Risk and Return

1. Miss Jyoti purchased 10 shares of Xavier Ltd. on 1/1/2020 for ₹ 75 per share, during the year 2020 Xavier Ltd. paid dividend of ₹ 12 per share. The market price of the share on 31/12/2020 was ₹ 93 per share. You are required to find out the returns earned by Ms. Jyoti during the year 2020.
   Return = [Dividend + (Price at the end – price at the beginning)]/price at the beginning *100
   Return =[12+(93-75)]/75*100 = 40%

2. Ms. Pallai purchased 100 shares of Kumar Ltd on 1/1/2020 for ₹ 95 per share, during the year 2020 Kumar Ltd. paid dividend of ₹ 17 per share. The market price of the share on 31/12/2020 was ₹ 106.50 per share. You are required to find out the returns earned by Ms. Pallai during the year 2020.
   Return = [17+(106.50-95)]/95*100 = 30%

3. Mukesh purchased 5 shares of Multan Ltd. for ₹ 57 each on 1/4/2020, during the year 2020-2021 company paid a dividend of ₹ 5 per share. Mr. Mukesh sold the share on 31/3/2021 for ₹ 50 each. You are required to find out the returns earned by Mukesh during the year 2020-21.
   Return = [5+(50-57)]/57*100 = -3.5%

4. Jones purchased 12 shares of Liverpool Ltd., for ₹ 190 per share on 1/1/2017, during the time span of 3 years Liverpool Ltd., paid following dividends per share 2017 - ₹ 7, 2018 - ₹ 9, 2019 - ₹ 12. Jones sold the shares on 31-12-2019 for ₹ 225 per share, find out the holding period returns earned by Jones. Calculate Annualised returns also.
   Holding period return = [total dividend +(Pe-Pb)]/Pb *100
   HPR = [(7+9+12)+(225-190)]/190*100 = 33.2%
   Annualised Return = 33.2/3 = 11.1%

5. Torres purchased some shares of Ronaldo Ltd. for ₹ 1770 per share on 1/4/2020, he sold the shares on 30/9/2020 for ₹ 2250 per share, during this time period Ronaldo Ltd. paid normal dividends of ₹ 70 per share. Find out the holding period returns of Torres. Also find out Annualised return.
   HPR = [70+(2250-1770)]/1770*100 = 31%
   Annualised Return = 31/6*12 = 62%

6. XYZ Ltd. paid the following dividend per share and had following market price per share during the period 2015 – 2018.

Year	Dividend per share	Market price per share
2015	7	95
2016	9	105
2017	11	90
2018	12	158

   Calculate the annual rate of return for last 3 years.

   Return = [Dividend +(pe-pb)]/pb*100
   2016 = (9+(105-95))/95*100 = 20%

2017 = (11+(90-105))/105*100 = -3.81%

2018 = (12+(158-90))/90*100 = 88.89%

7. Find the expected returns of ABC Ltd.

Year	Dividend per share	Market price per share
2014	1.53	31.25
2015	1.53	20.75
2016	1.53	30.88
2017	2.00	67.00
2018	2.00	100.00
2019	3.00	154.00

Return = [Dividend +(pe-pb)]/pb*100

2015 = [1.53+(20.75-31.25)]/31.25 *100 = -28.7%

2016 = [1.53 + (30.88-20.75)]/20.75*100 = 55.8%

2017 = [2+(67-30.88)]/30.88*100 = 124%

2018 = [2+(100-67)]/67*100 = 52.23%

2019 = [3+(154-100)]/100*100 = 57%

8. Calculate expected returns from the following information for GEC Ltd.

Month	Returns
January	0.034
February	-0.06
March	-0.118
April	0.067
May	-0.063
June	-0.079
July	-0.059
August	0.268
September	0.178
October	0.191
November	-0.071
December	-0.055

Arithmetic mean return = 1.95%

9. Calculate expected returns, variance and standard deviation from the following information for XYZ Ltd.

Month	Returns
January	0.04
February	0.09
March	-0.06
April	0.075
May	-0.05
June	0.08

Month	Returns	Var
January	0.04	0.000117
February	0.09	0.003701
March	-0.06	0.007951

April	0.075	0.002101
May	-0.05	0.006267
June	0.08	0.002584
	0.175	0.022721

Return = 0.175/6 = 0.02917 =29.17%

Total Variance = 0.022721 = 2.27%

Standard Deviation = SQRT(total variance) = 0.061537 = 6.15%

10. Investor's assessment of return on a share of X Ltd. under three different situations is as follows:

Economic situation	Chance (P)	Return (%)
1	0.25	35
2	0.50	30
3	0.25	15

Calculate the expected rate of return, variance and standard deviation.

Economic situation	Chance (P)	Return (%)	pR	R-Er	(R-Er)^2	p*(R-Er)^2
1	0.25	35	8.75	7.5	56.25	14.0625
2	0.5	30	15	2.5	6.25	3.125
3	0.25	15	3.75	-12.5	156.25	39.0625
		Er =	27.5		Var =	56.25

Expected Return (Er) = 27.5%

Variance (Var) = 56.25%

Standard Deviation = SQRT (Var) = 7.5%

11. The current price of stock 'Q' is ₹ 150. The future prices with probabilities are given below:

Future Prices (₹)	120	150	180	210	240
Probability	0.1	0.2	0.4	0.2	0.1

Assuming that the company will not pay any dividend you are required to find out expected returns and standard deviation of the stock.

Current Price	150						
Future Prices	120	150	180	210	240		
Return	**-0.2**	**0**	**0.2**	**0.4**	**0.6**		
Probability	0.1	0.2	0.4	0.2	0.1		
pR	-0.02	0	0.08	0.08	0.06	**0.2**	**Exp Ret**
R-Er	-0.4	-0.2	0	0.2	0.4		
(R-Er)^2	0.16	0.04	0	0.04	0.16		
p*(R-Er)^2	0.016	0.008	0	0.008	0.016	**0.048**	**Variance**

					0.219089	SD

12. The risk free return is 10% and the return on market portfolio is 15%. Stock A's Beta is 1.5; its dividends & earnings are expected to grow at the constant rate of 8%. If the previous dividend per share of Stock A was 2. What should be the intrinsic value per share of stock A?

Rf = 10% ; Rm =15% ; Beta = 1.5

Ke (re) = Rf + Beta (Rm –Rf)

Ke = 10+1.5 (15-10) = 10+1.5(5) = 17.5%

Intrinsic value of share (P0) = D1/(Ke –g) *100

D1 =D0(1+g)

D1 =2(1+8%) =2(1.08) = 2.16

P0 = 2.16/(17.5 – 8)*100 =22.74

13. The risk-free return is 8% and the expected return on a market portfolio is 12%. If the required return on a stock is 15%, what is its beta?

Rf = 8%; Rm= 12%; Ke =15% ; Beat = ?

Ke = Rf + Beta (Rm –Rf)

15 = 8 + Beta (12-8)

7 = Beta(4)

Beta = 7/4 = 1.75

14. The risk-free return is 9%. The required return on a stock whose beta is 1.5 is 15%. What is the expected return on the market portfolio?

Rf =9%; Beta = 1.5; Ke=15%; Rm=?

Ke = Rf + Beta (Rm – Rf)

15 = 9 + 1.5 (Rm – 9)

6 = 1.5(Rm -9)

4 =Rm -9

Rm =13%

15. You are considering purchasing the equity stock of MVM company. The current price per share is Rs.10. You expect the dividend a year hence to be Rs. 1.00. You expect the price per share of MVM stock a year hence to have the following probability distribution.

Price a year hence	10	11	12
Probability	0.4	0.4	0.2

a. What is the expected price per share a year hence?

Expected price = (10*0.4)+(11*.4)+(12*0.2) = 10.8

16. The stock of Alpha company performs well relative to other stocks during recessionary periods. The stock of Beta company, on the other hand does well during growth periods.

Both stocks are currently selling for Rs.50 per share. The rupee return (dividend plus price change) of these stocks for the next year would be as follows:

Economic condition	Probability	Return on Alpha stock	Return on Beta stock
High growth	0.3	55	75
Low growth	0.3	50	65
Stagnation	0.2	60	50
Recession	0.2	70	40

Calculate the expected return and standard deviation of :
a. Rs. 1000 in the equity stock of Alpha
b. Rs. 1000 in equity stock of Beta

Investment of Rs. 1000 in stock Alpha

Economic situation	Chance (P)	Return (%)	Overall Return	pR	Overall R-Er	(R-Er)^2	p*(R-Er)^2
High Growth	0.3	55	1100	330	-50	2500	750
Low Growth	0.3	50	1000	300	-150	22500	6750
Stagnation	0.2	60	1200	240	50	2500	500
Recession	0.2	70	1400	280	250	62500	12500
			Er =	1150		Var =	20500

Expected (Er) =	1150
Variance (Var) =	20500
STD Dev (SD) =	143.18

Investment of Rs. 1000 in stock Beta

Economic situation	Chance (P)	Return (%)	Overall Return	pR	Overall R-Er	(R-Er)^2	p*(R-Er)^2
High Growth	0.3	75	1500	450	200	40000	12000
Low Growth	0.3	65	1300	390	100	10000	3000
Stagnation	0.2	50	1000	200	-200	40000	8000
Recession	0.2	40	800	160	-400	160000	32000
			Er =	1200		Var =	55000

Expected (Er) =	1200
Variance (Var) =	55000
STD Dev (SD) =	234.52