

SUGGESTED SOLUTION

CA FINAL NOV'19

SUBJECT-SFM

Test Code - FNJ 7316

BRANCH - () (Date:)

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ANSWER 1(A)

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Initial Margin = \mu + 3 \sigma
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Where μ = Daily Absolute Change

 σ = Standard Deviation

Accordingly;

Initial Margin = Rs. 10,000 + Rs. 6,000 = Rs. 16,000

Maintenance margin = Rs. $16,000 \times 0.75 = Rs.12,000$

Day	Changes in future Values (Rs.)	Margin A/c (Rs.)	Call Money (Rs.)
4/2/09	-	16000	-
5/2/09	50 x (3294.40 - 3296.50) = -105	15895	-
6/2/09	50 x (3230.40 - 3294.40) = -3200	12695	-
7/2/09	50 x (3212.30 - 3230.40) = -905	16000	4210
10/2/09	50 x (3267.50 - 3212.30) = 2760	18760	-
11/2/09	50 x (3263.80 - 3267.50) = -185	18575	-
12/2/09	50 x (3292 - 3263.80) =1410	19985	-
14/2/09	50 x (3309.30 - 3292) =865	20850	-
17/2/09	50 x (3257.80 - 3309.30) = -2575	18275	-
18/2/09	50 x (3102.60 - 3257.80) = -7760	16000	5485

(8 MARKS)

ANSWER 1(B)

(i) Total premium paid on purchasing a call and put option

= (Rs. 15 per share \times 200) + (Rs. 90 per share \times 200).

In this case, Mr. John exercises neither the call option nor the put option as both will result in a loss for him.

Ending value = - Rs. 21000 + zero gain = - Rs.21000

i.e. Net loss = Rs.21000

(3 MARKS)

(ii) Since the price of the stock is below the exercise price of the call, the call will not be exercised. Only put is valuable and is exercised.

Net Gain = (Exercise Price - Current Price) x No of Shares - Premium Paid

Total premium paid = Rs. 21000

Ending value = - Rs. 21000 + Rs. $[(900 - 700) \times 200]$ = Rs. 19,000

P Net gain = Rs. 19,000

(3 MARKS)

(iii) In this situation, the put is worthless, since the price of the stock exceeds the put's exercise price. Only call option is valuable and is exercised. Total

premium paid = Rs. 21000

Ending value = $- \text{Rs. } 21000 + \text{Rs. } [(1200 - 1100) \times 200] = - \text{Rs. } 1000$

Net Loss = Rs.1,000

(2 MARKS)

ANSWER 1(C)

Important features of NPS are as under:

- (i) Any citizen of India, whether resident or non-resident who are aged between 18 60 years as on the date of submission of his/her application can join NPS.
- (ii) NPS is an easily accessible, low cost, tax-efficient, flexible and portable retirement savings account.
- (iii) Under the NPS, the individual contributes to his retirement account and his employer can also co-contribute for the social security/welfare of the individual.
- (iv) NPS is designed on defined contribution basis wherein the subscriber contributes to his account.
- (v) In NPS, there is no defined benefit that would be available at the time of exit from the system and the accumulated wealth depends on the contributions made and the income generated from investment of such wealth.
- (vi) In NPS, Accumulated Pension Wealth = Contributions + Investment Growth Charges.

(4 MARKS)

ANSWER 2(A)

(i) Let P be the buyback price decided by ABB Ltd.

Market Capitalisation after Buyback

= 1.15P
$$\left(20 \text{ Lakhs} - \frac{50\% \text{ of } 180 \text{ lakhs}}{P}\right)$$

= 23 lakhs P - 130.50 lakhs

Again, 23 lakhs P - 130.50 lakhs

or 23 lakhs P = 400 lakhs + 130.50 lakhs

or
$$P = 503.5/23 = Rs. 21.89$$
 per share

(4 MARKS)

(ii) Number of Shares to be Bought Back:-

Rs. 90 lakhs/ 21.89 = 4.111 lakhs (Approx.) or 411147 shares

(1 MARK)

(iii) Shares after buyback

or
$$20,00,000 - 4,11,147 = 15,88,853$$
 shares

Therefore, EPS = 5 x 20 lakhs/ 15.889 lakhs = Rs. 6.29

Thus, EPS of ABB Ltd., increases to Rs.6.29.

So, EPS of ABB Ltd. is increased by Rs. 1.29 (6.29 – 5.00)

(3 MARKS)

ANSWER 2(B)

$$(1 + 0.12) (1 + Risk Premium) = (1 + 0.14)$$

Therefore, Risk adjusted dollar rate is = $1.0179 \times 1.08 = 1.099 - 1 = 0.099$

Calculation of NPV

Year	Cash flow (Million)	PV Factor at 9.9%	P.V.
	US\$		
1	2.00	0.910	1.820
2	2.50	0.828	2.070
3	3.00	0.753	2.259
4	4.00	0.686	2.744
5	5.00	0.624	<u>3.120</u>
			12.013
		Less:	<u>11.000</u>
		Investment	
		NPV	<u>1.013</u>

Therefore, Rupee NPV of the project is= Rs. (48 x 1.013) Million = Rs.48.624 Million

(8 MARKS)

ANSWER 2(C)

Applications of Value at Risk (VAR)

VAR can be applied

- (a) to measure the maximum possible loss on any portfolio or a trading position.
- (b) as a benchmark for performance measurement of any operation or trading.
- (c) to fix limits for individuals dealing in front office of a treasury department.
- (d) to enable the management to decide the trading strategies.
- (e) as a tool for Asset and Liability Management especially in banks.

(4 MARKS)

ANSWER 3(A)

(a) (i) Portfolio Beta

$$0.30 \times 0.50 + 0.50 \times 0.60 + 0.20 \times 1.20$$

$$= 0.15 + 0.3 + 0.24$$

(1 MARK)

(ii) Residual Variance

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

$$\beta_X^2 \times \sigma_M^2 = (0.5)^2(0.12)^2 = 0.0036$$

$$\beta_Y^2 \times \sigma_M^2 = (0.6)^2 (0.12)^2 = 0.0052$$

$$\beta_Z^2 \times \sigma_M^2 = (1.20)^2 (0.12)^2 = 0.0207$$

Residual Variance = Total Variance - Systematic Risk

$$X = 0.020 - 0.0036 = 0.0164$$

Y
$$0.010 - 0.0052 = 0.0048$$

$$Z = 0.120 - 0.0207 = 0.0993$$

(3 MARKS)

(iii) Portfolio variance using Sharpe Index Model

Portfolio Variance = Systematic Risk of the Portfolio + Unsystematic Risk of the Portfolio

Systematic Variance of Portfolio = $(0.12)^2 \times (0.69)^2 = 0.006856$

Unsystematic Variance of Portfolio = $0.0164 \times (0.30)^2 + 0.0048 \times (0.50)^2 +$

 $0.0993 \times (0.20)^2 = 0.006648$

Total Variance = 0.006856+ 0.006648 = 0.013504

(4 MARKS)

ANSWER 3(B)

Conversion Price = Rs. 50 x 17 = Rs. 850

Intrinsic Value = Rs.850

Accordingly the yield (r) on the bond shall be:

Rs. 850 = Rs. 100 PVAF(r, 10) + Rs. 1000 PVF(r, 10)

Let us discount the cash flows by 11%

850 = 100 PVAF (11%, 10) + 1000 PVF (11%, 10)

 $850 = 100 \times 5.890 + 1000 \times 0.352 = 91$

Now let us discount the cash flows by 13%

850 = 100 PVAF (13%, 10) + 1000 PVF (13%, 10)

 $850 = 100 \times 5.426 + 1000 \times 0.295 = -12.40$

Accordingly, IRR

11% +
$$\frac{90.90}{90.90 - (-12.40)}$$
 × (13% - 11%)

$$11\% + \frac{90.90}{103.30} \times (13\% - 11\%)$$

= 12.76%

The spread from comparable bond = 12.76% - 11.80% = 0.96%

(8 MARKS)

ANSWER 3(C)

Purchasing Power Parity (PPP): Purchasing Power Parity theory focuses on the 'inflation – exchange rate' relationship. There are two forms of PPP theory:-

The ABSOLUTE FORM, also called the 'Law of One Price' suggests that "prices of similar products of two different countries should be equal when measured in a common currency". If a discrepancy in prices as measured by a common currency exists, the demand should shift so that these prices should converge.

The RELATIVE FORM is an alternative version that accounts for the possibility of market imperfections such as transportation costs, tariffs, and quotas. It suggests that 'because of these market imperfections, prices of similar products of different countries will not necessarily be the same when measured in a common currency.' However, it states that the rate of change in the prices of products should be somewhat similar when measured in a common currency, as long as the transportation costs and trade barriers are unchanged.

The formula for computing the forward rate using the inflation rates in domestic and foreign countries is as follows:

$$F = S \frac{(1+i_D)}{(1+i_F)}$$

Where F= Forward Rate of Foreign Currency and S= Spot Rate

i_D = Domestic Inflation Rate and i_F= Inflation Rate in foreign country

Thus PPP theory states that the exchange rate between two countries reflects the relative purchasing power of the two countries i.e. the price at which a basket of goods can be bought in the two countries.

(4 MARKS)

ANSWER 4(A)

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

Value of Firm =
$$V_0 = \frac{FCFF_1}{K_c - g_n}$$

FCFF1 = Expected FCFF in the year 1 Kc= Cost of capital

gn = Growth rate forever

Thus, Rs. 500 lakhs = Rs. 20 lakhs /(Kc-g)

Since g = 5%, then Kc = 9%

Now, let X be the weight of debt and given cost of equity = 12% and cost of debt = 6%, then 12% (1 - X) + 6% X = 9%

Hence, X = 0.50, so book value weight for debt was 50%

∴ Correct weight should be 150% of equity and 50% of debt.

:. Cost of capital = $K_C = 12\% (0.75) + 6\% (0.25) = 10.50\%$

and correct firm's value = Rs. 20 lakhs/(0.105 - 0.05) = Rs. 363.64 lakhs.

(8 MARKS)

ANSWER 4(B)

(i) Forward contract:

Rupees needed in 90 days = $$5,00,000 \times Rs. 73 = Rs.3,65,00,000$

(1 MARK)

(ii) Money market hedge:

Amount in \$ to be invested = 5,00,000/1.0250 = Rs.4,87,805 Amount of Rs. needed to convert into \$ = 4,87,805 x 71 = Rs. 3,46,34,155 Interest and principal on Rs. loan after 90 days

= Rs. 3,46,34,155 x 1.06 = Rs. 3,67,12,204

(2 MARKS)

(iii) Call option:

	., - C an - p t · c · · · · · · · · · · · · · · · · · · ·					
Expected	Prem./unit	Exercise	Total	Total price for	Prob.	Pixi (5) x (6)
Spot rate		Option (3)	price per	\$5,00,000 x		
(1)	(2)		unit (4)	(4)	Pi	(7)
				= (5)	(6)	
72.50	0.10	No	72.60	3,63,00,000	0.25	90,75,000
73.00	0.10	No	73.10	3,65,50,000	0.50	1,82,75,000
74.50	0.10	Yes	74.10	3,70,50,000	0.25	92,62,500
			*			
						3,66,12,500
Add: Interest on Premium @ 6% (50,000 x 6%)						3,000
						3,66,15,500

^{* (}Rs. 74 + Rs.0.10)

(2 MARKS)

(iv) No hedge option:

Expected Future spot	Rs.needed Xi	Prob.	Pi xi
rate		Pi	
72.50	3,62,50,000	0.25	90,62,500
73.00	3,65,00,000	0.50	1,82,50,000
74.50	3,72,50,000	0.25	93,12,500
			3,66,25,000

(2 MARKS)

Decision: Forward Contract Strategy is most preferable strategy because it requires the least amount to arrange \$5,00,000.

(1 MARK)

ANSWER 4(C)

Some of the sources for funding a start-up:

- (i) Personal financing: It may not seem to be innovative but you may be surprised to note that most budding entrepreneurs never thought of saving any money to start a business. This is important because most of the investors will not put money into a deal if they see that you have not contributed any money from your personal sources.
- (ii) **Personal credit lines:** One qualifies for personal credit line based on one's personal credit efforts. Credit cards are a good example of this. However, banks are very
 - cautious while granting personal credit lines. They provide this facility only when the business has enough cash flow to repay the line of credit.
- (iii) **Family and friends:** These are the people who generally believe in you, without even thinking that your idea works or not. However, the loan obligations to friends and relatives should always be in writing as a promissory note or otherwise.
- (iv) Peer-to-peer lending: In this process group of people come together and lend money to each other. Peer to peer to lending has been there for many years. Many small and ethnic business groups having similar faith or interest generally support each other in their start up endeavors.
- (v) **Crowdfunding**: Crowdfunding is the use of small amounts of capital from a large number of individuals to finance a new business initiative. Crowdfunding makes use of the easy accessibility of vast networks of people through social media and crowdfunding websites to bring investors and entrepreneurs together.
- (vi) Microloans: Microloans are small loans that are given by individuals at a lower interest to a new business ventures. These loans can be issued by a single individual or aggregated across a number of individuals who each contribute a portion of the total amount.
- (vii) Vendor financing: Vendor financing is the form of financing in which a company lends money to one of its customers so that he can buy products from the company itself. Vendor financing also takes place when many manufacturers and distributors are convinced to defer payment until the goods are sold. This means extending the payment terms to a longer period for e.g. 30 days payment period can be extended to 45 days or 60 days. However, this depends on one's credit

worthiness and payment of more money.

- (viii) Purchase order financing: The most common scaling problem faced by startups is the inability to find a large new order. The reason is that they don't have the necessary cash to produce and deliver the product. Purchase order financing companies often advance the required funds directly to the supplier. This allows the transaction to complete and profit to flow up to the new business.
- (ix) Factoring accounts receivables: In this method, a facility is given to the seller who has sold the good on credit to fund his receivables till the amount is fully received. So, when the goods are sold on credit, and the credit period (i.e. the date up to which payment shall be made) is for example 6 months, factor will pay most of the sold amount upfront and rest of the amount later. Therefore, in this way, a startup can meet his day to day expenses.

(4 MARKS)

ANSWER 5(A)

On 28th February 2019 bank would purchase form the exporter US\$ 200000 at the agreed rate i.e. Rs. 71.50/\$. However, bank will charge for this early delivery consisting of Swap Difference and Interest on outlay of funds.

(i) Swap Difference

Bank sells at Rs.71.20 It buys at Rs.71.35 Swap loss per US\$ Rs. 0.15

Swap loss for \$ 200000 is Rs. 30,000

(2 MARKS)

(ii) Interest on Outlay of funds

On February Bank sell \$ in Market Rs. 71.20 Bank

buys from customer Rs. 71.50

Outlay per US \$

Outlay of funds for US\$ 200000 Rs.60,000

Interest of outlay of funds on Rs. 60,000 for 31 days (1^{st} March 2019 to 31^{st} March 2019) at 15% p.a. i.e. Rs.764

(2 MARKS)

(iii) Charges for early delivery

Swap Loss Rs.30,000
Interest on Outlay of Funds Rs. 764
Rs.30,764

(2 MARKS)

(iv) Net Inflow to Global Ltd.

Proceed of US \$ 200000@Rs.71.50Rs.1,43,00,000

Less: Charges for early delivery Rs. 30,764

Net Inflow Rs. 1,42,69,236

(2 MARKS)

ANSWER 5(B)

(a) NAV of the Fund.

$$\frac{₹ 9,52,38,000}{800000}$$
 = ₹ 119.0475 rounded to ₹ 119.05

(2 MARKS)

(b) The revised position of fund shall be as follows:

Shares	No. of shares	Price	Amount (Rs.)
A Ltd.	10000	19.70	1,97,000
B Ltd.	50000	482.60	2,41,30,000
C Ltd.	28000	264.40	74,03,200
D Ltd.	100000	674.90	674,90,000
E Ltd.	30000	25.90	7,77,000
Cash			2,40,800
			10,02,38,000

No. of units of fund =
$$800000 + \frac{5000000}{119.0475} = 8,42,000$$

(3 MARKS)

(c) On 2nd April 2009, the NAV of fund will be as follows:

Shares	No. of shares	Price	Amount (Rs.)
A Ltd.	10000	20.30	2,03,000
B Ltd.	50000	513.70	2,56,85,000
C Ltd.	28000	290.80	81,42,400
D Ltd.	100000	671.90	6,71,90,000
E Ltd.	30000	44.20	13,26,000
Cash			2,40,800
			10,27,87,200

(3 MARKS)

ANSWER 5(C)

Some of the parameters to identity the currency risk are as follows:

- (i) **Government Action:** The Government action of any country has visual impact in its currency. For example, the UK Govt. decision to divorce from European Union i.e. Brexit brought the pound to its lowest since 1980's.
- (ii) **Nominal Interest Rate:** As per interest rate parity (IRP) the currency exchange rate depends on the nominal interest of that country.
- (iii) Inflation Rate: Purchasing power parity theory impact the value of currency.
- (iv) Natural Calamities: Any natural calamity can have negative impact.
- (v) War, Coup, Rebellion etc.: All these actions can have far reaching impact on currency's exchange rates.
- (vi) **Change of Government:** The change of government and its attitude towards foreign investment also helps to identify the currency risk.

(4 MARKS)

ANSWER 6(A)

Dividend Plan

Unit acquired =
$$\frac{5,00,000}{46}$$
 = 10869.57

Date	Units held	D	ividend	Reinvestment	New	Total
		%	Amount	Rate	Units	Units
01.04.2014						10869.57
31.12.2014	10869.57	12	13043.48	47.0	277.52	11147.09
31.03.2016	11147.09	15	16720.64	49.5	337.79	11484.88
31.03.2018	11484.88	10	11484.88	48.0	239.27	11724.15
31.03.2019	Maturity Val	ue	(₹ 49.0 X 1	1724.15)	l	₹ 5,74,483.35
	Less: Cost of Acquisition				₹ 5,00,000.00	
	Total Gain				₹ 74483.35	

∴ Effective Yield =
$$\frac{₹ 74,483.35}{₹ 5,00,000} \times \frac{1}{5} \times 100 = 2.98\%$$

(4 MARKS)

Bonus Plan

Units Acquired =
$$\frac{10,00,000}{42}$$
 = 23809.52

Date	Particulars	Calculation Working	No. of Units	NAV (₹)
1.4.14	Investment		23809.52	42
30.9.15	Bonus	23,809.52 / 4 =	5952.38	
			29761.90	43
30.9.17	"	29761.9 / 6 =	4960.32	
			34722.22	44
31.3.19	Maturity Value	34722.22 x ₹ 44 =		15,27,777.68
	Less: Investment			10,00,000.00
	Gain			5,27,777.68

:. Effective Yield
$$\frac{5,27,777.68}{10,00,000} \times \frac{1}{5} \times 100 = 10.56\%$$

(4 MARKS)

ANSWER 6(B)

(i) Calculation of Overall Cost

Upfront Fee (GBP 10 M @ 1.20%) ₹ 1,20,000
Interest Payment (GBP 10 M x 3.55% x 3.4) ₹ 12,07,000
Hedging Cost (GBP 10 M x 4% x 3.4) ₹ 13,60,000
Total ₹ 26,87,000

Or ₹ 2.687 million

Overall cost in % terms on Annual Basis =
$$\frac{2.687 \text{million}}{(1,00,00,000-1,20,000)} \times \frac{1}{3.4}$$

= $\frac{2.687}{9.88} \times \frac{1}{3.4} \times 100 = 8\%$

Overall Cost in Rupee terms@ GBP 1 = ₹ 90x $\frac{2.687}{3.4}$ x 100 = ₹ 711.26 lakhs

OR

Overall cost in % terms on Annual Basis
$$= \frac{2.687 \text{million}}{(1,00,00,000)} \times \frac{1}{3.4}$$
$$= \frac{2.687}{1.00} \times \frac{1}{3.4} \times 100 = 7.9\%$$
Overall Cost in Rupee terms@ GBP 1
$$= 10,000,000 \times 7.90\% \times 90$$
$$= ₹ 71,100,000$$

OR

Calculation of overall cost

Interest & Margin (A) = 3.55%

Hedging cost (B) = 4%

7.55%

Onetime fee = 1.20%

Average loan maturity = 3.4 years

Per annum cost 1.2/3.4 (C) = 0.35%

Annual overall cost in % terms (A+B+C) = 7.9%

Overall Cost in Rupee terms@ GBP 1 = 10,000,000 X 7.90% X 90

= ₹71,100,000

(4 MARKS)

(ii) Cost of Hedging in terms of Rupees

₹ 13,60,000 x 90 = ₹ 12,24,00,000 = ₹ 12.24 crores in Total

OR

GBP10,000,000 X 90 X 4% = ₹ 3,60,00,000 on Annual Basis

(1 MARK)

- (iii) If K Ltd. pursues an aggressive approach then Gain/Loss in INR Depreciation/ Appreciation shall be computed as follows:
 - (a) If INR depreciates by 10%

Re. loss per GBP = 90 x 10% = ₹ 9

Total Losses GBP10M = ₹ 90 Million

Less: Cost of Hedging = ₹ 36 Million

Net Loss = ₹ 54 million

(b) If INR appreciates by 10%

₹ Gains per GBP = ₹ 90 x 10% = ₹ 9

Total Gain on Repayment of Ioan = 90 Million

Add: Saving in Cost of Hedging = 36 Million

Net Gain = 126 Million

(3 MARKS)

ANSWER 6(C)

Originator (entity which sells assets collectively to Special Purpose Vehicle) achieves the following benefits from securitization:

- (i) Off Balance Sheet Financing: When loan/receivables are securitized it release a portion of capital tied up in these assets resulting in off Balance Sheet financing leading to improved liquidity position which helps expanding the business of the company.
- (ii) **More specialization in main business:** By transferring the assets the entity could concentrate more on core business as servicing of loan is transferred to SPV. Further, in case of non-recourse arrangement even the burden of default is shifted.
- (iii) **Helps to improve financial ratios:** Especially in case of Financial Institutions and Banks, it helps to manage Capital-To-Weighted Asset Ratio effectively.
- (iv) **Reduced borrowing Cost:** Since securitized papers are rated due to credit enhancement even they can also be issued at reduced rate as of debts and hence the originator earns a spread, resulting in reduced cost of borrowings.

(4 MARKS)

OR

ANSWER 6(C)

The steps involved in mechanism of securitization are as follows:

- (i) **Creation of Pool of Assets:** The process of securitization begins with creation of pool of assets by segregation of assets backed by similar type of mortgages in terms of interest rate, risk, maturity and concentration units.
- (ii) **Transfer to SPV:** Once assets have been pooled, they are transferred to Special Purpose Vehicle (SPV) especially created for this purpose.
- (iii) **Sale of Securitized Papers:** SPV designs the instruments based on nature of interest, risk, tenure etc. based on pool of assets. These instruments can be Pass Through Security or Pay Through Certificates.
- (iv) **Administration of assets:** The administration of assets in subcontracted back to originator which collects principal and interest from underlying assets and transfer it to SPV, which works as a conduit.
- (v) **Recourse to Originator:** Performance of securitized papers depends on the performance of underlying assets and unless specified in case of default they go back to originator from SPV.
- (vi) **Repayment of funds:** SPV will repay the funds in form of interest and principal that arises from the assets pooled.
- (vii) **Credit Rating to Instruments:** Sometime before the sale of securitized instruments credit rating can be done to assess the risk of the issuer.

(4 MARKS)