FINAL EXAMINATION

December 2015

P–14(AFM)
Syllabus 2012

Advanced Financial Management

Time Allowed: 3 Hours

Full Marks: 100

The figures in the margin on the right side indicate full marks.

All workings must form part of your answer.

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

No present value table or other statistical table will be provided in addition to this question paper.
Candidates may use relevant information given at the end of the
question paper for computation of answers.

This paper contains **five** *questions. All questions are compulsory,*
subject to instruction provided against each question.

1. **All sub-divisions are compulsory:** 2×10=20

   (a) List two direct instruments and two indirect instruments used by RBI in the implementation of its monetary policy.

   (b) Differentiate between open-end and closed-end mutual funds.

   (c) Given that the strike price is ₹ 240, the current stock price is ₹ 225, and risk-free interest rate is 5% p.a., calculate the theoretical minimum price of a put option after 6 months. Which action is advantageous?

   (d) An investor holds two equity shares A and B in equal proportion with the following risk and return:

   $E(R_A)$ = 26%

   σ_A = 20%

   $E(R_B)$ = 22%

   σ_B = 24%

   The returns of these securities have a positive correlation of 0.7. Calculate the portfolio return and risk.

(e) The following information is provided:

	Investment	
	X	Y
Principal ₹	20 lacs	20 lacs
Rate of yield p.a.	12%	12%
Tenor (years)	3	3
Compounding	monthly	continuous
Compounding charges payable at the end of the period	Nil	₹ m per lac

For what minimum value of 'm' will an investor prefer X to Y?

(f) A project has an equity beta of 1.2 and is to be financed by 30% debt and 70% equity. Assume debt beta as zero, risk-free rate of return as 12% and return on market portfolio as 20%. Calculate the project beta and the return from the project.

(g) What is marginal cost of capital? When will this be equal to the average cost of capital?

(h) Securities A and B have a standard deviation of 10% and 15% respectively. The respective average returns are 12% and 20%.

Investor X has limited funds. He wants to compare A and B and choose the safer security. Advise X.

(i) The foreign exchange market prices for US dollar ($) against Indian rupees (₹) are quoted as under:

	Buying	Selling
Spot	65.30	65.50
Three months' forward	66.35	67.20

Calculate the cost of the forward cover.

(j) S invested in a mutual fund when the NAV was ₹ 13.50 per unit. 90 days later, the NAV was ₹ 12.45 per unit. During the period S got a cash dividend of ₹ 1.25 per unit and capital gain distribution of ₹ 0.25. Calculate the annualized return.

2. **Answer any three sub-divisions from (a) to (d):** 8×3=24

(a) A mutual fund made an issue of 800000 units of ₹ 10 each on 01.04.2014. No entry load was charged. It made the following investments after meeting its issue expenses.

	₹
40,000 Equity Shares of ₹ 100 @ ₹ 160	64,00,000
At par:	
8% Government Securities	6,40,000
9% Debentures (unlisted)	4,00,000
10% Debentures (listed)	4,00,000
	78,40,000

During the year, dividend of ₹ 9,60,000 was received on equity shares. Interest on all types of debt securities was received as and when due. At the end of the year on 31.03.2015, equity shares and 10% debentures were quoted at 175% and 90% of the respective par values. Other investments were at par. The operating expenses during the year amounted to ₹ 4,00,000.

(i) Find out the Net Assets Value (NAV) per unit at the end of the year.

(ii) Find out the NAV if the Mutual Fund had distributed a dividend of ₹ 0.90 per unit during the year to the unit holders. 8

(b) (I) The data pertaining to 5 mutual funds is given below:

Fund	Return	Standard deviation (σ)	Beta (β)
J	13	6	1.50
K	9	2	0.90
L	11	3	1.20
M	15	5	0.80
N	12	4	1.10

Compute the reward-to-variability/volatility ratios and rank the funds, if the risk-free rate is 6%. 5

(II) What is the principal business of the following entities? 3

(i) Asset Finance Company (AFC)

(ii) Investment Company (IC)

(iii) Infrastructure Debt Fund-NBFC (IDF-NBFC)

(c) The current price (in Dec 2015) of sugar is ₹ 40 per kg. Sugar Mill SM expects to produce 200 MT of sugar in February 2016. February futures contract due on 20th February is trading at ₹ 45 per kg. SM wants to hedge itself against a price decline to below ₹ 45 kg in February. 100% cover is required and each contract is for 10 MT.

(i) Explain SM's appropriate hedging measure showing cash flows for full value if the price falls to ₹ 42 per kg in February 2016.

(ii) What is the position of SM in the futures and in the spot market? (6+2)=8

(1 MT = 1000 kg.)

(d) Explain four measures taken by the Central Government in the field of infrastructure financing. 8

Please Turn Over

3. **Answer** *any two* **sub-divisions from (a) to (c):**   10 × 2 = 20

   (a) Compute the theoretical price of the following securities for 6 months:

Securities of	A Ltd	B Ltd.	C Ltd.
Spot Price	₹ 5450	₹ 450	₹ 1050
Dividend Expected	₹ 60	₹ 25	₹ 60
Dividend Receivable in	2 months	3 months	4 months
6 month's futures contract rate	₹ 5510	₹ 490	₹ 1070

   You may assume a risk-free interest rate of 9% p.a.

      (i) What action do you recommend to benefit from futures contract?

      (ii) What will be the impact on the theoretical forward prices if the risk-free interest rate is taken lower than 9%?   8+2=10

   (b) Nihar, a foreign exchange dealer, is actively engaged in simultaneously buying and selling same foreign currencies to make guaranteed profit.

   The rates prevailing in the market are as follows:

Spot rate	:	₹ 65.80 / $
3 months forward rate	:	₹ 66.40 / $
3 months interest rates	:	₹ : 7% p.a
		$: 11% p.a.

   Discuss the possibility of a net gain in arbitrage if Nihar's borrowing potential is limited to ₹ 100 million.   10

   (c) (I) A portfolio Manager owns three stocks.

Stock	Shares owned	Stock price	Beta
1	40,000	₹ 300	1.1
2	80,000	₹ 200	1.2
3	1,20,000	₹ 80	1.3

   The Spot Nifty Index is at 1400 and futures price is 1420; the index factor is 100.

   Use stock index futures to:

      (i) decrease the portfolio beta to 0.8 and

      (ii) increase the portfolio beta to 1.5

      (iii) Find out the number of contracts of stock index futures to be bought or sold.   6

   (II) State any four assumptions of the Black & Scholes Model of option valuation.   4

4.   **Answer** *any two* **sub-divisions from (a) to (c):**   8×2=16

(a)   (I) The following information is given:

Investment	Initial Price (₹)	Dividend (₹)	Market Price at the end of the year (₹)	Beta risk factor
(I) In Equity Shares:				
J Ltd.	60	4	120	0.8
K Ltd.	70	6	130	0.7
M Ltd.	70	6	200	0.5
(II) Govt. of India Bonds	2,000	300	2040	0.9

Risk-free return =16%

Compute the expected return under the Capital Asset Pricing Model (CAPM) and the average return of portfolio, assuming a weightage of the proportion of initial price, considering one unit of each security in the portfolio.   5

(II) When we compare the return under CAPM with the estimated return, different situations arise. State the inference and corresponding recommended action for each of the situations.   3

(b)   (I) The following independent situations are given. Identify the type of risk and state whether it is systematic or unsystematic risk.

(i) Company A was earning high revenues due to significant market share in a particular variety of sweets. In the recent past, the market share has considerably reduced due to competition, resulting in drop in revenues and profits.

(ii) Announcement of a change in government triggered an immediate crash in the prices of securities.   2×2=4

(II) Explain the concept of 'Beta of a security'.   4

(c)   M Ltd. and Q Ltd. are in the same industry and risk class. They pay taxes at 35% and have steady earnings. The following information is given:

	M Ltd. ₹ (Crores)	Q Ltd. ₹ (Crores)
Capital Employed (₹)	1200	800
Share Capital	680	480
Reserve and surplus	520	240
9% Debt	—	400
Market value of shares	2800	1480
Market value of Debentures	—	200
Profit After Tax	378	316.8

Equity Beta of M Ltd. is 1.2.

(i) Calculate cost of equity of Q Ltd.

(ii) Calculate Beta of equity of Q Ltd. (Assume zero beta for debt).   3+5=8

Please Turn Over

5. **Answer *any two* sub-divisions from (a) to (c):**   10×2=20

   (a) A company is considering which of two mutually exclusive projects it should undertake. The Finance Director thinks that the project with the higher Net Present Value (NPV) should be chosen whereas the Managing Director thinks that the one with the higher Internal Rate of Return (IRR) should be undertaken especially as both projects have the same initial outlay and length of life. The company anticipates cost of capital of 10% and the net after tax cash flows of the projects are as follows:

Year end	0	1	2	3	4	5
Cash flows (000) Project X	(200)	35	80	90	75	20
Project Y	(200)	218	10	10	4	3

      (i) Calculate the NPV of each project   4

     (ii) Which project do you think will have a higher internal rate of return (IRR)? Why?   2

    (iii) Under what circumstances will NPV and IRR give different ranking of projects? Why?   2

    (iv) Which project would you recommend? Why?   2

   (b) Lotus Finance Ltd. is engaged in leasing business. The company wants your advice to structure the lease of a machine costing ₹ 30 lacs. The machine will have no salvage value. The life of the machine and the lease period will be 5 years and it has to be fully depreciated in 5 years on straight line basis. The average post-tax cost of funds to Lotus Finance is 10%, but to cover the effects of inflation, they prefer to hike this rate by 2%. Assume tax rate is 50% and that taxes are paid on the last day of the year.

   Calculate the minimum annual lease rent to be charged if

      (i) the lease rents are payable on the first day of each year.

     (ii) the lease rents are payable on the last day of each year.

    (iii) What is the type of the above lease? Give reasons for your classification.   5+3+2=10

   (c) (i) A Textile Manufacturing Company is considering one of two mutually exclusive proposals, Projects M and N, which require initial cash outlays of ₹ 8,40,000 and ₹ 8,75,000 respectively. The expected net cash flows and their certainty equivalents (C.E.) are as follows:

Year end	Project M		Project N	
	Cash flow ₹	C.E.	Cash flows ₹	C.E.
1	4,50,000	0.8	4.50,000	0.9
2	5,00,000	0.7	4,50,000	0.8
3	5,00,000	0.5	5,00,000	0.7

   The risk-free rate is 7% and the risk adjusted discount rate is 10%. Based on the certainty equivalent approach, advise the company on which project to choose.   6

     (ii) State any four assumptions relating to investors under the Modern Portfolio Theory.   4

Table values/measures for use in various answers:

$e^{0.015}$	=	1.01511
$e^{0.0225}$	=	1.022755
$e^{0.025}$	=	1.02532
$e^{0.03}$	=	1.030455
$e^{0.45}$	=	1.04603
$e^{0.36}$	=	1.4333294

$(1.01)^{36}$	=	1.43076878

Present value factors $\left(\frac{1}{1+x}\right)^{n}$

End of year (n) \ Rate (x)	1	2	3	4	5	6	7
7%	0.9346	0.8734	0.8163	0.7629	0.7130	0.6663	0.6227
10%	0.9091	0.8264	0.7513	0.6830	0.6209	0.5645	0.5132
12%	0.8929	0.7972	0.7118	0.6355	0.5674	0.5066	0.4523
20%	0.8333	0.6944	0.5787	0.4823	0.4019	0.3349	0.2791

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