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**TEST SERIES**

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**SUGGESTED SOLUTION**

**FINAL MAY 2019 EXAM**

**SUBJECT- SFM**

**Test Code – FNJ 7080**

**BRANCH - () (Date :)**

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**Answer 1:**

In order to find out the NAV, the cash balance at the end of the year is calculated as follows-

Particulars	Rs.
Cash balance in the beginning (Rs. 100 lakhs Rs. 98 lakhs)	2,00,000
Dividend Received	12,00,000
Interest on 7% Govt. Securities	56,000
Interest on 9% Debentures	45,000
Interest on 10% Debentures	50,000
	15,51,000
(-) Operating expenses	5,00,000
Net cash balance at the end	10,51,000
<b>Calculation of NAV</b>	<b>Rs.</b>
Cash Balance	10,51,000
7% Govt. Securities (at par)	8,00,000
50,000 equity shares @ Rs. 175 each	87,50,000
9% Debentures (Unlisted) at cost	5,00,000
10% Debentures @90%	4,50,000
Total Assets	1,15,51,000
No. of Units	10,00,000
NAV per Unit	Rs. 11.55

**(7 marks)**

Calculation of NAV, if dividend of Rs. 0.80 is paid

Net Assets (Rs. 1,15,51,000 Rs. 8,00,000)	Rs. 1,07,51,000
No. of Units	10,00,000
NAV per unit	Rs.10.75

**(1 marks)****Answer 2:****Working Notes:**

- (i) Present Trade receivables period =  $365 \times 3,500 / 21,300 = 60$  days  
(ii) Reduction in trade receivables under factoring arrangement

	Rs.
Current trade receivables	3,500,000
Revised trade receivables (Rs. 21,300,000 x 35/365)	2,042,466
Reduction in trade receivables	1,457,534

**(2 marks)**

### Calculation of benefit of with-recourse offer

As the XYZ's offer is with recourse, ABC will gain the benefit of bad debts reducing from 0.9% of turnover to 0.6% of turnover.

	Rs.
Finance cost saving = $1,457,534 \times 0.07$	102,027
Administration cost saving	40,000
Bad debt saving = $21,300,000 \times (0.009 - 0.006)$	63,900
Total saving	205,927
Additional interest on advance ( $2,042,466 \times 0.8 \times 0.02$ )	32,680
Net benefit before factor fee (A)	173,247
With-recourse factor fee = $21,300,000 \times 0.0075$ (B)	159,750
Net benefit of with-recourse offer (A) – (B)	13,497

(3 marks)

### Calculation of benefit of non-recourse offer

As the offer is without recourse, the bad debts of ABC will reduce to zero, as these will be carried by the XYZ, and so the company will gain a further benefit of 0.6% of turnover.

	Rs.
Net benefit before with-recourse factor fee (A) as above	173,247
Non-recourse factor fee Rs. $21,300,000 \times 0.0125$ (D)	266,250
Net cost before adjusting for bad debts (E) = (D) – (A)	93,003
Remaining bad debts eliminated = $21,300,000 \times 0.006$ (F)	127,800
Net benefit of non-recourse offer (F) – (E)	34,797

(3 marks)

The XYZ's offer is financially acceptable on a with-recourse basis, giving a net benefit of Rs. 13,497. On a non-recourse basis, the XYZ's offer is not financially acceptable, giving a net loss of Rs. 93,003, if the elimination of bad debts is ignored.

The difference between the two factor fees (Rs. 106,500 or 0.5% of sales), which represents insurance against the risk of bad debts, is less than the remaining bad debts (Rs. 127,800 or 0.6% of sales), which will be eliminated under non-recourse factoring.

When this elimination of bad debts is considered, the non-recourse offer from the factor is financially more attractive than the with-recourse offer.

(2 marks)

### Answer 3:

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

$$\text{Value of Firm} = V_0 = \frac{\text{FCFF}_1}{K_c - g_n}$$

Where –

$\text{FCFF}_1$  = Expected FCFF in the year 1  
 $K_c$  = Cost of capital

$g_n$  = Growth rate forever Thus, Rs. 1800 lakhs = Rs. 54lakhs /  $(K_c - g)$

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 /  $(0.1454 - 0.09) = \text{Rs. } 974.73 \text{ lakhs.}$  **(6 marks)**

**Answer 4:**

(i) **Expected NPV**

(Rs. in lakhs)

Year I			Year II			Year III		
CFAT	P	CF×P	CFAT	P	CF×P	CFAT	P	CF×P
14	0.1	1.4	15	0.1	1.5	18	0.2	3.6
18	0.2	3.6	20	0.3	6.0	25	0.5	12.5
25	0.4	10.0	32	0.4	12.8	35	0.2	7.0
40	0.3	<u>12.0</u>	45	0.2	<u>9</u>	48	0.1	<u>4.8</u>
	$\bar{x}$ or $\overline{CF}$	<u>27.0</u>		$\bar{x}$ or $\overline{CF}$	<u>29.3</u>		$\bar{x}$ or $\overline{CF}$	<u>27.9</u>

NPV	PV factor @ 6%	Total PV
27	0.943	25.461
29.3	0.890	26.077
27.9	0.840	<u>23.436</u>
	PV of cash inflow	74.974
	Less: Cash outflow	<u>50.000</u>
	NPV	<u>24.974</u>

**(2 marks)**

(ii) **Possible deviation in the expected value**

Year I				
$X - \bar{X}$	$X - \bar{X}$	$(X - \bar{X})^2$	$P_1$	$(X - \bar{X})^2 P_1$
14 - 27	-13	169	0.1	16.9
18 - 27	-9	81	0.2	16.2
25 - 27	-2	4	0.4	1.6
40 - 27	13	169	0.3	<u>50.7</u>
				<u>85.4</u>

**(2 marks)**

$$\sigma_1 = \sqrt{85.4} = 9.241$$

Year II				
$X - \bar{X}$	$X - \bar{X}$	$(X - \bar{X})^2$	$P_2$	$(X - \bar{X})^2 \times P_2$
15 - 29.3	-14.3	204.49	0.1	20.449

20-29.3	-9.3	86.49	0.3	25.947
32-29.3	2.7	7.29	0.4	2.916
45-29.3	15.7	246.49	0.2	<u>49.298</u>
				<u>98.61</u>

(2 marks)

$$\sigma = \sqrt{98.61} = 9.930$$

Year III				
$X - \bar{X}$	$X - \bar{X}$	$(X - \bar{X})^2$	$P_3$	$(X - \bar{X})^2 \times P_3$
18-27.9	-9.9	98.01	0.2	19.602
25-27.9	-2.9	8.41	0.5	4.205
35-27.9	7.1	50.41	0.2	10.082
48-27.9	20.1	404.01	0.1	<u>40.401</u>
				<u>74.29</u>

(2 marks)

$$\sigma\sigma_3 = \sqrt{74.29} = 8.619$$

Standard deviation about the expected value:

$$\sigma\sigma = \sqrt{\frac{85.4}{(1.06)^2} + \frac{98.61}{(1.06)^4} + \frac{74.29}{(1.06)^6}} = 14.3696$$

(2 marks)

Answer 5:

**Discounting Factor:**

Cost of finance 20% - Tax 35% = 13%.

(i) **PV of cash outflows under leasing alternative**

Year-end	Lease rent after taxes P.A.	PVIFA at 13%	Total P.V.
1 – 5	Rs. 3,90,000	3.517	Rs. 13,71,630

**PV of cash outflows under buying alternative**

Year end	Loan Instalment	Tax advantage on Interest	Tax advantage on Depreciation	Net Cash Outflow	PVIF at 13%	Total PV
1	6,68,673	1,40,000	1,75,000	3,53,673	0.885	3,13,001
2	6,68,673	1,21,193	1,31,250	4,16,230	0.783	3,25,908
3	6,68,673	98,624	98,438	4,71,611	0.693	3,26,826
4	6,68,673	71,542	73,828	5,23,303	0.613	3,20,785
5	6,68,673	38,819	55,371	5,74,483	0.543	<u>3,11,944</u>
		Total PV outflows				15,98,464
		Less: PV of Salvage Value (Rs. 4,00,000 * 0.543)				<u>2,17,200</u>
						13,81,264
		Less: PV of tax saving on short term capital loss (4,74,609 – 4,00,000) * 35% * .543				14,179
		NPV of Cash outflow				13,67,085

**Working Notes:**

## (1) Schedule of Debt Payment

<b>Year-end</b>	<b>Opening balance</b>	<b>Interest @ 20%</b>	<b>Repayment</b>	<b>Closing Balance</b>	<b>Principal Amount</b>
1	20,00,000	4,00,000	6,68,673	17,31,327	2,68,673
2	17,31,327	3,46,265	6,68,673	14,08,919	3,22,408
3	14,08,919	2,81,784	6,68,673	10,22,030	3,86,889
4	10,22,030	2,04,406	6,68,673	5,57,763	4,64,267
5	5,57,763	1,10,910*	6,68,673	0	5,57,763

\*Balancing Figure

## (2) Schedule of Depreciation

<b>Year</b>	<b>Opening WDV</b>	<b>Depreciation</b>	<b>Closing WDV</b>
1	20,00,000	5,00,000	15,00,000
2	15,00,000	3,75,000	11,25,000
3	11,25,000	2,81,250	8,43,750
4	8,43,750	2,10,938	6,32,812
5	6,32,812	1,58,203	4,74,609

- (3) EMI = Rs. 20,00,000 / Annuity for 5 years @ 20% = i.e. Rs. 20,00,000 / 2.991 = Rs. 6,68,673.

**Advice:** Company is advised to borrow and buy not to go for leasing as NPV of cash outflows is lower in case of buying alternative.

**Note:** Students may note that the cost of capital of the company given in the question is 14% at which cash flows may also be discounted. **(5 marks)**

## (ii) Evaluation from Lessor's Point of View

	<b>(1)</b>	<b>(2)</b>	<b>(3)</b>	<b>(4)</b>	<b>(5)</b>
Lease Rent	6,00,000	6,00,000	6,00,000	6,00,000	6,00,000
Less: Depreciation	<u>5,00,000</u>	<u>3,75,000</u>	<u>2,81,250</u>	<u>2,10,938</u>	<u>1,58,203</u>
EBT	1,00,000	2,25,000	3,18,750	3,89,062	4,41,797
Less: Tax @ 35%	<u>35,000</u>	<u>78,750</u>	<u>1,11,563</u>	<u>1,36,172</u>	<u>1,54,629</u>
EAT	65,000	1,46,250	2,07,187	2,52,890	2,87,168
Add: Depreciation	<u>5,00,000</u>	<u>3,75,000</u>	<u>2,81,250</u>	<u>2,10,938</u>	<u>1,58,203</u>
Cash Inflows	<u>5,65,000</u>	<u>5,21,250</u>	<u>4,88,437</u>	<u>4,63,828</u>	<u>4,45,371</u>
PV factor @ 14%	0.877	0.769	0.675	0.592	0.519
PV of inflows	4,95,505	4,00,841	3,29,695	2,74,586	2,31,148

**Evaluation:**

Aggregate PV of cash inflows	17,31,775
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Add: PV of salvage value ( $4,00,000 \times 0.519$ )	2,07,600
Add: Tax shelter on short-term capital loss ( $(4,74,609 - 4,00,000) \times 0.35 \times 0.519$ )	<u>13,553</u>
PV of all cash inflows	19,52,928
Cost of the machine	20,00,000
NPV	-47,072

Hence, leasing at this rate is not feasible.

(5 marks)

**Answer 6:**

Number of new shares to be issued

- (a) **If the dividend is declared:** In case the firm pays dividend of Rs. 9 per share out of total profits of Rs. 2,00,00,000 and plans to make new investment of Rs. 50,00,000, the number of shares to be issued may be found as follows:

Total Earnings	Rs. 2,00,00,000
Dividends paid	<u>90,00,000</u>
Retained earnings	1,10,00,000
Total funds required	<u>5,00,00,000</u>
Fresh funds to be raised	<u>3,90,00,000</u>
Market price of the share	156
Number of shares to be issued (Rs. 3,90,00,000/156)	2,50,000

(3 marks)

- (b) **If the dividend is not declared:** In case the firm pays no dividend out of total profits of Rs. 2,00,00,000 and plans to make new investment of Rs. 50,00,000, the number of shares to be issued may be found as follows:

Total Earnings	Rs. 2,00,00,000
- Dividends paid	<u>0</u>
Retained earnings	2,00,00,000
Total funds required	<u>5,00,00,000</u>
Fresh funds to be raised	<u>3,00,00,000</u>
Market price of the share	165
Number of shares to be issued (Rs. 3,00,00,000/165)	1,81,818

(3 marks)