STRATEGIC FINANCIAL MANAGEMENT - STAGE –6

Marks

Q.2   (a)   Z=1.2 x 1 + 1.4 x 2 + 3.3 x 3 + .6 x 4 + 1.0 x 5

2

Where X1 = Working capital to total assets

X2 = cumulative retained earnings to total assets

X3 = earnings before interest and taxes to total assets

X4 = market value of equity to book value of total liabilities

X5 = sales to total assets

The Z-scores for the two companies are:

Alpha Z = 1.2 (31,500/150,000) + 1.4 (57,000/150,000)
+ 3.3 (36,000/150,000) + 0.6 (114,000/66,000)
+ 1.0 (258,000/150,000) = 4.33

2

Beta Z = 1.2 (–4,800/63,000) + 1.4 (9,000/63,000)
+ 3.3 (3,900/63,000) + 0.6 (15,300/39,000)
+ 1.0 (69,000/63,000) = 1.66

2

Alpha is a much healthier company. If we use Altman's cutoffs, below 1.81 represents firms to become bankrupt and above 2.99, healthy firms.

The area in between is one of misclassification).

Based on these cutoffs, we would say that there was a high probability that Beta company would go bankrupt in the near future, but very little probability that Alpha company would go bankrupt.

2

(b)

(i)

Profit Margin	Profit / Sale	160 / 3,200	=	0.05
Assets turnover	Sale / Total Assets	3,200 / 2,000		1.6 times
Equity multiplier	1 + Debt / Equity	1+ 1,200 / 800		2.5
Dividend payout ratio	Dividend / Profit	96 / 160		0.6
Retention ratio	1- Dividend payment Ratio			0.4
ROE	Profit Margin x Asset Turn over x Equity multiplier 0.05 x 1.6 x 2.5			0.2
Sustainable Growth Rate	0.4 x 0.2 / 1-(0.4 x 0.2)	0.08 / 0.92		8.7%

Marks for (b)(i): Equity multiplier: 1, Retention ratio: 1, ROE: 2, Sustainable Growth Rate: 1

(ii)   Let the desired profit margin = y:

$\frac{Y (1.6 \times 2.5 \times 0.4)}{1-(y \times 1.6 \times 2.5 \times 0.4)}$	=	0.15
$\frac{1.6\ y}{1 - 1.6\ y}$	=	0.15
1.6 y	=	.15 (1 – 1.6 y)
1.6 y	=	.15 – 0.24 y
1.6 y + .24 y	=	.15
1.84 y	=	.15
Y	=	8.15%

Marks for (ii): 1, 1, 1

(iii)   The net profit margin needs to be raised (from 5 percent to 8.15 percent). Therefore, it may be feasible for the company to attain the 15 percent SGR.

2

Q.3 (a)

(i)

		Rupees (000)			Marks
	Now	**Year 1**	**Year 2**	**Year 3**	**Year 4**
Current assets	30,000	37,200	46,128	57,198	70,926	1
Fixed assets	30,000	37,200	46,128	57,198	70,926	1
Total assets	60,000	74,400	92,256	114,396	141,852	
Current liabilities	9,000	18,900	31,506	47,646	77,352	1
long-term debt (15 million + 9 million)	24,000	24,000	24,000	24,000	15,000	1
Shareholders equity**	27,000	31,500	36,750	42,750	49,500	1
Liabilities and owner's equity	60,000	74,400	92,256	114,396	141,582	

*   The current liabilities row is a residual and is found by subtracting long-term debt and shareholders equity from total assets. In the fourth year the term loan becomes a current liability.

**   Increased by the amount of expected profits.

(ii)

		Rupees (000)			
Protective terms	**Now**	**Year 1**	**Year 2**	**Year 3**	**Year 4**
Working capital	21,000	18,300	14,622	9,552	-6,426	1
Total liabilities	33,000	42,900	55,506	71,646	92,352	
Liabilities to total assets	0.550	0.577	0.602	0.626	0.651	1

Long-term debt does not increase. All growth is financial with short-term liabilities and retained earnings.

	Rupees (000)			
Net addition to fixed assets	7,200	8,928	11,070	13,728	
Add: Depreciation	9,300	11,532	14,300	17,732	
Capital expenditures	16,500	20,460	25,370	31,460	2
Total available = Rs.9 million + depreciation	18,300	20,532	23,300	26,732	1

The company will breach:

- ❑   The total liabilities to total assets ratio restriction in the second year and onward
- ❑   The capital expenditures restriction in the third year and forth year.
- ❑   The working capital requirement in the fourth year.

2

This is a classic example of a company which wishes to grow at a rate faster than the growth in its retained earnings. The protective covenants will restrict this growth.

Apart from the three binding covenants, there is a serious question of whether the company can obtain the large amount of additional short-term debt that is necessary to finance the growth.

(b) (i) **Cost of trade credit:** If discounts are not taken up to Rs.485,000 can be raised after the second month. The cost would be

$$\frac{3}{97} \times \frac{365}{60} = \mathbf{18.81\%}$$

  (ii) **Cost of bank loan:** Assuming the compensating balance would not otherwise be maintained, the cost would be

$$\frac{65,000}{450,000} = \mathbf{14.44\%}$$

  (iii) **Cost of factoring:** The factor fee for the year would be
2% x Rs.6,000,000 = Rs.120,000

The savings affected, however, would be Rs.90,000, giving a net factoring cost of Rs.30,000. Borrowing Rs.375,000 on the receivables would thus cost

$$\frac{(12\%) (Rs.375,000) + Rs.30,000}{Rs.375,000} = \frac{Rs.45,000 + Rs.30,000}{Rs.375,000} = \mathbf{20.00\%}$$

Bank borrowing would be the cheapest source of funds.

Q.4 (a) Cash Flow (Rupees in million)

TIME	(i) INITIAL PROJECT	DISCOUNT FACTOR @ 14%	PV	Marks	(ii) SCENARIO 1 PROBABILITY = .3	SCENARIO 2 PROBABILITY = .3
1	- 18	0.8772	-15.7896	½		
2	- 18	0.7695	-13.851	½		
3	3	0.6750	2.025	½		
4	6	0.2921	3.5526	½		
5	12	0.5194	6.2328	½	-30	-30
6	12	0.4556	5.4672	½	18	12
7	9	0.3996	3.5964	½	18	12
8	3	0.3506	1.0518	½	18	12
9		0.3075			18	12
10		0.2697			18	12
NPV			-7.7148		* 16.53	** 5.82

The project has an NPV of Rs. –7.71 million and it would be rejected.

*I. - 30(0.5194) + 18(1.783)
     - 15.582 + 32.094
     = 16.512

**II. -30(0.5194) +12 (1.783)
     - 15.582 + 21.396
     = 5.814

Option value   = .3(16.53) + .3(5.82) + .4 (0)
           = 6.69 million

Worth of project = - 7.71 + 6.69 = - 1.02 million

While the option value raises the worth of the project substantially, it does not entirely offset the initial project's negative NPV. Therefore, we would reject the project.

4 (b)   (i)   14-9 a. Expected annual cash flows: <u>Marks</u>

Project A: Probable

Probability	x	Cash Flow	=	Cash Flow
0.2		7,000		1,400
0.6		7,750		4,650
0.2		8,500		1,700
Expected annual cash flow				7,750

1

Project B: Probable

Probability	x	Cash Flow	=	Cash Flow
0.2		Rs. 0		Rs. 0
0.6		7,750		4,650
0.2		19,000		3,800
Expected annual cash flow				8,450

1

Coefficient of variation:

$$CV = \frac{\text{St}andard-viation}{\exp ected-value} = \frac{\sigma NPV}{ExpectedNPV}$$

Project A:

$$\sigma A = \sqrt{(-Rs750)^2(0.2) + (-Rs0)^2(0.6) + (Rs750)^2(0.2)} = Rs474.34.$$

1

Project B:

$$\sigma B = \sqrt{(-Rs.8,450)^2(0.2) + (-Rs.700)^2(0.6) + (Rs.10,550)^2(0.2)} = Rs.6,069.18$$

1

CV_A = Rs.474.34 / Rs.7,750 = 0.0612.   1

CV_B = Rs.6,069.18 / Rs.8,450 = 0.7182.   1

(ii)   Project B is the riskier project because it has the greater variability in its probable cash flows, whether measured by the standard deviation or the coefficient of variation. Hence, Project B is evaluated at the 12% cost of capital, while Project A requires only a 10% cost of capital.

Project A:

NPV – 7,750 + (7,750 x 2.4868)

– 7,750 + 19,273 = 11,523   1

Project B:

NPV – 7,750 + (8,450 x 2.4019)

– 7,750 + 20,296 = 12,546   1

Project B has the higher NPV; therefore, the firm should accept Project B.   1

(iii)   The portfolio effects from Project B would tend to make it less risky than otherwise. This would tend to reinforce the decision to accept Project B.   1

Q.5

Marks

(a) V = Value of debt (D) + Value of equity $(S) = D + \dfrac{(EBIT - I(1-t)}{k_s}$

Calculation of EBIT:

	Rs.
Sales	24,000,000
Variable costs	12,000,000
Fixed costs	10,000,000
Total costs before interest and taxes	22,000,000
EBIT	2,000,000

1

I = Interest cost of the original Rs.2,000,000 debt at 8%
+ Interest cost of incremental Rs.2,000,000 debt at 9%
= Rs.2,000,000 (0.08) + Rs.2,000,000(0.09) = Rs.160,000 + Rs.180,000 = Rs.340,000.

1

$$V = \text{Rs.4,000,000} + \frac{(2,000,000 - 340,000)(1 - 0.40)}{0.115}$$

= Rs.4,000,000 + Rs.8,660,870 = Rs.12,660,870.

1

Since the value of the firm increases from its current values of Rs.12,514,286 to Rs.12,660,870 by increasing the debt from Rs.2,000,000 to Rs.4,000,000, the firm should increase its use of debt.

1

(b) Value of the firm with debt = Rs.6,000,000.
I = Interest cost of the original Rs.2,000,000 debt at 8%
+ Interest cost of incremental Rs.4,000,000 debt at 12%
= Rs.2,000,000 (0.08) + Rs.4,000,000(0.12) = Rs.640,000

1

$$V = \text{Rs.6,000,000} + \frac{(2,000,000 - 640,000)(1 - 0.4)}{0.15} = \text{Rs.11,440,000}$$

1

Since increasing the debt from Rs.4 million to Rs.6 million would cause the value of the firm to decline, it should limit its use of debt to Rs.4 million.

1

(c) The original market price of the firm's stock was Rs.20. We can use this information to determine the number of shares outstanding:

$$\text{Shares outstanding} = \frac{Value\,of\,equity}{\Pr ice} = \frac{S}{P} = \frac{V - D}{P}$$

$$n = \frac{12,514,288 - 2,000,00}{20} = 525,714\,shares$$

1

The firm increases its leverage by selling debt and repurchasing its shares of stock. The repurchase price is the equilibrium price that would prevail after the repurchase transaction. The original shareholders would sell their stock only at a price that incorporated the increased value of the firm resulting from the repurchase:

$$P_1 = \frac{V_1 - D_0}{n_0}$$

At D = Rs.4 million: $P1 = \dfrac{(12,660,870 - 2,000,000)}{525,714} = Rs.20.28.$

1

At D = Rs.6 million: $P1 = \dfrac{(11,440,000 - 2,000,000)}{525,714} = Rs.17.96.$

1

(d) Since the firm pays out all its earnings as dividends. DPS = EPS.

$$P1 = \frac{DPS}{k_s} = \frac{EPS}{K}, \text{ and EPS} = (P) (k_s)$$

EPS (D = Rs.2 million) = (Rs.20.00) (0.105) = Rs.2.10

1

EPS (D = Rs.4 million) = (Rs.20.28) (0.115) = Rs.2.33

1

EPS (D = Rs.6 million) = (Rs.17.96) (0.150) = Rs.2.69

1

Although the firm's EPS is higher at D = Rs.6 million, the firm should not increase its debt from Rs.4 to Rs.6 million because the stock price is higher at a debt level of Rs.4 million. The optimum capital structure is the one that maximizes stock price rather than EPS.

1

(e) The value of the old debt would decline. They have a fixed rate, so k_d rises because of added financial risk, and the value of the debt must fall. This value is transferred to the stockholders. For exactly this reason, debt indentures do place limits on the amount of additional debt the firms can issue.

1

STRATEGIC FINANCIAL MANAGEMENT - STAGE –6

Q. 6   (a)   Marks

(i)   Exchange ratio based on market price = $\dfrac{1.6 \times Rs.35}{Rs.40}$ = 1.4   1

(ii)   EPS and P/E ratios

Particulars	Blue Limited	Green Limited
(a) EAT (Rs.)	3,000,000	900,000
(b) Number of shares	600,000	150,000
(c) EPS (a) ÷ (b) (Rs.)	5	6
(d) P/E ratios (MPS ÷ EPS) (times)	7 (Rs.35/5)	6.67 (Rs.40/6)

                                            (1   +   1)   =   2

(iii)   Implied P/E ratio in the acquisition of Green Limited:

$\dfrac{\text{Market price of shares offered to Blue Limited} = \text{Rs.56}}{\text{Current EPS of Green Limited} \qquad 6}$ = 9.33   1

(iv)   EPS of Blue Limited after acquisition : $\dfrac{\text{Rs.3,000,000 + Rs.900,000}}{600,000 + 240,000}$ = Rs.4.64   1

(v)   Expected market price of merged company: Rs.4.64 x 7 times = Rs.32.48.   1

(b)   (i)   Since the net cash flows are equity returns, the appropriate discount rate is that cost of equity which reflects the riskiness of the cash flow stream. This cost is SCC's cost of equity:

$k_s = k_{RF} + (RP_M)b = 8\% + (4\%)1.50 = 14\%$ 2

(ii)   The terminal value is:

$$TV = \frac{149.6(1.07)}{0.14 - 0.07} = Rs.2,286.743.$$ 2

Annual cash flows are calculated as follows:

                                                                                    Rs.(000)

Year	2011	2012	2013	2014
Sales	900	1036	1110	1200
COGS (65%)	(585)	(673.4)	(721.4)	(780)
Gross profit	315	362.6	388.6	420
Selling / Admin	(90)	(106)	(120)	(136)
EBIT	225	256.6	268.6	284
Interest	(36)	(42)	(48)	(54)
EBT	189	214.6	220.6	230
Taxes (35%)	(66.2)	(75.2)	(77.2)	(80.6)
Net income	122.8	139.4	143.4	149.6

                2   +   2   +   2   +   2   = 8

The value of SCC to Global Communication Company's shareholders is the present value of the cash flows which accrue to the shareholders:

Year	Cash flow	PV factor @ 14%	PV
2011	122.8	0.8772	107.72
2012	139.4	0.7695	107.27
2013	143.4	0.6750	96.80
2014	149.6	0.5921	88.58
2014	2,286.7	0.5921	1,353.98
			1,754.35

                                                                                    2

THE END