

**CMA JUNE-2020 EXAMINATION
PROFESSIONAL LEVEL-IV
SUBJECT: 401. FINANCIAL MANAGEMENT**

Model Solution

Solution of the Q. No. 1

(a)

- (i) $\$1,000,000 / \$40 = 25,000$ shares
- (ii) $\$700,000 / (250,000 + 25,000) = \2.55 EPS
- (iii) $\$1,000,000 / \$1,000 = 1,000$ bonds
 $\$1,000 / \$45 = 22.222$ shares
 $1,000 \text{ bonds} \times 22.222 \text{ shares} = 22,222$ shares
 $250,000 + 22,222 = 272,222$ shares outstanding
- (iv) $\$700,000 / (250,000 + 22,222) = \2.57 EPS
- (v) Since the convertible bond issue results in less dilution and higher EPS (although the EPS are very close), it is therefore recommended. The risk of an overhanging issue should be considered since the marginal increase in EPS is slight.

(b)

- (i) The current price of Tangshan Mining stock is:
 $P = \$4.89 / (0.1089 - 0.05) = \83.02
- (ii) The price of Tangshan Mining stock if the capital structure change is made is expected to be:
 $P = \$5.24 / (0.1134 - 0.06) = \98.13
- (iii) Yes. Tangshan Mining should make the change because it will maximize share price.

(c)

Answer: Interest on debt = $\$1,000 \times 9\% = \90
Net proceeds = $\$1,000 - \$20 - (\$1,000 \times 2\%) = \960
Before-tax cost of debt = 9.45% (using financial calculator)
 $r_i = 9.45\% \times (1 - 40\%) = 5.67\%$
 $r_p = \$8 \div (\$65 - \$3) = 12.9\%$

Growth = $((\$5.07 - \$3.45) \div \$3.45) \times 100 = 47\% \div 5 \text{ years} = 9.3913\%$
Net proceeds = $\$40 - 1 - 1 = \38
 $r_n = (\$5.07 \div \$38) + 9.3913\% = 22.73\%$

 $r_a = (0.3) \times (5.67) + (0.05) \times (12.9) + (0.65) \times (22.73) = 16.20\%$

Solution of the Q. No. 2(a)

- (i) $\text{EPS} = \$5,000,000 / 1,000,000 = \5.00 per share
- (ii) $\text{P/E Ratio} = \$50.00 / \$5.00 = 10$
- (iii) $\text{Dividends/Share} = \$2,500,000 / 1,000,000 = \$2.50/\text{share}$
- (iv) If the firm paid \$55 to repurchase stock, it could repurchase approximately 45,455 shares ($\$2,500,000 \div \55 per share). As a result, the firm would now have 954,545 shares outstanding (1,000,000 shares - 45,455 shares). As a result, EPS would rise from \$5.00 per share to approximately \$5.24 per share ($\$5,000,000 \div 954,545$ shares). If we assume the stock still sells at 10 times earnings, the new market price could be estimated by multiplying the new EPS by the PE ratio. The new price would thus be \$52.40 per share, an increase of approximately \$2.40 in share price. Note that this amount would have been precisely \$2.50 cents per share if not due to rounding.
- (v) The net effect of a stock dividend and a stock repurchase is the same. In this example, in both cases, shareholders would have received a net gain of approximately \$2.50 per share.

(b)

(i) The maximum dividend per share the firm can pay is:

$$\frac{\$11,600,000}{2,000,000 \text{ shares}} = \$5.80/\text{share}$$

	2-for-1	Cash dividend	Stock dividend
Preferred stock	\$ 500,000	\$ 500,000	\$ 500,000
Common stock	2,000,000*	2,000,000	2,100,000**
Paid-in capital	10,000,000	10,000,000	11,900,000
Retained earnings	<u>11,600,000</u>	<u>8,600,000</u>	<u>9,600,000</u>
Total S.E.	<u>\$24,100,000</u>	<u>\$21,100,000</u>	<u>\$24,100,000</u>

*(4,000,000 shares at \$0.50 par)

** (2,100,000 shares at \$1 par)

(iii) (1) \$10/share

(2) \$19.05; 2,000,000 shares × \$20/share = \$40,000,000 market value

No. of shares after the stock dividend = 2,100,000 shares

Stock price per share = \$40,000,000/2,100,000 = \$19.05

Solution of the Q. No. 3(a)

(i) Reduction in receivables days=75-45=30 days

Reduction in receivables = $30 \div 365 \times \text{Tk. } 16\text{m}$ = Tk. 13,15,068

Saving in Finance cost = $(8\% \times 13,15,068)$ = 1,05,205

Administrative savings = 100,000

Service charge = $(1.75\% \times \text{Tk. } 16\text{m})$ = 2,80,000

Summary:

Service charge	(2,80,000)
Finance cost saved by reducing receivables	1,05,000
Administrative costs saved	<u>1,00,000</u>
Net annual cost of the service	<u>(75,000)</u>

Edden will have to balance this cost against the security offered by improved cash flows and greater liquidity.

(ii)

Sale ledger administration 1%*Tk. 16m Tk. (1,60,000)

Administration costs savings 1,00,000

Cost of factor finance 10%*80%*3.3m (2,64,000)

Overdraft finance costs saved 8%*80%*3.3m 2,11,200

Net cost of factoring Tk. 1,12,800

As before Edden will have to balance this cost against the security offered by improved cash flows and greater liquidity.

(b) (i)

$$R_p = .4(15\%) + .6(20\%) = 18\%$$

$$\begin{aligned} \sigma_p &= [(.4)^2(1.0)(.2)^2 + 2(.4)(.6)(.36)(.2)(.4) + (.6)^2(1.0)(.4)^2]^{1/2} \\ &= (.0778)^{1/2} \\ &= 27.9\% \end{aligned}$$

(ii)

$$R_p = .6(15\%) + .4(20\%) = 17\%$$

$$\begin{aligned}\sigma_p &= \sqrt{(.6)^2(1.0)(.2)^2 + 2(.6)(.4)(.36)(.2)(.4) + (.4)^2(1.0)(.4)^2} \cdot 1/2 \\ &= (.0538)^{1/2} \\ &= 23.2\%\end{aligned}$$

The lesser proportional investment in the riskier asset, Meet Inc., results in a lower expected return as well as a lower standard deviation.

Solution of the Q. No. 4

(i) Total annual interest (Tk. in thousands):

Serial bonds, 8% on 2,400	Tk. 192
Mortgage bonds, 10% on 3000	300
Subordinate debentures, 12% of 2000	<u>240</u>
	Tk. <u>732</u>

Total annual principal payments: Tk. 100+150=Tk. 250

EBIT necessary to service Tk. 250 (1- 0.30)=Tk. 175

Times Interest earned: Tk. 2000/Tk. 732= 2.73

Debt-service coverage: Tk. 2000/1089=1.84

(ii) Deviation from mean before ratio is one to one:

Times Interest earned: Tk. 2000-732=Tk. 1,268

Debt service coverage: Tk. 2000-1089=Tk. 911

Standardizing the deviations:

Times Interest earned: 1,268/1500=.845

Debt service coverage: 911/1500=.607

Using Normal Probability Distribution Table, these standardized deviations correspond to probabilities of the two ratios being less than one to one of approximately 20% and 27%, respectively.

(iii): There is a significant probability, 27%, that the company will fail to cover its interest and principal payments. Its debt ratio of tk 7.4m/8.3m=0.89 is much higher than the industry norm of .47. Its book value of debt to market value of stock ratio is even higher. Although the information is limited, it would appear that Torstein is pushing out on the risk spectrum as it has to do with debt. Still its times interest earned approaches 3, and the situation would not yet appear to be critical.

Solution of the Q. No. 5(a)

This shows that an appreciation of the foreign currency against the dollar for a subsidiary in that country will result in higher values on both the balance sheet and income statement once those values are translated into dollars even if the local currency values didn't change at all. The opposite would be the case if the foreign currency depreciates against the dollar.

Translation of Income Statement

	<u>December 31, 2014</u>		<u>December 31, 2015</u>
		US\$	US\$
	RMB	(8.27 RMB = US\$1)	(6.62 RMB = US\$1)
Sales	1,800,000	217,654.17	272,067.71
Cost of Goods Sold	<u>1,650,000</u>	<u>199,516.32</u>	<u>249,395.41</u>
Operating Profits	150,000	18,137.85	22,672.31

Translation of Balance Sheet

Assets	December 31, 2014		December 31, 2015
	RMB	US\$ (8.27 RMB = US\$1)	US\$ (6.62 RMB = US\$1)
Cash	24,000	2,902.06	3,627.57
Inventory	180,000	21,765.42	27,206.77
Plant and Equipment	<u>96,000</u>	<u>11,608.22</u>	<u>14,510.28</u>
Total	300,000	36,275.70	45,344.62
Liabilities and Stockholders Equity			
Debt	144,000	17,412.33	21,765.42
Paid in Capital	120,000	14,510.28	18,137.85
Retained Earnings	<u>36,000</u>	<u>4,353.08</u>	<u>5,441.35</u>
Total	300,000	36,275.70	45,344.62

(b)(i)

Effective Rates	U.S. Dollar	Pound Sterling	Euro
Euromarket	7.5%	7%	3.5%
Domestic	6.5	7.25%	4.0

(ii) \$25 million should be invested in U.S. dollars in the Euromarket.

(iii) \$10 million should be raised in Euro in the Euromarket.

(c) (i)

Year	Earnings before Taxes	Taxes	Tax Relief
1	\$ 0	\$ 0	\$ 43,200
2	0	0	115,200
3	0	0	129,600
4	0	0	170,000
5	70,000	28,000	142,000

Total tax relief = \$1,500,000 × 0.40 = \$600,000

(ii)

Year (n)	Tax Benefit	(1.17) ⁻ⁿ	PV
1	\$ 43,200	× 0.855	= \$36,936
2	115,200	× 0.731	= 84,211
3	129,600	× 0.624	= 80,870
4	170,000	× 0.534	= 90,780
5	142,000	× 0.456	= <u>64,752</u>
Total PV of tax benefits			\$357,550

Liquidation value of assets	\$1,300,000.00
+ PV of tax benefits	<u>357,550</u>
Maximum Price	\$1,657,550

(iii) No, the PV of the benefits is less than the purchase price of the acquisition (\$1.8 million).

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