

# CMA FINAL MARATHON

## SFM



HGPA CLASSES , PUNE  
CMA FINAL SFM MARATHON – Dec 2022 Exams  
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MARATHON HIGHLIGHTS :

- AS PER PAPER PATTERN EXPECTED FOR DEC 2022 EXAMS – OFFLINE
- CONCEPT + IMP QUESTIONS COVERED ( June 2018 to Dec 2019 past exam papers )
- IN ENGLISH
- EXPECTED TO HAVE A GONE THROUGH THE SYALLBUS EARLIER
- NEED TO SOLVE IT WITH ME , LIVE
- FOR REGULAR / FAST TRACK COURSES , WHATSAPP ON 9921511185
- I will also give some questions which are IMPORTANT on the spot in the marathon

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EXCLUSIVE CMA FINAL BATCHES  
FOR ADMISSIONS : CONTACT NO : 9665195753

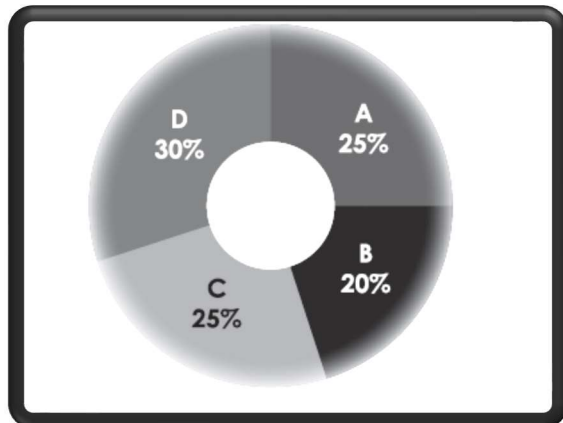
Paper Pattern :

Dec 2019 paper contained two sections, A and B.

Section A is compulsory and contains question no. 1 for 20 marks.

Section B contains question numbers 2 to 8, each carrying 16 marks. ( Answer any 5 questions )

Weightage :



Sec A : Cap budg. + Leasing  
Sec B : Mutual Funds + Theory  
Sec C : Portfolio Mngt  
Sec D : Derivatives + Forex + Theory

Sequence to be followed while studying :

Portfolio management  
Derivative  
Forex  
Capital Budgeting  
Leasing  
Mutual Funds  
Theory

## PORTFOLIO MANAGEMENT :

MCQ :

1.

A company is considering four projects A, B, C and D with the following information:

	Project A	Project B	Project C	Project D
Expected NPV (Rs)	60,000	80,000	70,000	90,000
Standard deviation (Rs)	4,000	10,000	12,000	14,000

Which project will fit the requirement of low risk appetite?

- (A) Project A
- (B) Project B
- (C) Project C
- (D) Project D

2. The probability distribution of security N is given below:

Probability	Return (%)
0.30	30
0.40	20
0.30	10

The risk of the return of the security will be around

- (A) 60%
- (B) 8%
- (C) 20%
- (D) 24%

3.

A project had an equity beta of 1.3 and was going to be financed by a combination of 30% debt and 70% equity. Assuming debt-beta to be zero, the project beta is :

- (A) 0.81
- (B) 0.71
- (C) 0.51
- (D) 0.91

4.

A project had an equity beta of 1.4 and is to be financed by a combination of 25% Debt and 75% Equity. Assume Debt Beta as zero,  $R_f = 12\%$  and  $R_m = 18\%$ . Hence, the required rate of return of the project is

- (A) 16.72%
- (B) 18.30%
- (C) 17.45%
- (D) 12.00%

5.

The beta co-efficient of equity stock of Anjuna Ltd is 1.6. The risk free rate of return is 12% and the required rate of return is 15% on the market portfolio. If dividend expected during the coming year ₹2.50 and the growth rate of dividend and earnings is 8%. At what price the stock of Anjuna Ltd. Can be sold (based on CAPM)?

- (A) ₹12.50
- (B) ₹16.80
- (C) ₹28.41
- (D) Insufficient Information.

6.

A project had an equity beta of 1.3 and was going to be financed by a combination of 30% debt and 70% equity. Assuming debt-beta to be zero, calculate the project beta and return from the project taking risk free rate of return to be 10% and return on market portfolio of 18%.

- (A) 14.28%
- (B) 17.28%
- (C) 15.28%
- (D) 16.28%

7.

The following is not a systematic risk.

- (A) Market Risk
- (B) Interest Rate Risk
- (C) Business Risk
- (D) Purchasing Power Risk

8.

An investor has three alternatives of varying investment values. The data available for each of these alternatives are given below:

Alternative	Expected Return (%)	Standard Deviation of Return
I	23	8
II	20	9.5
III	18	5

Which alternative would be the best if coefficient of variation is used?

- (A) Alternative III is the best as its co-efficient of variation is the lowest
- (B) Alternative II is the best as its co-efficient of variation is the lowest
- (C) Alternative I is the best as its co-efficient of variation is the lowest
- (D) None

9.

An investor owns a stock portfolio equally invested in a risk free asset and two stocks. If one of the stocks has a beta of 0.75 and the portfolio is as risky as the market, the beta of the stock in portfolio is

- (A) 2.12
- (B) 2.25
- (C) 2.56
- (D) 2.89

10.

For a portfolio containing three securities A, B and C,  
correlation coefficients  $\rho_{AB} = +0.4$ ;  $\rho_{AC} = +0.75$ ;  $\rho_{BC} = -0.4$ ;

standard deviation  $\sigma_A = 9$ ;  $\sigma_B = 11$ ;  $\sigma_C = 6$ ;

weights  $\omega_A = 0.2$ ;  $\omega_B = 0.5$ ;  $\omega_C = 0.3$ ;

The covariance of securities A and B is

- (A) 3.96
- (B) 24.75
- (C) 39.6
- (D) 247.5

Questions :

11.

From the following information, ascertain the risk of the portfolio —

Securities	Standard Deviation	Proportion in Portfolio
A	8%	0.30
B	12%	0.50
C	6%	0.20

Correlation Co-efficient

AB = 0.50

AC = -0.40

BC = +0.75

12.

Stock P has a Beta of 1.50 and a market expectation of 15% return. For Stock Q, it is 0.80 and 12.5% respectively. If the risk free rate is 6% and the market risk premium is 7%, evaluate whether these two stocks are priced correctly? If these two stocks to be regarded as correctly priced, what should the risk free rate and market risk premium be?

13.

The total market value of the equity share of Dharam Company is ₹60,00,000 and the total value of the debt is ₹40,00,000. The treasurer estimate that the beta of the stocks is currently 1.5 and that the expected risk premium on the market is 12 per cent. The Treasury bill rate is 10 per cent.

**Required—**

- What is the beta of the Company's existing Portfolio of assets?
- Estimate the Company's Cost of Capital and the discount rate for an expansion of the company's present business.

**14.**

**Mr. Q owns a portfolio with the following characteristics —**

	Security A	Security B	Risk Free Security
Factor 1 Sensitivity	0.80	1.50	0
Factor 2 Sensitivity	0.60	1.20	0
Expected Return	20%	25%	15%

It is assumed that security returns are generated by a two-factor model —

- If Mr. Q has ₹1,00,000 to invest and sells short ₹50,000 of Security B and purchases ₹1,50,000 of Security A what is the sensitivity of Mr. Q portfolio to the two factors?
- If Mr. Q borrows ₹1,00,000 at the risk free rate and invests the amount he borrows along with the original amount of ₹1,00,000 in Security A and B in the same proportion as described in Part 1, what is the sensitivity of the portfolio to the two factors?
- What is the expected return premium of Factor 2?

**15.**

**Following are the information on two Portfolios, D and G —**

Particulars	Portfolio D	Portfolio G
Elimination of Unsystematic Risk (Diversifiable Risk) Variance[ $\sigma^2$ ]	Complete 6.66	Partial 14.96

The Sensex has returned an average of 16.25% on the investment in the past years. The expected appreciation in return is 3% on the previous year's return. The variance of the return on Sensex is measured at 2.96.

7% ₹1,000 Government Guaranteed Bonds are traded at ₹1,094. The covariance between Portfolio G and the Market is 4.96. Ascertain the expected return on Portfolio D and G.

**16.**

Stock P has a Beta of 1.50 and a market expectation of 15% return. For Stock Q, it is 0.80 and 12.5% respectively. If the risk free rate is 6% and the market risk premium is 7%, evaluate whether these two stocks are priced correctly? If these two stocks to be regarded as correctly priced, what should the risk free rate and market risk premium be?

**17.**



Returns on two portfolios, B and L, for the past 4 years are —

Year	1	2	3	4
Portfolio B	13.00%	13.50%	12.50%	14.00%
Portfolio L	14.35%	11.75%	13.60%	12.90%

Beta factor of the two portfolios are 1.3 and 1.2 respectively. If the market portfolio fetches 12% return and RBI Bonds, which are considered risk free, yield 5% return, which of the above two portfolios will an investor prefer?

18.

An investor holds two stocks X and Y. An analyst prepared ex-ante probability distribution for the possible Economic scenarios and the conditional returns for the two stocks and the market index as shown below:

Economic Scenario	Probability	Conditional Returns %		
		X	Y	Market
Growth	0.40	25	20	18
Stagnation	0.30	10	15	13
Recession	0.30	-5	-8	-3

The risk free rate during the next year is expected to be around 9%. Determine whether the investor should liquidate his holdings in stocks X and Y or on the contrary make fresh investments in them. CAPM assumptions are holding true.

19.

The returns on Stock A and Market Portfolio for a period of 6 years are as follows:

Year	Return on A (%)	Return on Market Portfolio (%)
1	10	8
2	17	10
3	13	13
4	2	-4
5	10	11
6	-10	-2

You are required to determine: Characteristic line for Stock A

20.

A holds the following portfolio

Share/Bond	Beta	Initial Price	Dividend	Market price at the end of year
A Ltd.	0.9	30	3	60
B Ltd.	0.8	40	3	70

C Ltd.	0.6	50	2	150
G Bonds	0.01	1000	140	1010

Risk Free return is 14% Calculate:

- (i) The expected rate of return on his portfolio using Capital Asset Pricing (CAPM)
- (ii) The average return of his portfolio

## DERIVATIVE

21.

Shares of Sandeep Ltd are being quoted at ₹600 . 3-Months Futures Contract Rate is ₹636 per share for a lot size of 500 shares. If the Sandeep Ltd is not expected to distribute any dividend in the interim, risk free rate of return is 9%, what is the recommended course of action for a trader in shares?

If the 3-Months Futures Contract Rate is ₹ 600, what should be the action?

22.

A four month European call option on a dividend paying stock is currently selling for ₹5. The stock price is ₹66, the strike price is ₹60, and a dividend of ₹0.80 is expected in one month. The risk free interest rate is 12% per annum for all maturities. Do you have arbitrage?

23.

The price of Compact Stock of a face value of ₹10 on 31<sup>st</sup> December, 2013 was ₹414 and the futures price on the same stock on the same date i.e., 31<sup>st</sup> December, 2013 for March, 2014 was ₹444.

Other features of the contract and the related information are as follows:

- Time to expiration 3 months (0.25 year)
- Annual dividend on the stock of 30% payable before 31.3.2014.
- Borrowing Rate is 20 % p.a.

Based on the above information, calculate future price for compact stock on 31<sup>st</sup> December, 2013. Please also explain whether any arbitrage opportunity exists.

24.

**(Cross Hedge)**

Given the following information—

BSE Index	50,000
Value of Portfolio	₹1,01,00,000
Risk Free Interest Rate	9% p.a.
Dividend Yield on Index	6% p.a.
Beta of Portfolio	2.0

We assume that a futures contract on the BSE index with 4 months maturity is used to hedge the value of portfolio over next 3 months. One future contract is for delivery of 50 times the index. Based on the information, Calculate — (a) Price of future contract, (b) The gain on short futures position if index turns out to be 45,000 in 3 months.

25.

Bharat Investments Ltd is long on 25,000 Shares of Trinayan Earthmoving Equipments Ltd (TEEL). Its shares are currently quoted at ₹180 per share. Bharat fears fall in prices of TEEL. It therefore wants to hedge its risk under the Futures Contract route. However, future rate is not available for TEEL. Therefore, Bharat is looking for cross hedge and the following particulars are made available –

Related Index	NIFTY	Infrastructure Index	Iron and Steel Index	Bank Index
Beta of TEEL with Related Index	0.8	1.1	1.3	1.0
Correlation of TEEL with Related Index	0.6	0.8	0.6	0.3
No. of Units of TEEL underlying every Futures Contract of Index	1000	500	1000	1250

Bharat contemplating taking a cross hedge in either Iron and Steel Index, because it has the highest Beta value, consequently requiring less no. of Futures Contract, or Bank Index as it has the perfect Beta Value.

Advise Bharat.

26.

A unit trust wants to hedge its portfolios of shares worth ₹10 million using the BSE-SENSEX index futures. The contract size is 100 times the index. The index is currently quoted at 6,840. The beta of the portfolio is 0.8. The beta of the index may be taken as 1. What is the number of contracts to be traded?

27.

Companies A and B face the following interest rates :

A			B
US \$	FLOATING RATE	LIBOR + 0.5%	LIBOR + 1 %
Canadian \$	FIXED RATE	5 %	6.5 %

Assume that A wants to borrow US \$ at a floating rate of interest and B wants to borrow Canadian \$ at a fixed rate of interest .

A financial institution is planning to arrange a swap and requires a 50 BPS ( basis point spread ). If the swap is equally attractive to A and B , what are the rates of interest will A and B end up paying.

28.

Following information is available for two firms.

Firm	Objective	Fixed Rate	Floating Rate
A	Floating Rate	10%	LIBOR+0.75%
B	Fixed Rate	11%	LIBOR+1.00%

Explain how the two firms would enter into a swap transaction to reduce their interest costs, if Firm A does not want to pay more than LIBOR+0.35%.

29.

Company P Ltd. and Q Ltd. have been offered the following rate per annum on a ₹200 crore five year loan:

Company	Fixed Rate	Floating Rate
P Ltd.	12.0%	MIBOR+0.1%
Q Ltd.	13.4%	MIBOR +0.6%

Company P Ltd. requires a floating rate loan and Q Ltd. requires a fixed rate loan.

You are required to design a swap arrangement that will net a bank acting as intermediary at 0.5% p.a. and be equally attractive to both the companies. Also find out the effective interest rates.

30.

An investor bought 2,000 shares of X Ltd. for Rs.90 per share. The initial margin is 50%. The maintenance margin is 40%. If the stock price decreases to Rs.70 per share. The additional funds put by the investors to his margin account is –

- (a) Rs.20,000
- (b) Rs.20,500
- (c) Rs.21,000
- (d) Rs22,000

31.

The spot value of NIFTY is 6430. An investor bought a two month NIFTY for 6410 call option for a premium of Rs.24. The option is

- (a) In-the Money
- (b) At-the Money
- (c) Out-of the Money
- (d) Insufficient Data

32.

Shares of C Ltd. is traded at Rs.1,150. An investor is bullish about the market. He buys two one month call option contracts (one contract is 100 shares) on C Ltd. with a strike price of Rs.1,195 at a premium of Rs.35 per share. Three months later, if the share is selling at Rs.1240 what will be net profit/loss of the investor on the position?

- (a) Rs.1000
- (b) Rs.1200
- (c) Rs.1500
- (d) Rs.2000

33.

A stock index currently stands at 7000. The risk free interest rate is 8% p.a. continuously compounded and the dividend yield on the index is 4% p.a. What should be the futures price for a four month contract? [Given  $e^{(.08-.04)4/12} = 1.013423$ ]

- (a) 7093.96
- (b) 7097.34
- (c) 7098.68
- (d) 7099.25

34.

A 6-month forward contract on a non-dividend paying stock when the stock price is ` 60 and the riskfree interest rate (with continuous compounding) is 12% p.a. What is the forward price? [Given  $e^{0.06} = 1.0618$ ]

- (a) Rs.63.70
- (b) Rs.62.23
- (c) Rs.64.23

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(d) Rs.65.27

35.

If you sell a call option on a share with a strike price of Rs. 375, market price of Rs360, and a premium of Rs.21.What is the maximum loss on expiry of this position?

- (a) Rs.354
- (b) Unlimited
- (c) Rs.396
- (d) None of these

36.

On 31.8.2018, the value of stock index was ₹ 8,800. The risk free interest rate has been 8% p.a.. The dividend yield on this stock index is as under:

Month	June	July	August	September	October	November	December
Dividend Paid p.a.	3%	4%	3%	3%	4%	3%	3%

The duration of the contract is four months and the interest is calculated continuously compounded daily. You are required to calculate the future price of contract deliverable on 31.12.2018. ( $e^{0.01583} = 1.01593$ )

37.

From the following data for certain stock, find the value of a call option using Black-Scholes Model :

Price of stock now = Rs.80

Exercise price = Rs.75

Standard deviation of continuously compounded annual return = 0.40

Maturity period = 6 months

Annual interest rate = 12%

[Given  $1.062$ ;  $\log 1.0667 = 0.0646$ ;  $N(0.5820) = 0.7197$ ;  $N(0.2992) = 0.6176$ ]

**FOREX :**

**39.**

XYZ Ltd. a US firm will need £ 3,00,000 in 180 days.

In this connection, the following information is available:

Spot rate 1 £ = \$ 2.00 180 days

forward rate of £ as of today = \$1.96

Interest rates are as follows:

Particulars	UK	US
180 days deposit rate	4.5 %	5 %
180 days borrowing rate	5 %	5.5 %

A call option on £ that expires in 180 days has an exercise price of \$ 1.97 and a premium of \$ 0.04.

XYZ Ltd. has forecasted the spot rates 180 days hence as below

Future rate	Probability
\$ 1.91	25 %
\$ 1.95	60 %
\$ 2.05	15 %

Which of the following strategies would be most preferable to XYZ Ltd.?

- (a) A forward contract;
- (b) A money market hedge;
- (c) An option contract;
- (d) No hedging.

Show calculations in each case

40.

The finance director of P Ltd. has been studying exchange rates and interest rates relevant in India and USA. P Ltd. has purchased goods from the US Co. at a cost of \$ 51 lakhs payable in \$ in 3 months time.

In order to maintain profit margins the finance director wishes to adopt, if possible a risk free strategy that will ensure that the cost of goods to P Ltd. is no more than Rs.22crores.

Rs./\$ (Spot) 40/42

Rs./ \$ (1 month forward) 41/43

Rs./\$ (3 months forward) 42/45

Interest rates available to P Ltd.

	India (Rates in %)		USA (Rates in %)	
	Deposit	Borrowing	Deposit	Borrowing
1 month	13.00	15.00	7.00	10.00
3 month	13.00	16.00	8.00	11.00

Calculate whether it is possible for P Ltd. to achieve a cost directly associated with transaction no more than Rs.22 crores, by means of a forward market hedge or money market hedge. Transaction costs may be ignored.

41.

Paper Products Ltd. Has already received the invoices for HKD 2,10,000.

Spot rate RS/HKD = 6.50 and

60 day fwd rate is 6.60 .

Determine whether PPL should avail the credit of 60 days or lead the payment if interest rates in India is (a)11% p.a (b) 6.5 % p.a.



42.

On 15th January 2015 you as a banker booked a forward contract for US\$ 250000 for your import customer deliverable on 15th March 2015 at Rs. 65.3450. On due date customer request you to cancel the contract. On this date quotation for US\$ in the inter-bank market is as follows:

Spot	Rs.65.2900/2975 per US\$
Spot/ April	3000/ 3100
Spot/ May	6000/ 6100

Assuming that the flat charges for the cancellation is Rs.100 and exchange margin is 0.10%, then determine the cancellation charges payable by the customer.

43.

An importer booked a forward contract with his bank on 10th April for USD 2,00,000 due on 10th June @ ₹ 64.4000. The bank covered its position in the market at ₹ 64.2800.

The exchange rates for dollar in the interbank market on 10th June and 13th June were:

	10th June	13th June
Spot USD 1=	₹ 63.8000/8200	₹ 63.6800/7200
Spot/June	₹ 63.9200/9500	₹ 63.8000/8500
July	₹ 64.0500/0900	₹ 63.9300/9900
August	₹ 64.3000/3500	₹ 64.1800/2500
September	₹ 64.6000/6600	₹ 64.4800/5600

Exchange Margin 0.10% and interest on outlay of funds @ 12%. The importer requested on 14th June for extension of contract with due date on 10<sup>th</sup> August.

Rates to be rounded off to 4 decimals in multiples of 0.0025.

On 10th June, Bank Swaps by selling spot and buying one month forward.

Calculate:

- (i) Cancellation rate
- (ii) Amount payable on \$ 2,00,000
- (iii) Swap loss
- (iv) Interest on outlay of funds, if any
- (v) New contract rate

(vi) Total Cost

44.

Consider the following quotes. Spot (Euro/Pound) = 1.6543/1.6557; Spot (Pound/NZ\$) = 0.2786/0.2800. Calculate the % spread on the Euro/Pound Rate.

- (A) 0.085%
- (B) 0.0085%
- (C) 0.85%
- (D) 0.00085%

45.

Sunny Ltd. (SL), have exported goods to UAE for Arab Emirates Dirham (AED) 5,00,000 at a credit period of 90 days. Rupee is appreciating against the AED and SL is exploring alternatives to mitigate loss due to AED Depreciation. From the following information, analyze the possibility of Money Market Hedge —

Foreign Exchange Rates		
	Bid	Ask
Spot	₹ 11.50	₹ 11.80
3-Month Forward	₹ 11.20	₹ 11.40

Money Market Rates		
	Deposit	Borrowings
AED	9%	12%
Rupees	8%	10%

46.

The following table shows interest rates and exchange rates for the US Dollar and French Franc. The spot exchange rate is 7.05 Francs per Dollar. Complete the missing entries —

	3 Months	6 Months	1 Year
Dollar Interest Rate (Annual)	11½%	12¼%	?
Franc Interest Rate (Annual)	19½%	?	20%
Forward Francs per Dollar	?	?	7.52
Forward Discount on Franc (Percent per Year)	?	(6.3%)	?

## CAPITAL BUDGETING

Q.47

Following data has been available for a capital project:

Annual cash inflows            ₹ 1,00,000  
Useful life                        4 years  
Salvage value                    0

Internal rate of return        12%  
Profitability index            1.064

You are required to CALCULATE the following for this project:

- (i) Cost of project
- (ii) Cost of capital
- (iii) Net present value
- (iv) Payback period

PV factors at different rates are given below:

Discount factor	12%	11%	10%	9%
1 year	0.893	0.901	0.909	0.917
2 year	0.797	0.812	0.826	0.842
3 year	0.712	0.731	0.751	0.772
4 year	0.636	0.659	0.683	0.708

Q.48

A Ltd is an all equity financed company .The current market price of share is RS.180/-. It has just paid a dividend of Rs.15 /- per share and expected future growth in dividend is 12 % . Currently , it is evaluating a proposal requiring funds of Rs.20 lacs with annual inflows of Rs.10 lacs for 3 years . Find out the NPV of the proposal , if flotation cost is 5 % of issue price

Q.49

Initial investment of a project is Rs. 25 lakh. Expected annual cash flows are Rs. 6.5 lakh for 10 years Cost of capital is 15%. The annuity factor for 15% for 10 years is 5.019. What is the Profitability Index of the project?

- (i) 1.305
- (ii) 3.846
- (iii) 0.26

(iv) 0.7663

Q.50

If Annual CFAT is Rs.540000, Project life is 4 years and initial cost is Rs.1980000, what is the Payback Profitability of the project?

- (a) Rs.160000
- (b) Rs.195000
- (c) Rs.180000
- (d) Rs.120000

Q.51

The Gross Profitability Index of a project is 1.52 and its NPV is Rs. 52000, The cost of investment of the project is \_\_\_\_\_

- (a) Rs. 110000
- (b) Rs. 100000
- (c) Rs. 95000
- (d) Rs.105000

Q.52

The IRR of a project is 10%. If the annual cash flow after tax is RS.130000 and project duration is 4 years, what is the initial investment in the project?

- (a) Rs. 4,10,000
- (b) Rs. 4,12,100
- (c) Rs.3,90,000
- (d) Rs. 4,05,000

Q.53

The Profitability Index of a project is 1.28 and its cost of investment is Rs. 250000. The NPV of the project is \_\_\_\_\_

- (a) Rs.75000
- (b) Rs.80000
- (c) Rs. 70000
- (d) Rs.65000

Q.54

Nine Gems Ltd. has just installed Machine – R at a cost of ₹ 2,00,000. The machine has a five year life with no residual value. The annual volume of production is estimated at 1,50,000 units, which can be sold at ₹ 6 per unit. Annual operating costs are estimated at ₹ 2,00,000 (excluding depreciation) at this output level. Fixed costs are estimated at ₹ 3 per unit for the same level of production.

Nine Gems Ltd. has just come across another model called Machine – S capable of giving the same output at an annual operating cost of ₹ 1,80,000 (exclusive of depreciation). There will be no change in fixed costs. Capital cost of this machine is ₹ 2,50,000 and the estimated life is for five years with nil residual value.

The company has an offer for sale of Machine – R at ₹ 1,00,000. But the cost of dismantling and removal will amount to ₹ 30,000. As the company has not yet commenced operations, it wants to sell Machine – R and purchase Machine – S.

Nine Gems Ltd. will be a zero-tax company for seven years in view of several incentives and allowances available.

The cost of capital may be assumed at 15%. P.V. factors for five years are as follows:

Year	P.V. Factors
1	0.8696
2	0.7561
3	0.6575
4	0.5717
5	0.4972

- (i) Advise whether the company should opt for the replacement.
- (ii) Will there be any change in your view, if Machine-R has not been installed but the company is in the process of selecting one or the other machine?

Support your view with necessary workings.

#### Q.55

X Ltd. an existing profit-making company, is planning to introduce a new product with a projected life of 8 years. Initial equipment cost will be ₹ 120 lakhs and additional equipment costing ₹ 10 lakhs will be needed at the beginning of third year. At the end of the 8 years, the original equipment will have resale value equivalent to the cost of removal, but the additional equipment would be sold for ₹1 lakhs. Working Capital of ₹ 15 lakhs will be needed. The 100% capacity of the plant is of 4,00,000 units per annum, but the production and sales-volume expected are as under:

Year	Capacity in percentage
1	20
2	30
3-5	75
6-8	50

A sale price of ₹ 100 per unit with a profit-volume ratio of 60% is likely to be obtained. Fixed Operating Cash Cost are likely to be ₹ 16 lakhs per annum. In addition to this the advertisement expenditure will have to be incurred as under:

Year	1	2	3-5	6-8
Expenditure in ₹ lakhs each year	30	15	10	4

The company is subject to 40% tax, straight-line method of depreciation, (permissible for tax purposes also) and taking 15% as appropriate after tax Cost of Capital, should the project be accepted?

#### Q.56

A firm has an investment proposal, requiring an outlay of ₹ 80,000. The investment proposal is expected to have two years economic life with no salvage value. In year 1, there is a 0.4 probability that cash inflow after tax will be ₹ 50,000 and 0.6 probability that cash inflow after tax will be ₹60,000. The probability assigned to cash inflow after tax for the year 2 are as follows:

The cash inflow year 1	₹ 50,000	₹ 60,000
The cash inflow year 2	Probability	Probability
	₹ 24,000      0.2	₹ 40,000      0.4
	₹ 32,000      0.3	₹ 50,000      0.5
	₹ 44,000      0.5	₹ 60,000      0.1

The firm uses a 8% discount rate for this type of investment.

#### Required:

- (i) Construct a decision tree for the proposed investment project and calculate the expected net present value (NPV).
- (ii) What net present value will the project yield, if worst outcome is realized? What is the probability of occurrence of this NPV?
- (iii) What will be the best outcome and the probability of that occurrence?

(iv) Will the project be accepted?

(Note: 8% discount factor 1 year 0.9259; 2 year 0.8573)

Q.57

Skylark Airways is planning to acquire a light commercial aircraft for flying class clients at an investment of ₹50,00,000. The expected cash flow after tax for the next three years is as follows:

Year 1		Year 2		Year 3	
CFAT	Probability	CFAT	Probability	CFAT	Probability
14,00,000	0.1	15,00,000	0.1	18,00,000	0.2
18,00,000	0.2	20,00,000	0.3	25,00,000	0.5
25,00,000	0.4	32,00,000	0.4	35,00,000	0.2
40,00,000	0.3	45,00,000	0.2	48,00,000	0.1

The Company wishes to take into consideration all possible risk factors relating to an airline operations. The company wants to know:

- The expected NPV of this venture assuming independent probability distribution with 8 per cent risk free rate of interest.
- The possible deviation in the expected value.
- State the importance of standard deviation of the present value distribution in Capital Budgeting decisions?

Q.58

The Globe Manufacturing Company Ltd. is considering an investment in one of the two mutually exclusive proposals – Projects X and Y, which require cash outlays of ₹3,40,000 and ₹3,30,000 respectively. The certainty-equivalent (C.E.) approach is used in incorporating risk in capital budgeting decisions. The current yield on government bond is 10% and this be used as the riskless rate. The expected net cash flows and their certainty-equivalents are as follows:

Project X			Project Y		
Year-end	Cash flow (₹)	C.E.	Cash flow (₹)	C.E.	
1	1,80,000	0.8	1,80,000	0.9	
2	2,00,000	0.7	1,80,000	0.8	
3	2,00,000	0.5	2,00,000	0.7	

Present value factors of ₹1 discounted at 10% at the end of year 1, 2 and 3 are 0.9091, 0.8264 and 0.7513 respectively.

**Required:**

- Which project should be accepted?
- If risk adjusted discount rate method is used, which project would be analysed with a higher rate?



Q.59

An investment corporation wants to study the investment project based on three factors: market demand in units, contribution (sales price - variable cost) per unit and investment required. These factors are felt to be independent of each other. In analysing a new consumer product for a washing powder factory the corporation estimates the following probability distributions:

Annual demand		Contribution per unit		Required investment	
Units	Probability	₹	Probability	₹	Probability
20,000	0.05	3.00	0.10	17,50,000	0.25
25,000	0.10	5.00	0.20	20,00,000	0.50
30,000	0.20	7.00	0.40	25,00,000	0.25
35,000	0.30	9.00	0.20		
40,000	0.20	10.00	0.10		
45,000	0.10				
50,000	0.05				

Use Monte-Carlo simulation for 10 runs, estimate the percentage of return on investment (ROI %) defined by

$$\text{ROI \%} = \frac{\text{Cash inflow}}{\text{Investment}} \times 100$$

For each run, recommend an optimum investment strategy based on model value of ROI %.

Use the following sets of random numbers:

28, 57, 60, 17, 64, 20, 27, 58, 61, 30; 19, 07, 90, 02, 57, 28, 29, 83, 58, 41; and 18, 67, 16, 71, 43, 68, 47, 24, 19, 97 respectively for each of the 10 simulation run.

Q.60

A project has a mean NPV of ₹ 40 and standard deviation of NPV is 20. The finance manager wants to determine the probability of the NPV under the following ranges:

- Zero or less
- Greater than zero
- Between the range of ₹ 25 and ₹ 45

**Leasing :**

**Q.61**

ABC Company Ltd. is faced with two options as under in respect of acquisition of an asset valued ₹1,00,000/-

**EITHER**

(a) to acquire the asset directly by taking a Bank Loan of ₹1,00,000/- repayable in 5 year-end instalments at an interest of 15%.

**OR**

(b) to lease in the asset at yearly rentals of ₹320 per ₹1,000 of the asset value for 5 years payable at year end.

The following additional information are available.

(a) The rate of depreciation of the asset is 15% W.D.V.

(b) The company has an effective tax rate of 50%.

(c) The company employs a discounting rate of 16%.

You are to indicate in your report which option is more preferable to the Company. Restrict calculation over a period of ten years

The present value of one Rupee due at the end of each year is

End of year	1	2	3	4	5	6	7	8	9	10
Present Value	0.86207	0.74316	0.64066	0.55229	0.47611	0.41044	0.35313	0.30503	0.26295	0.22668

**Q.62**

Your company is considering to acquire an additional computer to supplement its time-share computer services to its clients. It has two options:

(i) To purchase the computer for ₹ 22 lakhs.

(ii) To lease the computer for three years from a leasing company for ₹ 5 lakhs as annual lease rent plus 10% of gross time-share service revenue. The agreement also requires an additional payment of ₹6 lakhs at the end of the third year. Lease rents are payable at the year-end, and the computer reverts to the lessor after the contract period.

The company estimates that the computer under review will be worth ₹ 10 lakhs at the end of third year.

**Forecast Revenues are:**

Year	1	2	3
Amount (₹ in lakhs)	22.5	25	27.5

Annual operating costs excluding depreciation/lease rent of computer are estimated at ₹9 lakhs with an additional ₹ 1 lakh for start up and training costs at the beginning of the first year. These costs are to be borne by the lessee. Your company will borrow at 16% interest to finance the acquisition of the computer. Repayments are to be made according to the following schedule:

Year end	1	2	3
Principal (₹'000)	500	850	850
Interest (₹'000)	352	272	136

The company uses straight line method (SLM) to depreciate its assets and pays 50% tax on its income. The management approaches you to advice. Which alternative would be recommended and why?

**Note:** The PV factor at 8% and 16% rates of discount are:

Year	1	2	3
8%	0.926	0.857	0.794
16%	0.862	0.743	0.641



### Mutual Funds :

1. A mutual fund that had a net asset value of Rs.20 at the beginning of month - made income and capital gain distribution of Rs. 0.0375 and Rs. 0.03 per share respectively during the month, and then ended the month with a net asset value of Rs.20.06. Calculate monthly return.

2. An investor purchased 300 units of a Mutual Fund at Rs.12.25 per unit on 31st December, 2009. As on 31st December, 2010 he has received Rs.1.25 as dividend and Rs.1.00 as capital gains distribution per unit.

Required :

(i) The return on the investment if the NAV as on 31st December, 2010 is Rs. 13.00.

(ii) The return on the investment as on 31st December, 2010 if all dividends and capital gains distributions are reinvested into additional units of the fund at Rs.12.50 per unit.

3. SBI mutual fund has a NAV of Rs.8.50 at the beginning of the year. At the end of the year NAV increases to Rs. 9.10. Meanwhile fund distributes Rs. 0.90 as dividend and Rs.0.75 as capital gains.

(i) What is the fund's return during the year?

(ii) Had these distributions been re-invested at an average NAV of Rs.8.75 assuming 200 units were purchased originally. What is the return?

4. The following information is extracted from Steady Mutual Fund's Scheme: - Asset Value at the beginning of the month - Rs.65.78 - Annualized return -15 % - Distributions made in the nature of Income - Rs.0.50 and Rs. 0.32 & Capital gain (per unit respectively).

You are required to:

(i) Calculate the month end net asset value of the mutual fund scheme (limit your answers to two decimals).

(ii) Provide a brief comment on the month end NAV.

5. A has invested in three Mutual Fund Schemes as per details below:

Particulars	MF A	MF B	MF C
Date of investment	01.12.2009	01.01.2010	01.03.2010
Amount of investment	Rs.50,000	Rs. 1,00,000	50,000
Net Asset Value (NAV) at entry date	Rs.10.50	Rs. 10	Rs. 10
Dividend received upto 31.03.2010	Rs.950	Rs. 1,500	Nil
NAV as at 31.03.2010	Rs.10.40	Rs. 10.10	Rs. 9.80

6. Mr. X on 1.7.2000, during the initial offer of some Mutual Fund invested in 10,000 units having face value of ₹10 for each unit. On 31.3.2001, the dividend operated by the MF was 10% and Mr. X found that his annualized yield was 153.33%. On 31.12.2002, 20% dividend was given. On 31.3.2003 Mr. X redeemed all his balance of 11,296.11 units when his annualised yield was 73.52%. What are the NAVs as on 31.3.2001, 31.12.2002 and 31.3.2003?

7.

Mr. A can earn a return of 16 per cent by investing in equity shares on his own. Now he is considering a recently announced equity based mutual fund scheme in which initial expenses are 5.5 per cent and annual recurring expenses are 1.5 per cent. How much should the mutual fund earn to provide Mr. A return of 16 per cent?

8.

\ The unit price of Equity Linked Savings Scheme (ELSS) of a mutual fund is Rs.10/-. The public offer price (POP) of the unit is Rs.10.204 and the redemption price is Rs.9.80.

Calculate:

- (i) Front-end Load
- (ii) Back end Load

9.

Cinderella Mutual Fund has the following assets in Scheme Rudolf at the close of business on 31st March, 2014.

Company	No. of Shares	Market Price Per Share
Nairobi Ltd.	25000	20
Dakar Ltd.	35000	300
Senegal Ltd.	29000	380
Cairo Ltd.	40000	500

The total number of units of Scheme Rudolf are 10 lacs. The Scheme Rudolf has accrued expenses of Rs. 2,50,000 and other liabilities of Rs. 2,00,000. Calculate the NAV per unit of the Scheme Rudolf

12.

Sun Moon Mutual Fund (Approved Mutual Fund) sponsored open-ended equity oriented scheme "Chanakya Opportunity Fund". There were three plans viz. 'A' – Dividend Re-investment Plan, 'B' – Bonus Plan & 'C' – Growth Plan.

At the time of Initial Public Offer on 1.4.1999, Mr. Anand, Mr. Bacchan & Mrs. Charu, three investors invested ` 1,00,000 each & chosen 'B', 'C' & 'A' Plan respectively

The History of the Fund is as follows:

Date	Dividend %	Bonus Ratio	Net Asset Value per Unit (F.V. Rs.10)		
			Plan A	Plan B	Plan C
28.07.2003	20		30.70	31.40	33.42
31.03.2004	70	5 : 4	58.42	31.05	70.05
31.10.2007	40		42.18	25.02	56.15
15.03.2008	25		46.45	29.10	64.28
31.03.2008		1 : 3	42.18	29.10	64.28
24.03.2009	40	1 : 4	48.10	19.95	72.40
31.07.2009			53.75	22.98	82.07

On 31st July all three investors redeemed all the balance units.

Calculate annual rate of return to each of the investors.

Consider:

1. Long-term Capital Gain is exempt from Income tax.
2. Short-term Capital Gain is subject to 10% Income tax.
3. Security Transaction Tax 0.2 per cent only on sale/redemption of units.
4. Ignore Education Cess.

14.

Five portfolios experienced the following results during a 7- year period:

<b>Portfolio</b>	<b>Average Annual Return (Rp) (%)</b>	<b>Standard Deviation (Sp)</b>	<b>Correlation with the market returns (r)</b>
A	19	2.5	0.840
B	15	2.0	0.540
C	15	0.8	0.975
D	17.5	2.0	0.750
E	17.1	1.8	0.600
Market Risk ( $\sigma_m$ )		1.2	
Market rate of Return ( $R_m$ )	14.0		
Risk-free Rate ( $R_f$ )	9.0		

Rank the portfolios using

- (a) Sharpe's method,
- (b) Treynor's method
- (c) Jensen's Alpha

15.

Year	Your Portfolio	BSE INDEX
2005	2	-5
2006	20	21
2007	10	23
2008	11	6
2009	31	32
2010	21	18
2011	1	5
2012	14	17
AVG RETURN	13.75	14.63
BETA	0.72	1
STD DEVIATION	9.43 %	11.08 %

Average treasury bill rate from 2005 to 2012 was 8.7 %

Evaluate your performance based on :

- a. Sharpe
- b. Treynor
- c. Jensen
- d. Morning Star model

## THEORY QUESTIONS :

DECEMBER 2021

Q.1

Write Short Notes on Foreign Currency Convertible Bonds.

Answer: Foreign Currency Convertible Bonds A foreign currency convertible Bond (FCCBs) is a quasi-debt instrument that is issued in a currency other than the issuer's domestic currency. Over the last few years, a majority of Indian Companies issuing FCCBs raised fund in several foreign currency. FCCBs could have a coupon rate of zero but have yield on maturity or FCCBs could also carry lower interest rate and yield on maturity. This is a bullet payment of interest at maturity if the bondholder opts for redemption. This bond is a mix between the debt and equity instrument and provides the bondholders an option to convert the bonds into equity. This bond gives the issuers an ability to access capital available in foreign markets and make their presence felt in the international market.

Q.2

Write Short Notes on Asset-Backed Risk.

Answer: Asset-Backed Risk. It is the risk that the changes in values of one or more assets that support an asset-backed security will significantly impact the value of the supported security. This kind of risk especially arises in securitisation transactions where by cash flows due on assets/receivables are pooled together to issue securities, the servicing of which is backed by the cash flows on such underlying assets

Q.3

Write Short Notes on Exposure netting of currency.

Answer: Exposure Netting. Exposure netting is the act of offsetting exposures in one currency with exposures in the same or another currency. Example: If an entity has Dollar Receivables, which is exposed to currency risk, it may enter into an offsetting position by entering into a Dollar Payable arrangement. Objective: The objective of netting is to offset the likely loss in one exposure, with the likely gain in another. Hedging tool: It is a form of hedging foreign exchange risks. When a Firm opts for exposure netting, it hedges its risk without taking any forward cover or options cover.

Q.4

Write Short Notes on The Efficient Frontier in portfolio comparison.

Answer: Efficient Frontier. Markowitz developed the concept of efficient frontier. For selection of a portfolio, comparison between combinations of portfolios is essential. A portfolio is not efficient if there is another portfolio with — Higher expected value of return and a lower standard deviation (risk). Higher expected value of return and the same standard deviation (risk). Same expected value but a lower standard deviation (risk).

Q.5

Write Short Notes on Leading and Lagging in foreign exchange management.

Answer: Leading and Lagging. It refers to the adjustment of the times of payments that are made in foreign currencies. Leading is the payment of an obligation before due date while lagging is delaying the payment of an obligation past due date. The purpose of these techniques is for the company to take advantage of expected devaluation or revaluation of the appropriate currencies. Lead and lag payments are particularly useful when forward contracts are not possible. It is more attractive to use for the payments between associate companies within a group. Leading and lagging are aggressive foreign exchange management tactics designed to take the advantage of expected exchange rate changes.

JUNE 2019

Q.6

State the differences between Commercial Paper(CP) and Certificate of Deposit (CD) on the following aspects:

- (i) Issuer
- (ii) Conditions to be satisfied by an issuer to be eligible for an issue

Answer :

	CP	CD
Issuer	Corporates, Primary Dealers	Scheduled Commercial Banks other than RRBs, Local Area Banks
Eligibility	Tangible net worth not less than ₹4 cr. Working capital limit not to be less than ₹ 4 cr. Credit rating to be at least P-2 of CRISL or PP2/ P2 of D2 of other rating agencies	Banks have to maintain CLR and SLR on the issue price of CDs



Q.7

State the differences between Indian Treasury Bills and Central Government securities on the following aspects:

(i) Purpose of issue

(ii) Tenor

Answer :

	T Bill	G Sec
Purpose	To tide over short term liquidity shortfalls	To meet Govt, expenditure commitments
Tenor	91 days, 182 days, 364 days.	More than 1 year, up to 30 years.

Q.8

State the differences between the commodity market and equity market futures in the following aspects:

(i) Initial Margin

(ii) Basis of price movements

Answer :

Futures	Commodity Market	Equity Market
Initial Margin	Lower in the range of 4-5-6%	Higher in the range of 25-40%
Basis of Price Movements	Purely based on Demand and supply of commodities	Based on expectation of future performance

DEC 2018

Q.9

State the type of risk in each of the following independent situations :

(i) The owner of a house property wants to sell it, but he is not able to find buyers.

(ii) The risk of recession anticipated by the automobile industry

(iii) The risk of loss in value of investment that cannot be eliminated by an investor through diversification.

(iv) The risk of a bank which has given a car loan to a person who has no defaulted two instalments of EMIs.

Answer :

(i) Liquidity Risk

(ii) Market Risk

(iii) Systematic Risk

(iv) Credit Risk

Q.10

Classify the following items under the appropriate category – whether Money Market (MM) or Capital Market (CM) :

i. Inter Bank Participation Certificate

ii. Equity Shares

iii. SWAPS

iv. REPOS

v. RBI and government are participants

vi. Commercial paper

vii. Global Depository Receipts (GDRs)

viii. Deep Discount Bonds (DDBs)

Answer :

i. Money Market

ii. Capital Market

iii. Money Market

iv. Money Market

v. Money Market

vi. Money Market

vii. Capital Market

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## viii. Capital Market

Q.11

Write short notes on 'repo' and 'reverse repo'

Answer :

Repo or ready forward contract is an instrument for borrowing funds by selling securities with an agreement to repurchase the said securities on a mutually agreed future date at an agreed price which includes interest for the funds borrowed. Repo rate is the return earned on a repo transaction expressed as an annual interest rate.

The reverse of the repo transaction is called 'reverse repo' which is lending of funds against buying of securities with an agreement to resell the said securities on a mutually agreed future date at an agreed price which includes interest for the funds lent. It can be seen from the definition above that there are two legs to the same transaction in a repo/reverse repo. The duration between the two legs is called the 'repo period'. Predominantly, repos are undertaken on overnight basis, i.e., for one day period. Settlement of repo transactions happens along with the outright trades in government securities.

Q.12

What is 'credit default risk' and 'counter party risk'?

Answer :

i) Credit default risk : The risk of loss arising from a debtor being unlikely to pay its loan obligations in full or the debtor is more than 90 days past due on any material credit obligation ; default risk may impact all credit sensitive transactions, including loans, securities and derivatives.

ii) Counterparty risk : The risk of loss arising from non performance of counterparty in trading activities such as buying and selling of commodities, securities, derivatives and foreign exchange transactions. If inability to perform contractual obligations in such trading activities is communicated before the settlement date of the transaction, then counterparty risk is in the form of pre-settlement risk, while if one of the counterparty defaults in its obligations on the settlement date, the counterparty risk is in the form of settlement risk.

JUNE 2018

Q.13

Explain the concept of 'option' in relation to a capital budgeting decision. What would be the value of the option?

Answer :

An option is a special contract under which the option owner enjoys the right to buy or sell something without any obligation to do the same. The option to buy is a 'call option' and the option to sell is a 'put option'. In the context of capital budgeting decision, the opportunities that managers have are called managerial option or real option, involving the real assets, not financial assets. The options provide the managers opportunity or flexibility to increase gains or reduce losses. The holder of a real option is often unclear as to what the precise right is and how long the same will last. Value of the option = NPV with option - NPV without option.

Q.14

Identify the following financial instruments:

(i) X is a negotiable instrument issued in US \$ and issued by a US Depository Bank for the benefit of a non US company that wishes to raise money in the US. X is listed on NYSE and NASDAQ. Issue of X offers access to both institutional and retail markets in the US.

(ii) Y is an instrument issued abroad by authorized overseas corporate bodies against shares or bonds of Indian companies held with nominated domestic custodial banks. An Indian company intending to issue Y will issue the corresponding number of shares to an overseas depository bank. Y is freely transferable outside India and dividend in respect of the shares represented by Y are paid in Indian rupees. Y is traded on OTC basis (Over the Counter). Y is listed on the London Stock Exchange.

(iii) Z is a zero - interest bond sold at a discount and redeemed at face value on maturity. Investors in Z are not looking for immediate return. Z is issued by the issuer to meet the long term requirements spanning 20 - 30 years. Z can also be traded in the market.

(iv) W is a negotiable certificate issued by a company or the Government, entitles the holder to repayment of principal and interest. Interest is paid periodically at predetermined intervals and the principal is repaid at a specified maturity date.

Answer :

(i) ADR or American Depository Receipt

(ii) GDR or Global Depository Receipt

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(iii) Deep Discount Bond

(iv) Bond

Q.15

State the type of risk in the following situation:

- (i) The risk of loss arising from sovereign State freezing foreign currency payments.
- (ii) The risk that stock prices or stock indices values and/or their implied volatility may change.
- (iii) The risk arising from the people, system and processes through which a company operates.
- (iv) Changes in currency exchange rates.

Answer :

- (i) The risk of loss arising from sovereign state freezing foreign currency payments-Country risk under Credit risk.
- (ii) The risk that stock prices or stock indices values and/or their implied volatility change-Equity risk under Market risk.
- (iii) The risks arising from the people, systems and process through which a company operates-Operational risk.
- (iv) Changes in currency exchange rates- Foreign Investments Risk.