Advanced Financial Management

Time Allowed: 3 Hours   Full Marks: 100

The figures on the right margin indicate full marks.

All workings must form part of your answers.

Wherever necessary, suitable assumptions may be made and clearly stated in the answer.

No present value or other statistical table will be provided in addition to this question paper.

Candidates may use relevant values from the information given at the end of the question paper
for computation of answers where required.

*This paper contains two sections, A and B. **Section A** is compulsory and contains question 1 for 20 marks.*
__Section B__ contains questions 2 to 8, each carrying 16 marks.
*Answer **any five** questions from **Section B**.*

Section A

1. (a) Answer *all* questions: 2×7=14

   (i) The market price (ex-dividend) of an open-ended mutual fund unit was ₹ 15 at the beginning of the year. A dividend of ₹ 2 per unit has been paid during the year. At the end of the year, the ex-dividend price is ₹ 18 per unit. Calculate the yield of the fund as a percentage up to two decimal places.

   (ii) S opened a 'sell' position in two futures contracts of shares in X Ltd., when the futures was trading at ₹ 1000. Each contract is for 100 shares. The initial margin is 10% and maintenance margin is 80% of the initial margin and the rules require withdrawal of 50% of excess over initial margin. When the price falls to ₹ 9·60 per share, what would be the amount to be withdrawn or of margin replenishment?

   (iii) A six-month forward contract on a stock that does not pay dividend is available at ₹ 340. The risk-free interest rate is 12% p.a. continuously compounded. Calculate the forward price.

Please Turn Over

(iv) A project with an initial investment of ₹ 50 lakh and life of 10 years generates Cash Flow After Tax (CFAT) of ₹ 10 lakh per annum. Calculate Payback Reciprocal.

(v) State any two situations in which NPV and IRR give conflicting results.

(vi) The return on market portfolio is 14%. The last dividend of share A was ₹ 2 and the dividend and earnings have a constant growth rate of 5% p.a. The beta of the share is 2 and the intrinsic value of the share is ₹ 12·35. Find the risk free return.

(vii) What is a Zero Coupon Bond? What is the return to the holder of such a bond?

(b) State whether the following are 'True' or 'False' (You may write only the question Roman numeral and state whether True or False without copying the statements into the answer books.): 1×6=6

(i) A strangle involves buying a put and call with the same strike price and same expiry date.

(ii) Black and Scholes Model of option valuation applies to American option.

(iii) A fully diversified portfolio has zero standard deviation.

(iv) An investor is compensated by proportionate reward when his investment has more unsystematic risk.

(v) While adjusting the cash flows of a project for risks using the certainty equivalents, the appropriate discount rate to be used to find the NPV will be the risk adjusted discount rate.

(vi) Cross rate is the rate of exchange of two currencies on the basis of exchange quotes of other pairs of currencies.

Section B

Answer *any five* questions from question number 2 to 8.

2. (a) A sugar mill M expects to produce 300 MT (1MT = 1000 kg) of sugar in 3 months' time. The current price of sugar is ₹ 42 per kg. Three months' futures contract is trading at ₹ 45 per kg. The lot size is 10 MT. A chocolate factory F, wants to purchase 300 MT of sugar in three month's time. M wants a cover of 50% while F wants a 100% cover on commodity futures.

(i) Identify the parties in the long and short position in the spot and futures market.

(ii) Identify the respective outflows and inflows for both these parties, if after three months, the price increases to ₹ 46 or drops to ₹ 40 per kg. 10

(b) The total market value of the equity share of E Ltd. 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.

    (i) What is the beta of the Company's existing Portfolio of assets?   6

3. (a) Four investors, A, B, P and T have invested equal amounts of money in different combinations of funds as per their risk aptitude. A has fully invested in Money Multiplier Funds, B has invested 50% in Money Multiplier and 50% in Balanced Growth Funds, P has invested 80% in Balanced Growth Funds and 20% in Safe Money Funds and T has fully invested in a fund that exactly replicates the market portfolio. The following information is given:

Fund Type	Return for the year (%)	Beta Factor
Money Multiplier (100% Equity)	24·00	1·8
Balanced Growth Funds (50% Equity and 50% Debt)	17·5	1·3
Safe Money (20% Equity and 80% Debt)	13·00	0·75

The market return is 16% and the risk-free rate is 8%.

Rank the investors' rewards using Treynor's measure.   10

(b) Fill up the contents of the following table:

	What is the variable on the x axis?	What is the variable on the y axis?	What is the most important information that is read from this graph?
Security Market Line			
Characteristic Line			
Capital Market Line			

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4. (a) IP, an importer in India has imported a machine from USA for US $ 20,000 for which the payment is due in three months. The following information is given:

Foreign Exchange Rates (₹/US $)		
	Bid	Ask
Spot	64·60	64·90
3 months' forward	65·50	65·80

Money Market Rates (p.a.)		
	Deposit	Borrowing
US $	6%	9%
Rupees	7%	11%

Show with appropriate supporting calculations whether a money market hedge is possible or not.

Compute the cost (in annualized percentage) of a Forward Contract Hedge.

Advise the importer on the best course of action to minimize rupee outflow. 8

(b) What is a repo and a reverse repo? What are the features of a repo? 8

5. (a) Shares of E Ltd. are being quoted at ₹ 600. Three months' futures contract rate is ₹ 636 per share with a lot size of 500 shares. If the company does not expect to distribute any dividend in the interim period and the risk free return is 9% p.a. continuously compounded, what is the recommended action for a trader in shares in the spot and futures market? Substantiate your conclusion with logical steps and compute the gains, if any, due to futures.

What would be the answers if the three months' futures contract rate is ₹ 600? 8

(b) A company is committed to run its production line for four years for the supply of a spare part. At the end of the fourth year, production will be stopped. A machine is used for this production, which has to be purchased at the beginning of the first year. The machine can be replaced at the end of the first, second, third year or used up to the fourth year. At the end of the fourth year, the machine will have to be sold since production is discontinued. Assume that maintenance costs are incurred at the end of the year only if the machine is to be used in the next year. Costs incurred to run the machine according to its age and the salvage values at the end of the respective years are given. Replacement of a machine will be made at the same cost as the

original machine. Revenues are unaffected by the age of the machine. Tax rate applicable is 40% for maintenance and the salvage values. The machine qualifies for 100% depreciation and tax benefit at the end of the first year of its use.

Year→	0	1	2	3	4
Purchase Price (₹)	6,00,000				
Maintenance Cost (₹)		1,60,000	1,80,000	2,00,000	2,00,000
Scrap Value (₹)		3,20,000	2,40,000	1,60,000	80,000

Present item-wise and year-wise undiscounted 4-year period cash flows for replacement cycle of one, two, three and four years. Use '+' sign for inflows and '–' for outflows.

Present discounted cash flows at 15% rate only for the computations showing replacement cycle of two years.   8

6. (a) On 01.04.2017, the following are the interest rates quoted on different Government of India Bonds based on their tenor:

Period to Maturity	Interest Rates (%)
1 year	9·5
2 years	10·5
3 years	11·25
4 years	10·5

Calculate the forward interest rates as at the following dates:

   (i) as on 01.04.2018, for 1 year, 2 years and 3 years bonds,

   (ii) as on 01.04.2019, for 1 year and 2 years bonds,

   (iii) as on 01.04.2020 for 1 year bond,

   (iv) Based on ₹ 1,00,000 face value of a bond, show computations for only (i) above, the amounts of interests accruing at the said dates at simple annual rests to substantiate the rates computed.   9

(b) A owns a portfolio in three stocks as detailed below:

Stock	No. of shares	Price ₹/share	Beta
X	4,00,000	400	1·1
Y	8,00,000	300	1·2
Z	12,00,000	100	1·3

The BSE-SENSEX is at 28,000 and futures price is 28,560. Assume that the index factor is 100. Use stock index futures to

(i) decrease the portfolio β to 0·8

(ii) increase the portfolio β to 1·5

Find out the number of contracts of stock index futures to be bought or sold.   7

7. (a) The following information about two funds, Tanni (all equity fund) and Manni (equal debt and equity fund) are given below:

Particulars	Tanni	Manni
Average Return (%)	25	18
Standard Deviation (%)	10	5
Coefficient of Correlation with market	0·3	0·7

If the risk-free return on market portfolio is 16% with a standard deviation of 4%,

(i) find the covariance of each fund with the market.

(ii) find the systematic risk and the expected return of each fund under the Capital Asset Pricing Model (CAPM).

(iii) what action will an investor take based on (ii) above?

(iv) does any of the funds lie on the Capital Market Line? Why?   10

(b) P Ltd. has two projects under consideration, A and B, each costing ₹ 60 lacs. The projects are mutually exclusive. The life of Project A is four years and of Project B is three years. The salvage value is zero for both the projects. Depreciation is charged uniformly for A over four years and 100% depreciation is available for B at the end of the first year. The tax rate is 40% and the hurdle rate for cash flow evaluation is 15%. The cash inflows before tax for A and B are given below:

(Figs. ₹ lacs)

At the end of the year	Project A	Project B
1	30	25
2	55	60
3	60	65
4	25	

Find the NPV of A and B. Comment on your preference.

Is the NPV the most appropriate measure for your decision? Why?

(Use PV factors up to 3 decimal points, show annual discounted cash flows for each project in ₹ lacs, up to two decimal places.)

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8. Answer *any four* out of the following five questions: 4×4=16

   (a) Compare the commodity and equity markets on any two of the following aspects:

      (i) Initial margin

      (ii) Basis of price movements

      (iii) Future predictability

   (b) Differentiate between open ended and close ended mutual funds.

   (c) State any four effects of corporate taxation on corporate financing.

(d) How would you determine the cost of irredeemable preference shares?

(e) What is meant by "delta" of an option? How would you utilize it in constructing a riskless portfolio?

Candidates may choose appropriate values from the following information as per the requirements of the questions:

Present Values $\frac{1}{(1+x)^n}$; x = interest rate; n = number of years.

year→ X↓ %	0	1	2	3	4	5	6	7	8	9	10
6	1	0·943	0·890	0·840	0·792	0·747	0·705	0·665	0·627	0·592	0·558
9	1	0·917	0·842	0·772	0·708	0·650	0·596	0·547	0·502	0·460	0·422
10	1	0·909	0·826	0·751	0·683	0·621	0·564	0·513	0·467	0·424	0·386
15	1	0·870	0·756	0·658	0·572	0·497	0·432	0·376	0·327	0·284	0·247

$e^{0.0225}$	1·0228
$e^{0.225}$	1·2523
$e^{0.25}$	1·2840
$e^{0.06}$	1·0618
$e^{0.09}$	1·0942