Answer 1(a)

(i)

$$R_1 = \frac{D_1 + P_1}{P_0} - 1 = \frac{(0.90 + 0.75) + 9.1}{8.50} - 1 = 26.47\%$$

(ii) If Distribution amount (0.90+0.75) is reinvested in the mutual fund itself then P_0 = 8.75, P_1= 9.1 & D_1 = 0.

$$R_1 = \frac{D_1 + P_1}{P_0} - 1 = \frac{0 + 9.1}{8.75} - 1 = 4\%$$

Here holder period return is 4%. If the investor can get more than 4% during this period from any other investment then he should invest this amount there. Otherwise distribution amount should be reinvested in the mutual fund itself.

Answer 1(b)

USING BINOMIAL PRICING MODEL:

Step 1: Calculate Delta

$$\Delta = \frac{uV_c - dV_c}{uV_s - dV_s} = \frac{1300 - 0}{27300 - 24700} = 0.5$$

$Here\ uV_c = max(uV_s - E, 0) = 27300 - 26000 = 1300$
$dV_c = max(dV_s - E, 0) = 24700 - 26000 = 0$

Step 2: Calculate value of perfectly hedged portfolio

$$M = dV_s \times \Delta$$
$$M = 24700 \times 0.5 = 12{,}350$$

Step 3: Calculate the value of call option

$$V_c = V_s \times \Delta - \frac{M}{e^{rt}} = 26000 \times 0.5 - \frac{12350}{1.03} = 1010$$

Comment: Current premium for option is justified

Answer1(c)

(i) Under the given circumstances, the USD is expected to quote at a premium in India as the interest rate is higher in India. Here approximate forward premium on USD = r^H-r^F = 9%-2% = 7% p.a.

(ii) Calculation, of the forward rate:

$$\frac{1 + r^H}{1 + r^F} = \frac{F}{S} \Rightarrow \frac{1 + .09/2}{1 + .02/2} = \frac{F}{64.5} \Rightarrow F = 66.74$$

(iii) forward premium

$$Forward\ Premium = \frac{F - S}{S} \times 100 = \frac{66.74 - 64.5}{64.5} \times 100 = 3.47\%$$

Answer1(d)

According to Purchasing Power Parity forward rate may be calculated as follows:

(i) After one year:

$$\frac{1 + i^H}{1 + i^F} = \frac{F}{S} \Rightarrow \frac{1 + .065}{1 + .03} = \frac{F}{43.4} \Rightarrow F = 44.87$$

(ii) After three years:

$$\frac{(1+i^H)^3}{(1+i^F)^3} = \frac{F}{S} \Rightarrow \left(\frac{1.065}{1.03}\right)^3 = \frac{F}{43.4} \Rightarrow F = 47.98$$

Answer 2(a)

We should quote a lease rent at which NPV of cash flows discounted @10% is zero.

Step 1: Cash flow for Cost of Asset: -60 Lakhs

Step 2: Cash flows for after tax lease rent: (let us assume that lease rent for first, second & third year are respectively 3X, 2X and X.

Year	Rent	After tax= Rent x .65	Depn.	TB on Depn. = Dep x 0.35
1	3x	1.95x	15.00	5.25
2	2x	1.30x	11.25	3.94
3	1x	0.65x	8.44	2.95
		3.335x	= PV @10%=	10.25

Step 3: Cash flow for tax benefit on capital loss:
Written down Value at the end of 3rd year = Capital Loss = 25.31
Tax Benefit = 25.31 x 35% = 8.86
Present Value = 8.86 x 0.751 = 6.66

Step 5: Calculation of lease rent:
-60 - 3.335X + 10.25 + 6.66 = 0
By Solving X = Rs. 12.92
Rent for Year 1 12.92 x 3 = 38.76 lakhs
Year 2 12.92x 2 = 25.84 lakhs
Year 3 12.92x 1 = 12.92 lakhs

Answer 2(b)

Calculation of NPV: (Fig. ₹ In Lakhs)

Year	PVF@9%	Cost of Plant	Recurring Cost	Savings
0	1	-1000	-	-
1	0.917	-	-400	1200
2	0.842	-	-500	1400
Present Value=		-1000	-787.81	2279.27

Net Present Value = -1,000 – 787.81 + 2279.27 = ₹ 491.46

Sensitivity Analysis:

(1) With respect to Cost of Plant:
to bring down the NPV to zero it should reduce by ₹ 491.46 means Cost of plant should increase by ₹ 491.46. Therefore:
% change = ₹ 491.46/ ₹ 1000 = 49.15%

(2) With respect to Recurring Cost:
to bring down the NPV to zero present value of recurring cost should Increase by ₹ 491.46. Therefore:
% change = ₹ 491.46/ ₹ 787.81 = 62.38%

(3) With respect to Savings:
to bring down the NPV to zero present value of savings should reduce by ₹ 4914. Therefore:
% change = ₹ 491.46/ ₹ 2279.27= 21.56%

Conclusion: Savings are the most sensitive factor to affect acceptability of the proposal.

Answer 3(a)
Receive :

$$1cr \times \left(1 + \frac{x}{100} \times \frac{7}{365}\right)$$

Pay

$$= 1\ cr. \times \left(1 + \frac{.0875}{365}\right)\left(1 + \frac{.0915}{365}\right)\left(1 + \frac{.0912}{365}\right)\left(1 + \frac{.0895}{365}\right)\left(1 + \frac{.0898}{365}\right)\left(1 + \frac{.0915}{365}\right)$$

= 1.0017295

$$\boldsymbol{Net} = 1cr \times \left(1 + \frac{x}{100} \times \frac{7}{365}\right) - 1.0017295 = 417$$

X = 9.24%

Answer 3(b)
In this question number of units are increasing hence it appears to be a dividend reinvestment scheme.

Step 1: Calculations as on 31st March, 2015

$$\text{Annualized Return} = \left(\frac{D_1 + P_1}{P_0} - 1\right) \times 100 \times \frac{12}{n}$$

$$153.33\% = \left(\frac{0 + P_1}{10000} - 1\right) \times 100 \times \frac{12}{9}$$

P_1 = 21.5

Step 2: Calculations as on 31st March, 2016
Since Dividend was reinvested by Mr. Vijay, additional units allotted $= \frac{1000}{21.5} = 46.51$ units

Units as on 31-03- 2015	= 1000 + 46.51	=1046.51
less units on 31-03-2016		=1129.61
Additional unit allotted		= 83.1

Let "X" be the NAV as on 31-03-2016
1046.51 x 2 / X = 83.1
X = 25.19

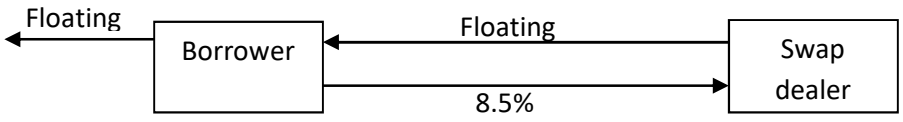
Step 3: Calculations as on 31st March, 2017

$$73.52\% = \left(\frac{0 + 1129.61 \times \text{NAV}}{10000} - 1\right) \times 100 \times \frac{12}{33}$$

NAV = 26.75

Answer 4(a)

(i) Borrower should enter into IRP where he pays fixed 8.5% p.a. & receives floating rate



(ii) Borrower pays premium = ₹ 40 × 75% = ₹ 30000

YEAR	SWAP		
	RECEIPT	PAYMENT@8.5%	NET
1	408000	340000	+68000
2	460000	340000	+120000
3	370000	340000	+30000
4	360000	340000	+20000

Answer 4(b)

1) Exchange Ratio = 12/15 = 0.8

2) Post merger EPS

$$\frac{\text{Earning of east} + \text{Earning of fost}}{\text{Shares of east} + \text{Shares to be issued to fost}} = \frac{2{,}00{,}000 + 60{,}000}{40{,}000 + 10{,}000 \times 0.8} = 5.42$$

3) No dilution of EPS for Fost co. ltd.:

Let us assume that the exchange ratio is "E".

Change in EPS = Pre merger EPS – Post merger EPS x Exchange Ratio

$$0 = \frac{2{,}00{,}000 + 60{,}000}{40{,}000 + 10{,}000 \times \text{E}} \times \text{E} - 6$$

E = 1.2

Answer 5(a)

(i) Using forward contract: US$ 20m ÷ .016129 = ₹ 1240.00m

(ii) Using currency futures:

Long ₹	.016118
Short ₹	.016134
Receive	$.000016 × 40* × 31.021218
	= $ .019854
Sell	($20m + $ .019854)÷.016136 = ₹ 1240.69 (Best)

*No. of lots: 1240.8487/31.021 = 40 lots

(iii) Not hedging the currency risk: US$ 20m ÷ .016136 = ₹ 1239.46m

Answer 5(b)

No. of shares issued: ₹ 175 lakhs/12.5 = 1.4 lakhs

$$New\ EPS \quad = \frac{25 \times 10\text{l} \ + \ 50\text{l}}{10\text{l} + 1.4\text{l}} = 26.32$$

New MPS = 26.32 × P/E i.e. 5 = ₹ 131.6

*P/E = MPS/ EPS = 125/25 =5times

Answer 6(a)

L	K	$(\mathbf{L}-\bar{\mathbf{L}})^2$	$(\mathbf{K}-\bar{\mathbf{K}})^2$	$(\mathbf{L}-\bar{\mathbf{L}})\,(\mathbf{K}-\bar{\mathbf{K}})$
10	11	1	9	3
4	-6	25	196	70
5	13	16	25	-20
11	8	4	0	0
15	14	36	36	36
45	**40**	**82**	**266**	**89**

$$\bar{L} = \frac{45}{5} = 9, \qquad \bar{K} = \frac{40}{5} = 8,$$

$$\sigma_L = \sqrt{\frac{\sum(L-\bar{L})^2}{n}} = \sqrt{\frac{82}{5}} = 4.05, \quad \sigma_M = \sqrt{\frac{\sum(M-\bar{M})^2}{n}} = \sqrt{\frac{266}{5}} = 7.29$$

$$Cov(L,M) = \frac{\sum(M-\bar{M})\,(L-\bar{L})}{n} = \frac{89}{5} = 17.8$$

$$r = \frac{Cov(L,M)}{\sigma_L \sigma_M} = \frac{17.8}{4.05 \times 7.29} = 0.60$$

Note: Question has not given information of weight to be assigned hence we have assume equal investment in each security.

(i) Return of the portfolio:

$R_p = 9 \times 0.50 + 8 \times 0.50 = 8.5\ \%$

(ii) Risk of portfolio is as under:

$$\sigma_p = \sqrt{(\sigma_1 \times w_1)^2 + (\sigma_2 \times w_2)^2 + 2\sigma_1\sigma_2 w_1 w_2 r_{12}}$$

$$= \sqrt{(4.05 \times 0.5)^2 + (7.29 \times 0.5)^2 + 2 \times 4.05 \times 7.29 \times 0.5 \times 0.5 \times .60} = 5.12$$

Answer 6(b)

(i) Let us assume that number of days required to earn 6% return = X

$$\frac{30{,}00{,}000 \times \frac{10}{100} \times \frac{x}{360} - 45000}{30{,}00{,}000} = 0.06$$

X = 270 days = 9 months

(ii) Let us assume that number of days required to break even = X

$$30{,}00{,}000 \times 10\% \times \frac{x}{360} - 45000 = 0$$

X = 54 days