FINANCIAL EDUCATION AND INVESTMENT AWARENESS

PRACTICAL MODULE

1. Spreadsheet Modeling

A) IF Function
The IF Function is a premade function in Excel, which returns values based on a true or false condition, as it allowsto make logical comparisons between a value and what we expect.
= IF(logical_test, [value_if_true], [value_if_false])

B) SUM Function
The SUMFunction is a premade function in Excel, which adds numbers in a range.
= SUM(select the range)

C) AVERAGE Function
The AVERAGE Function is a premade function in excel, which calculates the average (arithmetic mean).
= AVERAGE(select the range)

D) VLOOKUP Function
The VLOOKUP Function is a premade function in excel, which allows searches across columns. It is used to find things in a table or a range by row.
= VLOOKUP(lookup_value, table_array, col_index_num, [range_lookup])

Lookup_value: Select the cell where search values will be entered.
Table_array: The table range, including all cells in the table.
Col_index_num: The data which is being looked up. The input is the number of the column, counted from the left.
Range_lookup: 0 for Exact match, 1 for Approximate match.

E) MAX Function
The MAX Function is a premade function in excel, which finds the highest number in a range.
= MAX(select the range)

F) MIN Function
The MIN Function is a premade function in Excel, which finds the lowest number in a range.
= MIN(select the range)

G) NPV Function
NPV (Net Present Value) is a financial formula used to discount future cash flows.
=NPV(rate, value1, [value2],…)

2. **Statistical Functions in Excel**

A) **MEDIAN Function**:
The Median function is a premade function in Excel, which returns the middle value in the data.
=**MEDIAN(select the range)**

B) **MODE Function:**
The Mode function is a premade function in Excel, which is used to find the number seen most times.
=**MODE(select the (table) range)**

C) **STANDARD DEVIATION Function:**
The STDEV.S Function is a premade function in Excel, which calculates the Standard deviation (Std) for a sample. Standard deviation is a measure of the amount of variation or dispersion of a set of values.
=**STDEV.S(select the range)**

Dividend Discount Model (DDM)

The Dividend Discount Model, also known as DDM, is in which stock price is calculated based on the probable dividends that one will pay. They will be discounted at the expected yearly rate. It is a way of valuing a company based on the theory that a stock is worth the discounted sum of all of its future dividend payments. In other words, it is used to evaluate stocks based on the net present value of future dividends.

Formula

Dividend Discount Model = Intrinsic Value = Sum of Present Value of Dividends + Present

Dividend Discount Model Example

In this dividend discount model example, assume that you are considering the purchase of a stock which will pay dividends of $20 (Dividend 1) next year and $21.6 (Dividend 2) the following year. After receiving the second dividend, you plan on selling the stock for $333.3. What is the intrinsic value of this stock if your required retur In 15%?

Solution:

One can solve this dividend discount model example in 3 Step: -

Step 1 - Find the present value of dividends for years 1 and 2.

- PV (year 1) = $20/((1.15)^1$)
- PV(year 2) = $20/((1.15)^2$)
- In this example, they come out to be $17.4 and $163, respectively, for1st and 2nd-year dividends.

Step 2 - Find the present value of the future selling price after two years.

PV(Selling Price) =$333.3 / $(1.15)^2$

Step 3 - Add the present value of dividends and the present value of the selling price.

$17.4+ $16.3+ $252.0 = $265.8

1. Zero-growth Dividend Discount Model

The zero-growth model assumes that the dividend always stays the same, i. e.,there is no growth in dividends. Therefore, the stock price would be equal to the Annual dividends divided by the required rate of return.

Stock's Intrinsic Value = Annual Dividends / Required Rate of Return

Zero Growth Dividend Discount Model - Example

If a preferred share of stock pays dividends of $1.80 per year, and the required rate of return for the stock is 8%, then what is its intrinsic value?

Solution:

Here, we use the dividend discount model formula for zero growth dividends

Dividend Discount Model Formula = Intrinsic Value = Annual Dividends/ Required Rate of Return

Intrinsic Value = $1.80/0.08 = $22.50.

The shortcoming of the model above is that you would expect most companies to grow over time.

2- Constant-Growth Rate DDM Model

The constant-growth dividend discount model or the Gordon Growth Model assumes dividends grow by a specific percentage each year.

The constant-growth dividend discount model or DDM model gives us the present value of an infinite stream of dividends growing at a constant rate.

Constant-growth Dividend Discount Model- Example 1

If a stock pays a $4 dividend this year, and the dividend has been growing 6% annually, what will be the stock's intrinsic value, assuming a required rate of return of 12%?

Solution:

D1 $4 x 1.06 = $4.24

Ke = 12%

Growth rate or g = 6%

Intrinsic stock price = $4.24 / (0.12 - 0.06) = $4/0.06 = $70.66

EXERCISES ON CALCULATION OF NET ASSETS VALUE

1. FindNAVperunit?

NameoftheScheme	Money Plant
Size of the Scheme	Rs. 100 Lacs
Face Value of the Share	Rs. 10
Number of the outstanding shares	Rs. 10 Lacs
Market value of the fund's investm Receivables	Rs. 180 Lacs
Accrued Income	Rs. 1 Lakhs
Receivables	Rs. 1 Lakhs
Liabilities	Rs. 50000
Accrued expenses	Rs. 50000

Solution:

NAV per unit = (Investment+Recoverable+Accrued Income-Liabilities-Accruedexp) / No of units(mutualfund)

$\qquad$ = (180 lacs+1 lacs+1 lacs - 0.50 lacs - 0.50 lacs) / 10 Lacs

$\qquad$ = Rs. 18.10 per unit

2. A Mutual fund that had a NAV of 20 at the beginning of month made income and capital gain distribution of Re.0.0375 and Re.0.03 per share respectively during the month, and then ended the month with a NAV of Rs. 20.06. Calculate monthly return.

Solution:

Given, $NAV0 = 20$; $NAV1 = 20.06$; $D1 = 0.0375$; Capital Gain $1 = 0.03$

% Monthly Return = (NAV1 + Dividend + Capital gain – NAV0) / NAV0

% Monthly Return = (20.06 + 0.0375 + 0.03 - 20) / 20

$\qquad$ = 0.006375 = 0.6375%

Annual Return = 0.6375*12 = 7.65% p

3. An investor bought units of a mutual fund for Rs. 20.425. At the end of the year, the worth of his holding was Rs. 21.85 and he had received a dividend of 17.5%. Using the simple total return method, compute his return.

Solution:

NAV0 = Rs. 20.425; NAV1 = Rs. 21.85; D1 = Rs. 10 * 17.5% = Rs. 1.75; Capital Gain 1 = Rs.0

% Return = (NAV1 + Dividend + Capital gain – NAV0) / NAV0

% Return = (21.85 +1.75 +0 - 20.425) / 20.425 = 0.155447 = 15.54%

4. Ahas invested in three Mutual Fund Schemes as per details below:

Particulars	MF-A	MF-B	MF-C
Date of Investment	01.12.03	01.01.04	01.03.04
Amount of investment	50,000	1,00,000	50,000
Net Asset Value (NAV) at entry date	Rs. 10.50	Rs. 10	Rs. 10
Dividend received upto 31.03.04	Rs. 950	Rs. 1,500	Nil
NAV as at 31.03.04	Rs. 10.40	Rs. 10.10	Rs. 9.80

Required: What is the effective yield on schemes to Mr.A upto 31.03.04?

Solution:

	MF-A	MF-B	MF-C
Amount Invested	50,000	100000	50,000
N.A.V. at entry Date	10.50	10	10
No of units purchased	4761.90	10,000	5,000
Total Dividend received	950	1500	Nil
Dividends per units	950/4761.90 = 0.1995	1500/10,000 = 0.15	
N.A.V. at end of year	= Re.10.40	Re.10.10	Re.9.80
% periodic return	(10.40+0.1995-10.50) / 10.5 = 0.9476%	(10.10+0.15 -10) / 10 = 2.5%	(9.80+0-10) / 10 = -2%
Period	Dec – March = 4 month	Jan-March = 3 month	March = one month
Annualised Return	0.9476*12/4 = 2.8428%	2.5 * 12/3 = 10%	(-2)*12% =(-) 24%

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

(a) Pay Rs.0.75 per unit as dividend and Rs.0.60 per unit as a capital gain.

Or

(b) These distributions are to be reinvested at an average NAV of 8.65 per unit.

(c) What difference it would make interms of return available and which option is preferable?

Solution:

a) Option-1 if Dividend is paid

NAV0 = Rs. 8.75; NAV1 = Rs. 9.45; D1 = Rs. 0.75; Capital Gain1 = Rs.0.60

% Total return = (NAV1+ Dividend distribution + capital gain distribution- NAV0) / NAV0

$$= (9.45+0.75 + 0.60 - 8.75) / 8.75 = 0.2342 = 23.42\%$$

b) When all dividends and capital gains distributions are re-invested into additional units of the fund (Rs. 8.65 unit)

Dividend + Capital Gains per unit = Re. 0.75+ Re 0.60 = Rs. 1.35

Total Amt received from 300 units = Rs. 1.35 x 300 = 405/-

Additional Units Acquired = Rs. 405 / Rs. 8.65 = 46.82 Units.

Total No of Units at the end of the year = 300 units + 46.82 units = 346.82 units.

Closing Value of 346.82 units held at the end of the year = 346.82*9.45 = Rs. 3277.45

Price Paid for 300 Units at the beginning of the year = 300 * 8.75 = Rs. 2,625.00

%Return on units of MF = (Closing Investment - Opening Investment)/ Opening Investment % of Return

$$= (3277.45 - 2625.00) / 2625 = 0.24855 = 24.855\%$$

Conclusion: Since the holding period reward is more in terms of percentage in option two i.e., reinvestment of distributionsat an average NAV of Rs. 8.65 per unit, this option is preferable.

6. Orange purchased 200 units of Oxygen Mutual Fund at Rs.45 per unit on 31.12.2009. In 2010, he received Rs.1 as dividend per unit and a capital gains distribution of Rs.2 per unit.

(i) Calculate the return for the period of one year assuming that the NAV as on 31.12.2010 was Rs.48 per unit.

(ii) Calculate the return for the period of one year assuming that the NAV as on 31.12.2010 was Rs.48 per unit and all dividends and capital gains distributions have been reinvested at an average price of 46 per unit.

Ignore taxation.

Solution:

NAV0 = 45; NAV1= 48; D1 = 1; Capital Gain1 = Rs. 2

% Total return = (NAV1+Dividend distribution+capital gain distribution – NAV0)/ NAV0

$$= (48 +1+2 - 45) / 45 = 0.1333 =13.33\%$$

(ii) Total Dividend and Capital gain = (1+2)*200 = Rs. 600

No of units purchase by investing dividend and capital gains = 600/46 = 13.04

Total no. of Units at the end of the year = 213.04

NAV at the end of the year = Rs. 48

Closing Value of Investment at the end of the year = 213.04 * 48 = Rs. 10225.92 Purchase price of 200 units at the beginning of the year = 200*45 = Rs. 9000

%Return on units of MF = (Closing Investment - Opening Investment)/Opening Investment % of Return

$$= (10225.92 - 9000) / 9000 = 13.62\%$$

Closing Value of 10000 units = 115000 +100000 - 10000 = Rs.205000

NAV as on 31.03.2001 = Value of Investment No. of units = 205000/10000 = Rs. 20.05

If Dividend is reinvested on 31/03/2001 at NAV = Rs. 20.05

Therefore, no. of units as on 31.03.2001 = 215000/20.05 = 10487.80

For the year 2001-2002

Dividend as on 31.03.2002 = 20% =10,487.80*10x20%= Rs. 20,975.60

No. of Units sold on 31.3.2003 = 11296.11

Hence no. of units purchased during 2001-02 by reinvesting dividend of 2001-02 = 11296.11 - 10487.80 = 808.31 units

Therefore, NAV as on 31.03.2002 = Amt of Dividend / No. of Units purchased = 20975.6 / 808.31 = Rs. 25.95

For the year 2002-2003

As per Suggested

Annualised Return = 73.52% [Assuming for the period 01/07/2000 to 31/03/ 2003]

Value of Investment as on 01/07/2000 = Rs. 100000

Value of Investment as on 31/03/2003 = ?

Return for the period 01/07/2000 to 31/03/2003 = 73.52 * 33 / 12 = 202.18

Return = (Value of Investment at end of period - Value of Investment at beginning of period)/Investment at the beginning of period

Value of Investment at end of period - 100000/100000= 2.0218

Value of Investment at end of period = 2.0218*100000+100000 = 302180

NAV as on 31/03/2003 = Value of Investment at end of period / No of Units

= 302180 / 11296.11 = 26.75

7. A close ended MF is listed at BSE. Its market price is 50 per unit. The as sets under the management of the MF are worth 480m and the liabilities are Rs.1m. The number of units outstanding are 10m. What is NAV of the unit of MF? What is premium or discount over NAV?

Solution:

Value of all Assets of MF = Rs. 480 m

Value of liabilities of MF = 1m

No. of Units of MF = 10m

NAV = Assets – Liabilities/No of Units = (480-1)/10 = Rs. 47.90

The market price = Rs. 50

Premium over NAV = Rs. 50 - 47.90 = 2.10

% of premium over NAV = 2.10/47.90 = 4.38%

8. Mr A invested Rs. 1000 in close ended MF. NAV at the time of investment was Rs. 15 and it was being traded in the stock exchange at a premium of 1%. During the year the fund paid a dividend of Rs. 2 per unit. The investor sold the investment in the stock exchange after receiving the dividend. His return is 20% p.a. Assume that at the time of sale in the stock exchange i.e., six months after the date of investment, the units were being traded in the market at 2% discount. Whatwas the NAV at the time of sale.

Solution:

NAV on the date of Investment = Rs.15

Premium on NAV = 1%

Market price of Unit = 15*1.01 = Rs. 15.15

No of units purchased = Amt of Investment / Market Price

= 1000/15.15 = 66.0066 units

Return of Investor p.a. = 20% p.a.

His return for 6 months = 20/2 = 10%

The wealth would be at the end of six months period

= Investment*(1+Return)=1000*1.1

= 1100

Dividend per unit = Rs. 2

Dividend received by investor = 2*66.0066 = Rs.132

Sale proceeds of 66.0066 units = 1100-132 = Rs. 968

Sale proceeds of per units= 968/66.0066 = 14.67 = Market Price of Unit Discount on NAV on the date of sale = 2%

NAV = Market price/(1-DR) = 14.67/(1-0.02) = 14.96

9. Mr. Deore invested Rs. 25,000/- to purchase 2,500 units of ICICI MF - B plan on 4th April 2007. He decided to sell the units on 14th Nov. 2007 at NAV of Rs. 16.4/-. The exit load was 2.5%. Find his profit (Calculations are upto 2 decimal points).

Solution:

No. of units = 2500, purchase cost = Rs.25,000/-

NAV on the date of sale = RS. 16.4/-,

Exit load = 2.5% = of 16.4 = 0.41

Selling price of 1 unit = 16.4 - 0.41 = 15.99

Sale value = 2500 x 15.99 = Rs. 39,975/-

Profit = 39,975 - 25,000 = Rs. 14,975

10. Ragini invested Rs. 94,070/- in mutual Fund when NAV was Rs. 460/- with entry load of 2.25 %. She received a dividend of Rs. 5/- per unit. She, later sold all units of fund with an exit load of 0.5 %. If her gain was Rs.1654/-, find NAV at which she sold the units. (Calculations are upto 2 decimal points)

Solution:

Purchase price of one unit = 460 + 2.25% of 460

$$= 460 + 10.35 = 470.35$$

No. of units purchased = 94,070 = 200 470.35

Total dividend = $200 \times 5 = 1000$

Gain = Profit + Dividend

1654 = Profit + 1000

Profit = 1654-1000= 654 While selling let NAV of one unit be y

Sale price of one unit = NAV - exit load = y - 0.5% of y = 0.995 y

Sale price of 200 units = 200 x 0.995 y= 199 Y

Also, profit = Total sale - Total purchase 654 = 199 y - 94,070

199y = 654 + 94,070

199y = 94724

Y = 476

NAV at which she sold units = Rs. 476/-

11. If a mutual fund had NAV of Rs. 28/- at the beginning of the year and Rs. 38/- at the end of the year, find the absolute change and the percentage change in NAV during the year.

NAV at the beginning = Rs. 28/-

NAV at the end = Rs. 38/-

Absolute change in NAV = in 38 - 28 = Rs. 10/-

% change = Absolute change x 100 = 10 x100 = 35.71

% NAV at the beginning 28 Example 14

If NAV was Rs. 72/- at the end of the year, with 12.5 % increase during the year, find NAV at the beginning of the year.

Solution:

Let 'x' be the NAV at the beginning of the year.

Absolute change in NAV = 12.5 % of x = 12.5x , x = 0.125 x 100

NAV at the end of the year = x + 0.125 x

$$= 1.125x$$

1.125 x = 72 / 4"

x = 72 / 1.125 = 64

NAV's initial value was Rs. 64/-