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SUGGESTED SOLUTION

FINAL NOVEMBER 2018 EXAM

SUBJECT- SFM

Test Code - FNJ 7023

BRANCH - () (Date :)

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Answer 1:

(A)

(i) To compute perfect hedge we shall compute Hedge Ratio (Δ) as follows:

$$\Delta - \frac{C1 - C2}{S1 - S2} = \frac{150 - 0}{780 - 480} = \frac{150}{300} = 0.50$$

Mr. Dayal should purchase 0.50 share for every 1 call option.

(ii) Value of Option today

If price of share comes out to be Rs.780 then value of purchased share will be:

Sale Proceeds of Investment (0.50 x ` 780)	` 390
Loss on account of Short Position (` 780 – ` 630)	` 150
	` 240

If price of share comes out to be Rs. 480 then value of purchased share will be:

Sale Proceeds of Investment (0.50 x ` 480) ` 240

Accordingly, Premium say P shall be computed as follows:

(Rs. 300 – P) 1.025 = Rs. 240

P = Rs.65.85

(iii) Expected Return on the Option

Expected Option Value = (Rs. 780 – Rs. 630) × 0.60 + Rs. 0 × 0.40 = Rs. 90

$$\text{Expected Rate of Return} = \frac{90 - 65.85}{65.85} \times 100 = 36.67\%$$

(B)

Sharpe Ratio $S = (R_p - R_f)/\sigma_p$

Treynor Ratio $T = (R_p - R_f)/\beta_p$ Where,

R_p = Return on Fund

R_f = Risk-free rate

σ_p = Standard deviation of Fund

β_p = Beta of Fund Reward to

Variability (Sharpe Ratio)

Mutual Fund	R_p	R_f	$R_p - R_f$	σ_p	Reward to Variability	Ranking
A	15	6	9	7	1.285	2
B	18	6	12	10	1.20	3
C	14	6	8	5	1.60	1
D	12	6	6	6	1.00	5
E	16	6	10	9	1.11	4

Reward to Volatility (Treynor Ratio)

Mutual Fund	R_p	R_f	$R_p - R_f$	β_p	Reward to Volatility	Ranking
A	15	6	9	1.25	7.2	2
B	18	6	12	0.75	16	1
C	14	6	8	1.40	5.71	5
D	12	6	6	0.98	6.12	4
E	16	6	10	1.50	6.67	3

(C)

Characteristics of Financial Instruments

The important characteristics of financial instruments are enumerated as below:

a) Liquidity: Financial instruments provide liquidity. These can be easily and quickly converted into cash.

b) Marketing: Financial instruments facilitate easy trading on the market. They have a ready market.

c) Collateral value: Financial instruments can be pledged for getting loans.

d) Transferability: Financial instruments can be transferred from one person to another.

e) Maturity period: The maturity period of financial instruments may be short term, medium term or long term.

f) Transaction cost: Financial instruments involve buying and selling cost. The buying and selling costs are called transaction costs.

g) Risk: Financial instruments carry risk. Equity based instruments are riskier in comparison to debt based instruments because the payment of dividend is uncertain. A company may not declare dividend in a particular year. However, payment of principle or interest is more or less certain unless the company gets insolvent.

h) Future trading: Financial instruments facilitate future trading so as to cover risks arising out of price fluctuations, interest rate fluctuations etc.

Answer 2:

(A)

Market price per share (MPS) = EPS X P/E ratio or P/E ratio = MPS/EPS

(i) Calculation of EPS, P/E ratio, ROE and BVPS of BA Ltd. and DA Ltd.

		BA Ltd.	DA Ltd.
Earnings After Tax	(EAT)	Rs. 2,10,000	Rs. 99,000
No. of Shares	(N)	100000	80000
EPS	(EAT/N)	Rs. 2.10	Rs. 1.2375
Market price per share	(MPS)	40	15
P/E Ratio	(MPS/EPS)	19.05	12.12
Equity Funds	(EF)	Rs. 12,00,000	Rs. 8,00,000
BVPS	(EF/N)	12	10
ROE	(EAT/EF) × 100	17.50%	12.37%

(ii) Calculation of growth rates in EPS for BA Ltd. and DA Ltd.

Retention Ratio	(1-D/P ratio)	0.6	0.4
Growth Rate	(ROE × Retention Ratio)	10.50 %	4.95%

(iii) Evaluation of justifiable equity shares exchange ratio

Market price based = MPS_{DA}/MPS_{BA} = Rs.15 / Rs.40 =0.375:1(lower limit)

Since, BA Ltd. has a higher EPS, ROE, P/E ratio and even higher EPS growth expectations, the negotiable terms would be expected to be closer to the lower limit, based on the existing share prices.

(iv) Calculation of post-merger EPS and its effects

Particulars			**BA Ltd.**	**DA Ltd.**	**Combined**
EAT	(Rs.)	(i)	2,10,000	99,000	3,09,000
Share outstanding		(ii)	100000	80000	132000*
EPS	(Rs.)	(i) / (ii)	2.1	1.2375	2.341
EPS Accretion (Dilution)	(Re.)		0.241	(0.301**)	

* Shares outstanding (combined) = 100000 shares + (.40 × 80000)= 132000 shares

** EPS claim per old share = Rs.2.34 × 0.4 Rs. 0.936

EPS dilution = Rs.1.2375 – Rs. 0.936 Rs. 0.3015

(B)

(i) Cancellation Rate:

The forward sale contract shall be cancelled at Spot TT Purchase for $ prevailing on the date of cancellation as follows:

$/ Rs. Market Buying Rate	Rs. 63.6800
Less: Exchange Margin @ 0.10%	Rs. 0.0636
	Rs. 63.6163

Rounded off to Rs. 63.6175

(ii) Amount payable on $ 2,00,000

Bank sells $2,00,000 @ Rs. 64.4000	Rs. 1,28,80,000
Bank buys $2,00,000 @ Rs. 63.6163	Rs. 1,27,23,260
Amount payable by customer	Rs. 1,56,740

(iii) Swap Loss

On 10th June the bank does a swap sale of $ at market buying rate of Rs. 63.8300 and forward purchase for June at market selling rate of Rs. 63.9500.

Bank buys at	Rs. 63.9500
Bank sells at	Rs. 63.8000
Amount payable by customer	Rs. 0.1500

Swap Loss for $ 2,00,000 in Rs. = Rs. 30,000

(iv) Interest on Outlay of Funds

On 10th April, the bank receives delivery under cover contract at Rs. 64.2800 and sell spot at Rs. 63.8000.

Bank buys at	Rs. 64.2800
Bank sells at	Rs. 63.8000
Amount payable by customer	Rs. 0.4800

Outlay for $ 2,00,000 in Rs. 96,000

Interest on Rs. 96,000 @ 12% for 10 days Rs.320

(v) New Contract Rate

The contract will be extended at current rate

$/ Rs.Market forward selling Rate for August	Rs.64.2500
Add: Exchange Margin @ 0.10%	Rs.0.0643
	Rs.64.3143

Rounded off to Rs. 64.3150

(vi) Total Cost

Cancellation Charges	Rs. 1,56,740.00
Swap Loss	Rs. 30,000.00
Interest	Rs. 320.00
	Rs. 1,87,060.00

Answer 3:

(A)

1. <u>Calculation of initial outlay:-</u>

		Rs. (million)
a.	Face value	300
	Add:-Call premium	12
	Cost of calling old bonds	312
b.	Gross proceed of new issue	300
	Less: Issue costs	6
	Net proceeds of new issue	294
c.	Tax savings on call premium and unamortized cost 0.30 (12 + 9)	6.3

- Initial outlay = **Rs.** 312 million – **Rs.** 294 million – **Rs.** 6.3 million = **Rs.** 11.7 million

2. Calculation of net present value of refunding the bond:-

Saving in annual interest expenses **Rs.** (million)

[300 x (0.12 – 0.10)]	6.00
Less:- Tax saving on interest and amortization	
0.30 x [6 + (9-6)/6]	1.95
Annual net cash saving	4.05
PVIFA (7%, 6 years)	4.766
Present value of net annual cash saving	**Rs.** 19.30 million
Less:- Initial outlay	**Rs.** 11.70 million
Net present value of refunding the bond	**Rs.** 7.60 million

Decision: The bonds should be refunded

(B)

Differences between a startup and entrepreneurship

Startups are different from entrepreneurship. The major differences between them have been discussed in the following paragraphs:

(i) Start up is a part of entrepreneurship. Entrepreneurship is a broader concept and it includes a startup firm.

(ii) The main aim of startup is to build a concern, conceptualize the idea which it has developed into a reality and build a product or service. On the other hand, the major objective of an already established entrepreneurship concern is to attain opportunities with regard to the resources they currently control.

(iii) A startup generally does not have a major financial motive whereas an established entrepreneurship concern mainly operates on financial motive.

Priorities and challenges which startups in India are facing

The priority is on bringing more and more smaller firms into existence. So, the focus is on need based, instead of opportunity based entrepreneurship. Moreover, the trend is to encourage self - employment rather than large, scalable concerns.

The main challenge with the startup firms is getting the right talent. And, paucity of skilled workforce can hinder the chances of a startup organization's growth and development. Further, startups had to comply with numerous regulations which escalates it's cost. It leads to further delaying the chances of a breakeven or even earning some amount of profit.

(C)

Cost of capital by applying Free Cash Flow to Firm (FCFF) Model is as follows:-

Value of Firm = $V_0 = \frac{FCFF1}{Kc-gn}$

Where –

FCFF1 = Expected FCFF in the year 1

Kc= Cost of capital

gn = Growth rate forever

Thus, Rs. 1800 lakhs = Rs.54 lakhs /(K_c-g)

Since g = 9%, then K_c = 12%

Now, let X be the weight of debt and given cost of equity = 20% and cost of debt = 10%, then 20%

(1 – X) + 10% X = 12%

Hence, X = 0.80, so book value weight for debt was 80%

 Correct weight should be 60 of equity and 72 of debt.

 Cost of capital = K_c = 20% (60/132) + 10% (72/132) = 14.5455% and correct firm's value = Rs.54 lakhs/(0.1454 – 0.09) = Rs.974.73 lakhs.

Answer 4:

(A)

(i) Forward contract: Dollar needed in 180 days = £3,00,000 x $ 1.96 = $5,88,000/-

(ii) Money market hedge

: Borrow $, convert to £, invest £, repay $ loan in 180 days

Amount in £ to be invested = 3,00,000/(1+4.5%)*180/360 =

£ 2,93,399

Amount of $ needed to convert into £ = 2,93,399 x 2 = $

5,86,798

Interest and principal on $ loan after 180 days = $5,86,798 x 1.0275 = $ 6,02,935

(iii) Call option:

Expected Spot rate in 180 days	Prem./unit	Exercise Option	Total price per unit	Total price for £3,00,000xi	Prob. Pi	pixi
1.91	0.04	No	1.95	5,85,000	0.25	1,46,250
1.95	0.04	No	1.99	5,97,000	0.60	3,58,200
2.05	0.04	Yes	2.01*	6,03,000	0.15	90,450
						5,94,900

* ($1.97 + $0.04)

(iv) No hedge option:

Expected Future spot rate	Dollar needed Xi	Prob. Pi	Pi xi
1.91	5,73,000	0.25	1,43,250
1.95	5,85,000	0.60	3,51,000
2.05	6,15,000	0.15	92,250
			5,86,500

Recommendation: No hedging strategy i.e. keeping the position open appears to be most preferable because least number of $ are needed under this option to arrange £3,00,000.

(B)

Although there are many constituents for IFC but some of the important constituent are as follows:

(i) **Highly developed Infrastructure:** A leading edge infrastructure is prerequisite for creating a platform to offer internationally completive financial services.

(ii) **Stable Political Environment:** Destabilized political environment brings country risk investment by foreign nationals. Hence, to accelerate foreign participation in growth of financial center, stable political environment is prerequisite.

(iii) **Strategic Location:** The geographical location of the finance center should be strategic such as near to airport, seaport and should have friendly weather.

(iv) **Quality Life:** The quality of life at the center showed be good as center retains highly paid professional from own country as well from outside.

(v) **Rationale Regulatory Framework:** Rationale legal regulatory framework is another prerequisite of international finance center as it should be fair and transparent.

(vi) **Sustainable Economy:** The economy should be sustainable and should possess capacity to absorb all the shocks as it will boost investors' confidence.

(C)

Explanation of four features of VAR are as below:

(i) Components of Calculations: VAR calculation is based on following three components:

(a) Time Period

(b) Confidence Level – Generally 95% and 99%

(c) Loss in percentage or in amount

(ii) Statistical Method: It is a type of statistical tool based on Standard Deviation.

(iii) Time Horizon: VAR can be applied for different time horizons say one day, one week, one month and so on.

(iv) Probability: Assuming the values are normally attributed, probability of maximum loss can be predicted.

Answer 5:

(A)

(i) Return of Mrs. Charu invested in Plan A (Dividend Reinvestment)

(Amount in Rs.)

Date	Investment	Dividend payout (%)	Dividend Re-invested (Closing Units X Face value of '10 X Dividend Payout %)	NAV	Units	Closing Unit Balance ∑ Units
01.04.2009	1,00,000.00			10.00	10,000.00	10,000.00
28.07.2013		20	20,000.00	30.70	651.47	10,651.47
31.03.2014		70	74,560.29	58.42	1,276.28	11,927.75
31.10.2017		40	47,711.00	42.18	1,131.13	13,058.88
15.03.2018		25	32,647.20	46.45	702.85	13,761.73
24.03.2019		40	55,046.92	48.10	1,144.43	14,906.16

Redemption value 14,906.16 × 53.75	8,01,206.10
Less: Security Transaction Tax (STT) is 0.2%	1,602.41
Net amount received	7,99,603.69
Less: Short term capital gain tax @ 10% on 1,144.43 (53.64* – 48.10≈) = 6,340	634
Net of tax	7,98,969.69
Less: Investment	1,00,000.00
	6,98,969.69

*(53.75 – STT @ 0.2%) ≈ This value can also be taken as zero

Annual average return (%) $\frac{698696.69}{100000}$ x $\frac{12}{124}$ x 100 = 67.64%

(ii) Return of Mr. Anand invested in Plan B – (Bonus)

(Amount in `)

Date	Units	Bonus units	Total Balance	NAV per unit
01.04.2009	10,000		10,000	10
31.03.2014		12,500	22,500	31.05
31.03.2018		7,500	30,000	20.03
24.03.2019		7,500	37,500	19.37

Redemption value 37,500 × 22.98	8,61,750.00
Less: Security Transaction Tax (STT) is 0.2%	1,723.50
Net amount received	8,60,026.50
Less: Short term capital gain tax @ 10%	
7,500 × (22.93† – 19.95) = 22,350	2,235.00
Net of tax	8,57,791.50
Less: Investment	1,00,000.00
Net gain	7,57,791.50

(22.98 – STT @ 0.2%)

Annual average return (%) = $\frac{757791.50}{100000}$ x $\frac{12}{124}$ x 100 = 73.33%

(iii) Return of Mr. Bacchan invested in Plan C – (Growth)

Particulars	**(Amount in Rs.)**
Redemption value 10,000 × 82.07	8,20,700.00
Less: Security Transaction Tax (S.T.T) is .2%	1,641.40
Net amount received	8,19,058.60
Less: Short term capital gain tax @ 10%	0.00
Net of tax	8,19,058.60
Less: Investment	1,00,000.00
Net gain	7,19,058.60

Annual average return (%) = $\frac{719058}{100000}$ x $\frac{12}{124}$ x100 = 69.59%

Note: Alternatively, figure of * and † can be taken as without net of Tax because, as per Proviso 5 of Section 48 of IT Act, no deduction of STT shall be allowed in computation of Capital Gain.

(B)

(i) Portfolio Beta

0.20 x 0.40 + 0.50 x 0.50 + 0.30 x 1.10 = 0.66

(ii) Residual Variance

To determine Residual Variance first of all we shall compute the Systematic Risk as follows:

$\beta_A^2 \times \sigma_M^2$ = $(0.40)^2(0.01)$ = 0.0016

$\beta_B^2 \times \sigma_M^2$ = $(0.50)^2(0.01)$ = 0.0025

$\beta_C^2 \times \sigma_M^2$ = $(1.10)^2(0.01)$ = 0.0121

Residual Variance

A 0.015 – 0.0016 = 0.0134

B 0.025 – 0.0025 = 0.0225

C 0.100 – 0.0121 = 0.0879

(iii) Portfolio variance using Sharpe Index Model

Systematic Variance of Portfolio = $(0.10)^2 \times (0.66)^2 = 0.004356$

Unsystematic Variance of Portfolio = 0.0134 x (0.20)2 + 0.0225 x (0.50)2 + 0.0879 x

(0.30)2 = 0.014072

Total Variance = 0.004356 + 0.014072 = 0.018428

(iv) Portfolio variance on the basis of Markowitz Theory

= $(wA \times wA \times \sigma 2)_A$ + (wA x wBxCovAB) + (wA x wCxCovAC) + (wB x wAxCovAB) + (wB x wBx

σ2B) + (wB x wCxCovBC) + (wC x wAxCovCA) + (wC x wBxCovCB) + (wC x wCx σ2C)

= (0.20 x 0.20 x 0.015) + (0.20 x 0.50 x 0.030) + (0.20 x 0.30 x 0.020) + (0.20 x 0.50

x 0.030) + (0.50 x 0.50 x 0.025) + (0.50 x 0.30 x 0.040) + (0.30 x 0.20 x 0.020) + (0.30

x 0.50 x 0.040) + (0.30 x 0.30 x 0.10)

= 0.0006 + 0.0030 + 0.0012 + 0.0030 + 0.00625 + 0.0060 + 0.0012 + 0.0060 + 0.0090

= 0.0363

Answer 6:

(A)

Problems faced in growth of Securitization of instruments especially in Indian context is as follows:

(i) Stamp Duty: Stamp Duty is one of the obstacle in India. Under Transfer of Property Act, 1882, a mortgage debt stamp duty which even goes upto 12% in some states of India and this impeded the growth of securitization in India. It should be noted that since pass through certificate does not evidence any debt only able to receivable, they are exempted from stamp duty.
Moreover, in India, recognizing the special nature of securitized instruments in some states has reduced the stamp duty on them.

(ii) Taxation: Taxation is another area of concern in India. In the absence of any specific provision relating to securitized instruments in Income Tax Act experts' opinion differ a lot. Some are of opinion that in SPV as a trustee is liable to be taxed in a representative capacity then other are of view that instead of SPV, investors will be taxed on their share of income. Clarity is also required on the issues of capital gain implications on passing payments to the investors.

(iii) Accounting: Accounting and reporting of securitized assets in the books of originator is another area of concern. Although securitization is slated to an off-balance sheet instrument but in true sense receivables are removed from originator's balance sheet. Problem arises especially when assets are transferred without recourse.

(iv) Lack of standardization: Every originator follows own format for documentation and administration have lack of standardization is another obstacle in growth of securitization.

(v) **Inadequate Debt Market:** Lack of existence of a well-developed debt market in India is another obstacle that hinders the growth of secondary market of securitized or asset backed securities.

(vi) **Ineffective Foreclosure laws:** For last many years there are efforts are going on for effective foreclosure but still foreclosure laws are not supportive to lending institutions and this makes securitized instruments especially mortgaged backed securities less attractive as lenders face difficulty in transfer of property in event of default by the borrower.

(B)

Islamic Finance Instruments

Although there are number of Islamic Finance products, but some of common products/instruments are as follows:

Mudaraba

The Mudaraba is a kind of profit sharing arrangement wherein one party provides 100% of the capital involved and other party provides specialized knowledge and entrusted with exclusive responsibility of working. In case there is profit it shared among them in the pre-decided ratio and if there is loss only financier will borne the same.

Musharaka

It is a kind of joint business venture wherein all parties provide the capital in the business in agreed ratio and also have right to participate in the business. While the loss is strictly shared in the ratio of their capital contribution, the profit is shared as perpre-agreed ratio.

Sukuk

It is one of the most popular Islamic financial products. It is a kind of 'Debt Certificate' representing ownership in business or assets and through this instrument company borrows the money. Although it appears to be conventional debt instruments but is differs in following aspects:

- To have share in profit of assets.
- To have share in the underlying assets on realization of assets.

Ijara

It is a kind of lease financing arrangement wherein one party transfer the asset to other partly for some specific time for specific fee which includes capital cost of assets and profit margin of the lessor. In this arrangement, the responsibility for maintenance of the leased items remains with the lessor.

Murabaha

Also, known as cost plus contract it is a kind of trade credit or loans and mainly helps exporters and importer in meeting their funding requirements. The main feature of this arrangement is that profit margin of the financier is known to the buyer. In this arrangement financier buys thee assets and sells to the client (buyer) and buyer pays to the financier in installments consisting of following two elements:

- Cost of asset financed.

• Financier's profit on acquisition of asset

Istisna

It is a kind of funding arrangements for long term construction contracts wherein client pays some initial amount and balance amount is payable is repaid in installments. The whole project is funded by the financer and completion of project it is delivered to the client.

Salam

It is analogues to forward contract in the conventional finance. Though cash is received by the seller immediately on sale but goods as per pre-decided quality, quantity and time shall only be delivered in future. This sale shall be at the discounted price so that financer could make some profit out of the deal. However, it is important to note that Salam is prohibited in commodities such a gold, silver and other type of monetary assets.

(C)

Final settlement amount shall be computed by using formula:

$$= \frac{(N)(RR- FR)(dtm/DY)}{[1+ RR(dtm/DY)]}$$

Where,

N = the notional principal amount of the agreement;

RR = Reference Rate for the maturity specified by the contract prevailing on the contract settlement date;

FR = Agreed-upon Forward Rate; and

dtm = maturity of the forward rate, specified in days (FRA Days)

DY = Day count basis applicable to money market transactions which could be 360 or 365 days.

Accordingly,

If actual rate of interest after 6 months happens to be 9.60%

$$= \frac{(Rs.60crore)(0.096- 0.093)(3/12)}{[1 + 0.096(3/12)]}$$

$$= \frac{(Rs.60crore)(0.00075)}{1.024}$$

= Rs. 4,39,453

Thus banker will pay Parker & Co. a sum of Rs. 4,39,453

If actual rate of interest after 6 months happens to be 8.80%

$$= \frac{(Rs.60crore)(0.088- 0.093)(3/12)}{[1 + 0.088(3/12)]}$$

= (Rs.60crore)(-0.00125)

1.022

= - Rs. 7,33,855

Thus Parker & Co. will pay banker a sum of Rs. 7,33,855

Note: It might be possible that students may solve the question on basis of days instead of months (as considered in above calculations). Further there may be also possibility that the FRA days and Day Count convention may be taken in various plausible combinations such as 90 days/360 days, 90 days/ 365 days, 91 days/360 days or 91 days/365days.