amount @ 7%.

$x\, a_{\overline{25}|}^{(12)} = 9880$

$x = 821.76$

$x/12 = 68.48$ → Monthly Installment

ii) Loan outstang after 10/03/29

$821.76\, a_{\overline{11.33}|}^{(12)} = 648600$

iii) Loan outstang on 10th sept 2016

$827.71\, a_{\overline{13.83}|}^{(12)} = 26.88$

In = 301.56

Capital payment on 12th mu = 576.20

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