FINAL EXAMINATION

December 2019

P–14(SFM)
Syllabus 2016

Strategic Financial Management

Time Allowed: 3 Hours

Full Marks: 100

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

Working Notes should form part of the respective answers.

*Wherever necessary, candidates may make appropriate assumptions
and clearly state them.*

*No present value factor table or other statistical table will be given
in addition to this question paper. Candidates may use the values
tabulated at the end of this question paper.*

*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

Answer *all* the questions.

Each question carries *two* marks.

1. Choose the correct option from the four alternatives given: (1 mark is for the correct choice and 1 mark is for the justification/workings. You may present only the Roman numeral, your choice and the reason/working, without copying the question).   2×10=20

   (i) Which of the following investment avenues has the least risk associated with it?
      (A) Corporate Fixed Deposits
      (B) Deposits in commercial banks
      (C) Public Provident Fund
      (D) Non-convertible zero coupon bonds

   (ii) M uses 12% as nominal required rate of return to evaluate its new investment projects. It has recently been decided to protect shareholders' interest against loss of purchasing power due to inflation. If the expected inflation rate is 5%, the real discount rate will be
      (A) 6·67%
      (B) 6%
      (C) 17·6%
      (D) 7%

(iii) A wants to hedge its portfolio of shares worth ₹ 150 million using the Index futures. The contract size is 100 times the index. The index is currently quoted at 7500. The beta of the portfolio is 0·9. Consider the beta of the index as 1. The number of contracts to be traded is

    (A) 18000

    (B) 180

    (C) 22

    (D) 200

(iv) The following information is extracted from MF, a mutual fund scheme. NAV on 01-11-2019 is ₹ 65·78, annualized return is 15%. Distribution of income and capital gains were ₹ 0·50 and ₹ 0·30 per unit in the month. What is the NAV on 30-11-2019?

    (A) ₹ 67·50

    (B) ₹ 66·14

    (C) ₹ 65·80

    (D) ₹ 66·96

(v) A portfolio holding 90% of its assets in CNX Nifty stocks in proportion to their market capitalization and 10% in Treasury Bills is more sensitive to

    (A) Systematic Risk

    (B) Unsystematic Risk

    (C) Interest Rate Risk

    (D) Index Risk

(vi) Project X is to be financed by 40% debt (with zero beta) and balance with equity (with 1·3 beta). If the risk free rate is 13% and return on market portfolio is 22%, the return from the project will be

    (A) 13·07%

    (B) 13·70%

    (C) 24·70%

    (D) 20·02%

(vii) Z Ltd. invests ₹ 20 lacs in a project with life 5 years and no salvage value. Tax rate is 50% and straight line depreciation is used. The uniform expected cash flows after tax and before depreciation shield are:

Year end	1	2	3	4	5
Cash flows after tax (₹ lacs)	4	5	6	6	7

The payback period is

(A) 3 years

(B) 3 years and 11 months

(C) 2 years and 11 months

(D) 2 years and 6 months

(viii) 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%

(ix) A company's share is currently trading at ₹ 240. After 6 months, the price will be either ₹ 250 with probability of 0·80 or ₹ 220 with probability 0·20. A European call option exists with an exercise price of ₹ 230. The expected value of call option at maturity date will be

(A) ₹ 10

(B) ₹ 16

(C) ₹ 4

(D) ₹ 14

(x) The value of beta of a security does not depend on

    (A) standard deviation of the security

    (B) standard deviation of the market

    (C) correlation between the security and the market

    (D) risk free rate

Section B

Answer *any five* questions.

Each question carries *16* marks.

2. (a) R Ltd., a profitable company is considering the purchase of a new machine for ₹ 75,00,000. The machine's useful life is 5 years, with annual maintenance, insurance and administration costs of ₹ 12 lacs. Depreciation is over its life on straight line basis, considering zero scrap value. The tax rate is 30%. R Ltd. has a capital structure of 60% debt and 40% equity. Cost of debt before tax is 8% and the cost of equity is 12%. R Ltd. is interested in leasing out this machine to a lessee 'L' on year end annual lease rents and R will have to maintain the equipment at the costs stated above.

What should be the lease rents to be billed to L for the lease proposal to break-even if:

    (i) R Ltd. acquires the machine from its total finance pool.

    (ii) R Ltd. uses a bank borrowing specifically for this purpose at 10% interest rate on outstanding principal at the beginning of each year, with year-end instalments comprising 15 lacs towards principal and balance towards interest for the year?

Present calculations to the nearest rupee.   10

(b) GLOBAL Limited, an Indian company will need $ 5,00,000 in 90 days. The following information is given:

Spot Rate $ 1 = ₹ 69·50

90 days' forward rate of $ 1 as of today = ₹ 71·50

Interest Rates are as follows:

Particulars	US	India
90 days deposit rate	1·25%	2%
90 days borrowing rate	2·00%	3%

Compare the strategies of money market hedge vs. no hedging and compute the net advantage. Present calculations up to two decimal places.   6

3. (a) A silver merchant requires in three months' time, 3000 kg of silver for making silver articles during a wedding season. He expects the price to increase. Silver sells at spot rate of ₹ 5,100 per kg. Each silver futures contract (for 50 kg), expiring in three months sells at ₹ 5,200 per kg. The merchant wants to hedge half his requirement through futures and leave the remaining half uncovered. Explain his position and the gains/losses in the spot and futures market, the number of futures to trade in, the effective price per kg for his entire requirement if after 3 months,

   (i) Spot rate is ₹ 5,250/kg and futures is at ₹ 5,400 per kg.

   (ii) Spot rate is ₹ 5,000/kg and futures is at ₹ 4,900 per kg.   10

(b) Mr. NK has categorized stock in the market into four types, viz. Small cap growth stocks, Small cap value stocks, Large cap growth stocks and Large cap value stocks. Mr. NK also estimated the weights of the above categories of stocks in the market index. Further, the sensitivity of returns on these categories of stocks to three important factors are estimated to be:

Category of Stocks	Weight in the Market Index	Factor I (Beta)	Factor II (Book Price)	Factor III (Inflation)
Small cap growth	25%	0·80	1·39	1·35
Small cap value	10%	0·90	0·75	1·25
Large cap growth	50%	1·165	2·75	8·65
Large cap value	15%	0·85	2·05	6·75

Risk Premium		6·85%	−3·5%	0·65%

The rate of return on treasury bonds is 4·5%.

   (i) Using Arbitrage Pricing Theory, determine the expected return on the market index.

   (ii) Mr. NK wants to construct a portfolio constituting only the 'small cap value' and 'large cap growth' stocks. If the target beta for the desired portfolio is 1, determine the composition of his portfolio.   6

4. (a) On 1st August 2019, a bank entered into a forward purchase contract with an export customer for USD 25,000 due on 1st November at an exchange rate of INR 72·6000 and covered its position in the market at INR 72·6500. The customer remained silent on the due rate. On 16th November, the bank cancelled the contract without further notice as fifteen days had expired after the contract due date. The following exchange rates prevailed:

1st November	Inter bank TT rates	USD 1 = INR 72·7500/7600
	1 month forward	INR 72·9500/9600
	Merchant TT rates	INR 72·6700/9000
16th November	Interbank TT rates	INR 72·7000/7100
	Merchant TT rates	INR 72·6400/7800

Interest on outlay of funds is 12% p.a.

Explain the position of the bank in relation to the customer and the market on various dates, compute the swap loss/gain, ignore margin and find out the charges payable by the customer on cancellation.　　　　10

(b) The following information about two funds, TB (all equity fund) and MB (equal debt and equity fund) is given below:

Particulars	TB	MB
Average return (%)	25	18
Standard deviation (%)	10	5
Coefficient of Correlation with market	0·3	0·7

RBI Bond carries an interest rate of 5% and the expected 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)　　　　6

5. (a) A has invested in different points in time, in three schemes of a mutual fund. The following details are given:

Scheme	MF-P	MF-Q	MF-R
Amount of investment (₹)	2,00,000	4,00,000	2,00,000
NAV (₹/unit) on purchase date	10.30	10.10	10.0
Dividend received up to 30-11-2019 (₹)	6000	0	5000
NAV (₹/unit) on 30-11-2019	10.25	10.0	10.20
Effective annual yield (%) as on 30-11-2019	9.66	–11.66	24.15

Find out the following:

Number of units			
Holding period (no. of days)			
Holding period yield (%) up to two decimal places			
NAV (₹) on 30-11-2019			

Also compute the overall effective annual yield for A. Consider 365 days p.a.   10

(b) An investor holds the following securities:

Securities	Cost (₹)	Dividend/ Interest (₹)	Market Value (₹)	Beta
Equity Shares				
A Ltd.	1,00,000	17,250	98,000	0·6
B Ltd.	1,50,000	10,000	1,62,000	0·8
C Ltd.	1,40,000	7,000	1,85,000	0·6
GOI Bonds	3,60,000	36,000	3,60,000	0·01

Calculate:

(i) Portfolio beta using market value weights (up to two decimal places).

(ii) Market rate of return using CAPM, taking a risk free rate of 7%.

(iii) Would you rate the investor as risk-averse?   6

6. (a) A company has to replace its machine with either machine EM or LM. The following details are given:

Particulars	EM	LM
Purchase price (₹)	20,00,000	10,00,000
Scrap value at the end of its life (₹)	3,00,000	3,00,000
Life (no. of years)	12	6
Overhauling due at the end of year	8	4
Overhauling cost (₹)	4,00,000	2,00,000
Annual repair cost (₹)	2,00,000	2,80,000

If LM is chosen, it has to be replaced by another LM machine at the end of the 6th year at ₹ 12,00,000. Ignore depreciation and taxes. Use a discount rate of 10% p.a. with annual rests. Present annual pre-discounted cash flows for each machine, then apply the PV or annuity factors and show computations to the nearest rupee.

Compare the equivalent annual cash flows for the machines.

Which machine should the company choose based on NPV?   8

(b) The equity shares of MNB Ltd. are being sold at ₹ 315. A 3-month call option is available for a premium of ₹ 9 per share and a 3 month put option is available for a premium of ₹ 8 per share. Find out the net pay off of the holder of the call option and put option given that:

   (i) The strike price in both cases is ₹ 330 and

   (ii) The share price on the exercise day is ₹ 300 or ₹ 315 or ₹ 345 or ₹ 360.   8

7. (a) JASPAL Ltd. is currently considering two mutually exclusive projects, A and B. The following are some of the information concerning the two projects:

	Project A	Project B
Initial investment	₹ 15,000	₹ 20,000
Project life	3 years	3 years
Annual cash inflow	₹ 7,000	₹ 10,000
Risk index	0·4	1·8

In addition, the firm uses two different techniques to adjust for the different risk levels of projects: certainty equivalent factors and risk adjusted discount rate. Additional information is provided below:

Certainty equivalent factors		
Year	Project A	Project B
0	1·00	1·00
1	0·95	0·90
2	0·90	0·85
3	0·90	0·70

Risk index	RADR (%)	Risk index	RADR (%)
0·0	7·0	1·0	12·0
0·2	8·0	1·2	13·0
0·4	9·0	1·4	14·0
0·6	10·0	1·6	15·0
0·8	11·0	1·8	16·0

The company's cost of capital is 10%.

(i) Calculate the NPV of Project A and Project B at 10% discount rate.

(ii) Determine the NPV of Project A and Project B using certainty equivalent (CE) to account for Risk.

(iii) Determine the NPV of Project A and Project B using Risk Adjusted Discount Rate (RADR) to account for Risk.

(iv) Compare and explain your findings in (i), (ii) and (iii)   10

(b) The spot price of a share of Bevel Ltd. is ₹ 356 with a face value of ₹ 10 per share. The 3 months' futures contract is ₹ 386 per share.

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

(i) Time to expiration of the contract is 3 months

(ii) Annual dividend of the stock of 30% is payable after 3 months

(iii) Borrowing rate is 20% p.a. continuously compounded.

Based on the above information, as an investor, you are required to calculate the theoretical forward price for Bevel share. Also explain whether any arbitrage opportunity exists or not.   6

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

(a) (i) B is an Indian buyer of goods from S, a seller in USA. B's bank, BK, issues a document undertaking to pay S, a sum of $ 5000 on presenting evidence of shipping the goods. BK's agent bank in USA, upon confirmation by BK, pays S the $ 5000.

You are required to identify the document.

(ii) 'K' is a short term instrument issued by the RBI on behalf of the Government. K is issued at a discount to face value and is repaid at par on maturity. K is negotiable, with no default risk and eligible for SLR purposes. It is issued through the SGL account and only in book entry form. K has a secondary market also.

You are required to identify instrument 'K'.   4

(b) If σ_A, σ_B denote risk of return of securities A and B and Cov(A, B) is the covariance of the return of securities A and B in a portfolio consisting of only these two securities, what should be the proportion of investment in A so that the portfolio is of minimum variance? Explain. **4**

(c) M is a person who has studied the trends and analysed the equity market. He feels that he is certain to gain due to increasing prices, but does not have the required money to invest and hold shares. He would like to benefit from the purchase of 10,000 shares of A Ltd. which is trading on BSE at ₹ 205 per share. According to his estimate, it will fetch him at least ₹ 215 per share within a month. He can spare only ₹ 3,00,000 for a month. Advise him on whether and how he can or cannot fulfil his desire, assuming that he will not borrow and invest, but is willing to trade in the equity market and assuming that his prediction comes true. **4**

(d) If A and B are the only two securities of equal value in a portfolio, σ_A, σ_B the respective standard deviations of their returns and 'ρ' the correlation coefficient between A and B and if A has almost the same return as the market, explain whether the following statements are valid or not.

  (i) If $\rho = 1$ and the market is doing well as of now, the portfolio has maximum risk and the investment can be wiped out later.

  (ii) If $\rho = -1$, even if the market is doing well now, the returns will be almost negligible, but the investment will be safe. **4**

(e) State the equation which has to be violated so that there is arbitrage opportunity. Define the variables in the equation:

  (i) Domestic vs. foreign currency and interest rates.

  (ii) CAPM return vs. expected return **4**

End of yr.	PV factor table						Annuity factor table		
	1	2	3	4	5		3	4	5
Rate									
4·00%	0·962	0·925	0·889	0·855	0·822		2·775	3·630	4·452
4·80%	0·954	0·910	0·869	0·829	0·791		2·733	3·562	4·353
5·00%	0·952	0·907	0·864	0·823	0·784		2·723	3·546	4·329
5·60%	0·947	0·897	0·849	0·804	0·762		2·693	3·497	4·259
6·00%	0·943	0·890	0·840	0·792	0·747		2·673	3·465	4·212
7·00%	0·935	0·873	0·816	0·763	0·713		2·624	3·387	4·100
8·00%	0·926	0·857	0·794	0·735	0·681		2·577	3·312	3·993
8·16%	0·925	0·855	0·790	0·731	0·676		2·570	3·300	3·976
9·00%	0·917	0·842	0·772	0·708	0·650		2·531	3·239	3·889
9·60%	0·912	0·832	0·760	0·693	0·632		2·504	3·198	3·830
10·00%	0·909	0·826	0·751	0·683	0·621		2·487	3·170	3·791
11·00%	0·901	0·812	0·731	0·659	0·593		2·444	3·102	3·696
12·00%	0·893	0·797	0·712	0·636	0·567		2·402	3·037	3·605
13·00%	0·885	0·783	0·693	0·613	0·543		2·361	2·974	3·517
14·00%	0·877	0·769	0·675	0·592	0·519		2·322	2·914	3·433
15·00%	0·870	0·756	0·658	0·572	0·497		2·283	2·855	3·352
16·00%	0·862	0·743	0·641	0·552	0·476		2·246	2·798	3·274

End of yr.	PV factor table							Annuity factor table			
	6	7	8	9	10	11	12	6	10	11	12
Rate											
10·00%	0·564	0·513	0·467	0·424	0·386	0·350	0·319	4·355	6·145	6·495	6·814

$e^{-0·05}$	0·95123
$e^{0·05}$	1·05127
$e^{0·15}$	1·16183
$e^{-0·15}$	0·86071
$e^{0·35}$	1·41907
$e^{-0·35}$	0·70469