Equity of ABC Ltd. (ABCL) is ₹ 500 Crores, its debt, is worth ₹ 290 Crores. Printer Division segments value is attributable to 64%, which has an Asset Beta (β_p) of 1.55, balance value is applied on Spares and Consumables Division, which has an Asset Beta (β_{sc}) of 1.40 ABCL Debt beta (β_D) is 0.28.

You are required to calculate:

(i) Equity Beta (β_E),

(ii) Ascertain Equity Beta (β_E), if ABC Ltd. decides to change its Debt Equity position by raising further debt and buying back of equity to have its Debt to Equity Ratio at 1.50.

Assume that the present Debt Beta (β_{D1}) is 0.45 and any further funds raised by way of Debt will have a Beta (β_{D2}) of 0.50.

(iii) Whether the new Equity Beta (β_E) justifies increase in the value of equity on account of leverage?

3. (i) **Equity Beta**

To calculate Equity Beta first we shall calculate Weighted Average of Asset Beta as follows:

$= 1.55 \times 0.64 + 1.40 \times 0.36$

$= 0.992 + 0.504 = 1.496$

Now we shall compute Equity Beta using the following formula:

$$\beta_{Asset} = \beta_{Equity}\left[\frac{E}{E + D(1 - t)}\right] + \beta_{Debt}\left[\frac{D(1 - t)}{E + D(1 - t)}\right]$$

Accordingly,

$$1.496 = \beta_{Equity}\left[\frac{500}{500 + 290}\right] + \beta_{Debt}\left[\frac{290}{500+290}\right]$$

$$1.496 = \beta_{Equity}\left[\frac{500}{790}\right] + 0.28\left[\frac{290}{790}\right]$$

$\beta_{Equity} = 2.20$

(ii) **Equity Beta on change in Capital Structure**

Amount of Debt to be raised:

Particulars	Value (in ₹ Crore)
Total Value of Firm (Equity ₹ 500 crore + Debt ₹ 290 crore)	790
Desired Debt Equity Ratio	1.50 : 1.00
Desired Debt Level = $\frac{\text{Total Value x Debt Ratio}}{\text{Debt Ratio+Equity Ratio}}$	474
Less: Value of Existing Debt	(290)
Value of Debt to be Raised	184

Equity after Repurchase = Total value of Firm – Desired Debt Value

= ₹ 790 Crore – ₹ 474 Crore

= ₹ 316 Crore

Weighted Average Beta of ABCL:

Source of Finance	Investment (in ₹ Crore)	Weight	Beta of the Division	Weighted Beta
Equity	316	0.4	$\beta_{(E = X)}$	0.4x
Debt – 1	290	0.367	0.45	0.165
Debt – 2	184	0.233	0.50	0.117
	790	**Weighted Average Beta**		**0.282 + (0.4x)**

$\beta_{ABCL} = 0.282 + 0.4x$

$1.496 = 0.282 + 0.4x$

$0.4x = 1.496 – 0.282$

$X = 1.214/0.4 = 3.035$

$\beta_{\text{New Equity}} = 3.035$

(iii) Yes, it justifies the increase as it leads to increase in the Value of Equity due to increase in Beta.