110.		Questions						
1.	Navya Limted to wishes to raise additional capitals of ₹ 10 lakh for meetings its modernization							
	plan. It has ₹ 3,00,000 in the form of retained earnings available for investment purposes.							
	following are the further det	ails:	0		I F			
	Debt/ Equity mix		40%/60%					
	Cost of debt (before tax)							
	Upto ₹ 1,80,000		10%					
	Beyond ₹ 1,80,000		16%					
	Earning per share				₹4			
	Dividend pay-out				₹2			
	Expect growth rate in divid	lend			10%			
	Current market price per s	hare			44%			
	Tax rate				50%			
	Required:							
	i) To determine the patter	rn of raising the ad	ditional finance					
	ii) To calculate the post –ta	ax average cost of a	dditional debt.					
	iii) To calculate the cost of	retained earning ar	nd cost of equity	y, and				
	iv) To determine the overa	ll weighted average	e cost of capital	(after tax).				
	(ICAI SM mod	lified/May 2015 n	nodified/ May	2008 modified	/ November 2			
_	modified/July	y 2021 modified/	November 202	11 modified/Ma	ay 2019 modifi			
Ans.	i) Pattern of Raising Add	itional Finance						
	Equity = $10,00,000 \times 60$	/100 = ₹6,00,000						
	Debt = 10,00,000 × 40/1	100 = ₹4,00,000						
	Capital structure after Raising Additional Finance							
			Amount (₹)					
	Shareholder's Fund							
	Fquity Capital (6.00.00)	0 = 3.00.000			3 00 000			
			5,00,000					
	Potained earnings	noming Educativ	an Acadomy		3 00 000			
	Retained earnings Gr	ooming Educatio	On Academy		3,00,000			
	Retained earnings Gr Debt at 10% p.a.	Pioneer in Developing	Concepts		3,00,000 1,80,000			
	Retained earnings Gr Debt at 10% p.a. Debt at 16% p.a. (4,00,000	ooming Educatio Planet in Developing - 1,80,000)	Concepts		3,00,000 1,80,000 2,20,000			
	Retained earnings Gr Debt at 10% p.a. Debt at 16% p.a. (4,00,000 Total funds	- 1,80,000)	Concepts		3,00,000 1,80,000 2,20,000 10,00,000			
	Retained earnings       Grave and the second	$\frac{1}{1,80,000}$ of Additional Deb ' is cost of debt, '1' i - 0.5) = 5% or 0.05 - 0.5) = 8% or 0.08 ost Tax) i.e. $\frac{00\times0.08}{100} = 100 = 6.6$ ng and Cost of Equ + g = $\frac{2.2}{44} + 0.010 = 0.1$	t s interest and 't 5% aity applying E .5 or 15%	2' tax rate. Dividend Growt	3,00,000 1,80,000 2,20,000 10,00,000			
	Retained earnings         Retained earnings         Debt at 10% p.a.         Debt at 16% p.a. (4,00,000         Total funds         ii) Post-tax Average Cost         K <sub>d</sub> = l (1 -t), where ' K <sub>d</sub> On ₹1,80,000 = 10% (1 - 0n ₹2,20,000 = 16% (1 - 0n ₹2,20,000 = 10%	<b>ooming Education</b> - 1,80,000) <b>of Additional Deb</b> ' is cost of debt, 'l' i - 0.5) = 5% or 0.05 - 0.5) = 8% or 0.08 post Tax) i.e. $\frac{00 \times 0.08}{0}$ = 100 = 6.6 <b>ng and Cost of Equ</b> + g = $\frac{2.2}{44}$ + 0.010 = 0.1 <b>rage Cost of Capita</b>	t s interest and 't 5% aity applying E .5 or 15% al (WACC) (After Weights	2' tax rate. Dividend Growt	3,00,000 1,80,000 2,20,000 10,00,000 h Model			
	Retained earnings         Retained earnings         Debt at 10% p.a.         Debt at 16% p.a. (4,00,000         Total funds         ii) Post-tax Average Cost $K_d = 1 (1 - t)$ , where ' $K_d$ On ₹1,80,000 = 10% (1 - 0n ₹2,20,000 = 16% (1 - 4verage Cost of Debt (Potential for the form of the fo	ooming Education - 1,80,000) of Additional Deb ' is cost of debt, 'l' i - 0.5) = 5% or 0.05 - 0.5) = 8% or 0.08 post Tax) i.e. $\frac{00 \times 0.08}{0} = 100 = 6.6$ ng and Cost of Equ + g = $\frac{2.2}{44} + 0.010 = 0.1$ rage Cost of Capita Amount (₹)	t s interest and 't 5% aity applying D .5 or 15% al (WACC) (After Weights	2' tax rate. 2' ta	3,00,000 1,80,000 2,20,000 10,00,000 h Model (WACC)			
traff	Retained earningsRetained earningsDebt at 10% p.a.Debt at 16% p.a. (4,00,000Total fundsii) Post-tax Average Cost $K_d = 1 (1 - t)$ , where ' $K_d$ On ₹1,80,000 = 10% (1 - On ₹2,20,000 = 16% (1 - Average Cost of Debt (Potential Cost of Retained Earning $K_d = \frac{(1,80,000 \times 0.05) + (2,20,0)}{4,00,000}$ iii) Cost of Retained Earning $K_e = \frac{1.3865}{20} + g \text{ or } \frac{D_0(1+g)}{P_0}$ Then, $K_e = \frac{2.(1.1)}{44} + 0.10 = 100$ iv) Overall Weighted AverParticularsEquity (including	ooming Education - 1,80,000) of Additional Deb ' is cost of debt, 'l' i - 0.5) = 5% or 0.05 - 0.5) = 8% or 0.08 ost Tax) i.e. $\frac{00 \times 0.08}{0} = 100 = 6.6$ ng and Cost of Equ + g = $\frac{2.2}{44}$ + 0.010 = 0.1 rage Cost of Capita Amount (₹) 6.00.000	t s interest and 't 5% aity applying D .5 or 15% al (WACC) (After Weights 0.6	2' tax rate. 2' ta	3,00,000 1,80,000 2,20,000 10,00,000 h Model (WACC)			

## **Cost of Capital**

	Debt		4,00,000	0.4	6.65	2.66		
		Total	10,00,000	) 1		11.66		
2.	CALCULATE	the WACC using	g the following da	ata by using:				
	a) Book val	ue weights						
	b) Market v	alue weights						
	The capital structure of the company is as under:							
		(7.400 1.1	Particular	S		(₹)		
	Debentures	s ( $₹$ 100 per deb	enture)			5,00,000		
	Freierence	snares (₹ 100 p	er snarej			5,00,000		
	The market	prices of these s	ocurition and			20,00,000		
	Debentures	prices of these s	ecurries are. ₹ 105 r	er dehenture				
	Preference s	hares	₹110 p	er preference sh	are			
	Equity share	es	₹ 24 ea	ch.				
	Additional i	information:						
	<b>i)</b> ₹ 100	per debenture	redeemable at p	oar, 10% coupon	rate, 4% floatat	tion costs, 10-year		
	maturi	ty.						
	ii) ₹100 ן	per preference s	hare redeemable	e at par, 5% couj	oon rate, 2% floa	tation cost and 10-		
	year m	aturity.			o. l			
	III) Equity	shares has ₹ 4 f	loatation cost an	d market price ₹	24 per share.			
	The next yea	ir expected divid	ienu is < 1 with a	annual growth of	5%. The firm has	s practice of paying		
	Corporate ta	v rate is 30% II	viuellu. se VTM method t	o calculate cost o	f depentures and	nreference shares		
		(RTP Novem)	per 2020 / ICAI S	SM / MTP March	<b>2021</b> /January	2021 / May 2009)		
Ans.	i) Cost of I	Equity (K <sub>a</sub> )		0	<u> </u>	/		
		σ		00				
	$P_0-F$	8		350				
	$=\frac{1}{\mp 24-4}$ +	-0.05 = 0.1  or  1	10%	$\sim a^{\gamma}$				
	ii) Cost of I	Debt (Ka)		5				
	Current	market price (P	0) – floatation co	st = I(1-t) × PVA	F(r.10) + RV × PV	IF(r.10)		
	₹105 – 4	4% of ₹ 105 = ₹	10 (1-0.3) × PVA	F (r.10) + ₹ 100 >	(PVIF (r.10)			
	Calculati	ion of NPV at dis	count rate of 5%	and 7%				
			0					
	Year	Cash	Discount	Present Value	Discount	Present		
		flows	factor @ 5%		factor @ 7%	Value (₹)		
		(₹)	Ş					
	0	100.8	1.000	(100.8)	1.000	(100.8)		
	1 to 10	~7	7.722	54.05	7.024	49.17		
	10	100	0.614	61.40	0.508	50.80		
	NPV	24		+14.65		-0.83		
	~							
	and the second s							
	Calculation o	of IRR						
	-1	14.65		14.65	6.0004			
~	$IRR = 5\% + \frac{1}{14}$	$\frac{1}{4.65 - (-0.83)}$ (7%)	-5%) = 5% +	$\frac{1}{15.48}$ (7% – 5%)	= 6.89%			
-								
	Cost of Debt	$(K_d) = 6.89\%$						
	iii) Cost of I	Preference sha	res (K <sub>n</sub> )					
	Current	market nrice (P	a) - floatation co	st = PD × PVAF (r	$(10) + RV \times PVIF$	(r.10)		
	₹ 110 – 2	$2\% \text{ of } \neq 110 = \neq 1$	$5 \times PVAF (r 10) =$	- ₹ 100 × PVIF (r	10)	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
	(110 2	_,, 51 (110 - (1			-~,			

Calculation	of NPV at dis	scount rate of 3%	, ana	570			-	~ 1	_
Year	Cash flows	s Discount fac	ctor	Presen	t	Disco	unt factor	@	Present
0	(₹)	@ 3%		Value			5%		Value (₹)
0	107	.8 1.	.000	(107	(.8)		1.0	00	(107.8
1 to 10		5 8.	.530	42	.65	7.72		22	38.6
10	10	0.	744	74	.40		0.6	14	61.4
NPV				+9	.25				-7.7
$Calculation$ $IRR = 3\% + \frac{1}{c}$ Cost of Debt	$\frac{9.25}{9.25 - (-7.79)} (5)$	5% - 3%) = 3% %	$+\frac{9.2}{17.}$	<sup>25</sup> 04 (5% – 3	3%)	= 4.08	3%		
a) Calcula	tion of WAC	CC using book va	alue v	weights					
Source o	of capital	Book Value	W	eights	Af	fter tax cap	x cost of ital		WACC (K <sub>0</sub> )
		(₹)		(a)		(b	)	(	c) = (a)×(b)
10% Deben	itures	5,00,000		0.25			0.0689		0.0172
5% Prefere shares	nce	5,00,000		0.25			0.0408		0.010
Equity shar	res	10,00,000		0.50			0.10		0.0500
	ľ	20.00.000		1.00			-		0.0774
b) Calcula	= 0.07743 or ation of WA( Source of ca	r 7.74% CC using market apital	valu	e weights Aarket	We	ights	After tax c	ost	WACC (K <sub>0</sub> )
b) Calcula	= 0.07743 or ation of WA( Source of ca	r 7.74% CC using market apital	valu N	e weights Aarket Value	We	ights	After tax c of capita	ost	WACC (K <sub>0</sub> )
b) Calcula	= 0.07743 or ation of WAC Source of ca	r 7.74% CC using market apital Crooming Ed Piencer in De	valu M	e weights Market Value (₹)	We	ights a)	After tax c of capita (b)	ost	WACC (K <sub>0</sub> )
b) Calcula	= 0.07743 or ntion of WA( Source of ca ntures (₹ 105	r 7.74% CC using market apital Grooming Ed × 5,000)	valu N	e weights Market Value (₹) 5,25,000	We	<b>ights</b> <b>a)</b> 0.151	After tax c of capita (b) 0.06	ost 1 i89	WACC (K <sub>0</sub> ) (c) = (a)×(t 0.010
<ul> <li>b) Calcula</li> <li>10% Deben</li> <li>5% Prefere</li> <li>(₹ 110× 5,0</li> </ul>	= 0.07743 or tion of WA( Source of ca tures (₹ 105 nce shares 00)	r 7.74% CC using market apital Crooming Ed × 5,000)	valu N	e weights Market Value (₹) 5,25,000 5,50,000	We	<b>ights</b> <b>a)</b> 0.151 0.158	After tax c of capita (b) 0.06 0.04	ost 1 589 -08	WACC (K <sub>0</sub> ) (c) = (a)×(t 0.010 0.006
b) Calcula 10% Deben 5% Prefere (₹ 110× 5,0 Equity shar	= 0.07743 or tion of WA( Source of ca tures (₹ 105 nce shares 00) res (₹ 24× 1,0	r 7.74% CC using market apital Grooming Ed × 5,000)	valu N	e weights Market Value (₹) 5,25,000 5,50,000 24,00,000	We	<b>ights</b> <b>a)</b> 0.151 0.158 0.691	After tax c of capita (b) 0.06 0.04	ost al 589 608	WACC (K₀) (c) = (a)×(t 0.010 0.006 0.069
b) Calcula 10% Deben 5% Prefere (₹ 110× 5,0 Equity shar	= 0.07743 or ation of WA( Source of ca atures (₹ 105 nce shares 00) res (₹ 24× 1,0	<ul> <li>7.74%</li> <li>CC using market</li> <li>apital</li> <li>Grooming Edition</li> <li>× 5,000)</li> <li>00,000)</li> </ul>		e weights Market Value (₹) 5,25,000 5,50,000 24,00,000 34,75,000	We	<b>ights</b> <b>a)</b> 0.151 0.158 0.691 1.000	After tax c of capita (b) 0.06 0.04 0.	<b>ost</b> 11 589 608	WACC (K <sub>0</sub> ) (c) = (a)×(t 0.010 0.006 0.069 0.085
b) Calcula 10% Deben 5% Prefere: (₹ 110× 5,0 Equity shar WACC (K <sub>0</sub> )	= $0.07743$ or ation of WA( Source of ca atures (₹ 105 nce shares 00) res (₹ 24× 1,0 = $0.0859$ or 3 is the followi	<ul> <li>7.74%</li> <li>CC using market</li> <li>apital</li> <li>Grooming Edited</li> <li>× 5,000)</li> <li>00,000)</li> <li>8.59%</li> <li>ng capital struct</li> </ul>		e weights Market Value (₹) 5,25,000 5,50,000 24,00,000 34,75,000	We	<b>ights</b> <b>a)</b> 0.151 0.158 0.691 1.000	After tax c of capita (b) 0.06 0.04 0.	<b>ost</b> al 689 608 .10	WACC (Ko) (c) = (a)×(k 0.010 0.006 0.069 0.085
b) Calcula 10% Deben 5% Prefere (₹ 110× 5,0 Equity shar WACC (K <sub>0</sub> ) ABC Ltd. Ha 20X10.	= 0.07743 or tion of WA( Source of ca atures (₹ 105 nce shares 00) res (₹ 24× 1,0 = 0.0859 or 3 is the followi	x 7.74% CC using market apital Crooming Ed apital (Crooming Ed (Crooming Ed (Cr	valu M	e weights Market Value (₹) 5,25,000 5,50,000 24,00,000 34,75,000 which is con	We (	<b>ights</b> <b>a)</b> 0.151 0.158 0.691 1.000 ered to	After tax c of capita (b) 0.06 0.04 0. be optimu	ost al 589 608 .10	WACC (K <sub>0</sub> ) (c) = (a)×(t 0.010 0.006 0.069 0.085 as on 31st Ma
b) Calcula 10% Deben 5% Prefere (₹ 110× 5,0 Equity shar WACC (K <sub>0</sub> ) ABC Ltd. Ha 20X10.	= $0.07743$ or <b>tion of WA(</b> <b>Source of ca</b> itures (₹ 105 nce shares 00) res (₹ 24× 1,0 = $0.0859$ or 3 is the followi	x 7.74% CC using market apital Grooming Ed x 5,000) 00,000) 8.59% ng capital struct	valu N	e weights Market Value (₹) 5,25,000 5,50,000 24,00,000 34,75,000	We	<b>ights</b> <b>a)</b> 0.151 0.158 0.691 1.000 ered to	After tax c of capita (b) 0.06 0.04 0. 0.	ost al 589 608 .10	WACC (K₀) (c) = (a)×(t 0.010 0.006 0.069 0.085 as on 31st Ma (₹)
b) Calcula 10% Deben 5% Prefere: (₹ 110× 5,0 Equity shar WACC (K <sub>0</sub> ) ABC Ltd. Ha 20X10. 14% Debe	= 0.07743 or ation of WA( Source of ca atures (₹ 105 nce shares 00) res (₹ 24× 1,0 = 0.0859 or 3 is the following ntures	x 7.74% CC using market apital Grooming Ed x 5,000) 00,000) 8.59% ng capital struct	valu N	e weights Market Value (₹) 5,25,000 5,50,000 24,00,000 34,75,000	We	<b>ights</b> <b>a)</b> 0.151 0.158 0.691 1.000 ered to	After tax c of capita (b) 0.06 0.04 0. be optimu	ost al 589 608 .10	WACC (K₀) (c) = (a)×(t 0.010 0.006 0.069 0.085 as on 31st Ma (₹) 30,00
<ul> <li>b) Calcula</li> <li>10% Deben</li> <li>5% Prefere</li> <li>(₹ 110× 5,0)</li> <li>Equity shar</li> <li>WACC (K<sub>0</sub>)</li> <li>ABC Ltd. Ha</li> <li>20X10.</li> <li>14% Debea</li> <li>11% Prefe</li> </ul>	= 0.07743 or ation of WA( Source of ca atures (₹ 105 nce shares 00) res (₹ 24× 1,0 = 0.0859 or as the following ntures prence shares	x 7.74% CC using market apital Crooming Ed x 5,000) 00,000) 8.59% ng capital structures apital struc	valu N	e weights Market Value (₹) 5,25,000 5,50,000 24,00,000 34,75,000	We	ights a) 0.151 0.158 0.691 1.000 ered to	After tax c of capita (b) 0.06 0.04 0. be optimu	ost al 589 608 .10	WACC (K₀) (c) = (a)×(t 0.010 0.006 0.069 0.085 as on 31st Ma (₹) 30,00 10,00
<ul> <li>b) Calcula</li> <li>10% Deben</li> <li>5% Preferender</li> <li>(₹ 110× 5,0)</li> <li>Equity shar</li> <li>WACC (K<sub>0</sub>)</li> <li>ABC Ltd. Ha</li> <li>20X10.</li> <li>14% Deben</li> <li>11% Prefe</li> <li>Equity Shar</li> </ul>	= 0.07743 or tion of WA( Source of ca atures (₹ 105 nce shares 00) res (₹ 24× 1,0 = 0.0859 or 3 is the following ntures prence shares ares (10,000	x 7.74% CC using market apital Crooming Ed x 5,000) 00,000) 8.59% ng capital structu shares)	valu N	e weights Market Value (₹) 5,25,000 5,50,000 24,00,000 34,75,000 which is con	We	ights a) 0.151 0.158 0.691 1.000 ered to	After tax c of capita (b) 0.06 0.04 0. be optimu	ost al 889 .08 .10	WACC (K₀)          (c) = (a)×(t)         0.010         0.0069         0.085         as on 31st Ma         (₹)         30,000         1,60,000
b) Calcula 10% Deben 5% Preferen (₹ 110× 5,0 Equity shar WACC (K <sub>0</sub> ) ABC Ltd. Ha 20X10. 14% Deben 11% Prefe Equity Sha	= 0.07743 or tion of WA( Source of ca tures (₹ 105 nce shares 00) res (₹ 24× 1,0 = 0.0859 or 3 is the following ntures prence shares tres (10,000	x 7.74% CC using market apital Crooming Ed x 5,000) 00,000) 8.59% ng capital structures shares)	valu N ure, w	e weights Market Value (₹) 5,25,000 5,50,000 24,00,000 34,75,000 which is con	We	ights a) 0.151 0.158 0.691 1.000 ered to	After tax c of capita (b) 0.06 0.04 0. be optimu	ost al .899 .08 .10	WACC (K₀)          (c) = (a)×(t)         0.010         0.0069         0.0069         0.085         as on 31st Ma         (₹)         30,000         1,60,000         2,00,000
b) Calcula 10% Deben 5% Prefere (₹ 110× 5,0 Equity shar WACC (K <sub>0</sub> ) ABC Ltd. Ha 20X10. 14% Deben 11% Prefe Equity Sha The compar 20X9 EPS, F continue in	= 0.07743 or tion of WA( Source of ca atures (₹ 105 nce shares 00) res (₹ 24× 1,0 = 0.0859 or 3 is the followi ntures prence shares ares (10,000 ny share has Following is a future:	x 7.74% CC using market apital Crooming Ed x 5,000) 00,000) 8.59% ng capital structur shares) a market price the uniform tren	valu M valu vre, w of ₹ 2 d of F	e weights Market Value (₹) 5,25,000 5,50,000 24,00,000 34,75,000 which is con which is con 23.60. Next EPS for the	We () nside	ights a) 0.151 0.158 0.691 1.000 ered to ered to	After tax c of capita (b) 0.06 0.04 0. be optimu	ost al .89 .08 .10 	<pre>WACC (K₀) (c) = (a)×(t) 0.010 0.006 0.069 0.085 as on 31st Ma (₹) 30,00 10,00 1,60,00 2,00,00 e is 50% of y ch is expecte</pre>
b) Calcula 10% Deben 5% Preferen (₹ 110× 5,0) Equity shar WACC (K <sub>0</sub> ) ABC Ltd. Ha 20X10. 14% Deben 11% Prefe Equity Sha The compan 20X9 EPS. F continue in Yea	= 0.07743 or tion of WA( Source of ca atures (₹ 105 nce shares 00) res (₹ 24× 1,0 = 0.0859 or 3 is the followi ntures rence shares ares (10,000 my share has Following is the future: ar	T 7.74% CC using market apital Crooming Ed × 5,000) 00,000) 8.59% ng capital structur shares) a market price the uniform tren EPS (₹)	valu M valu	e weights Market Value (₹) 5,25,000 24,00,000 34,75,000 which is con which is con 23.60. Next EPS for the	We () nside	ights a) 0.151 0.158 0.691 1.000 ered to ered to	After tax c of capita 0.06 0.04 0. be optimu be optimu lend per sl 10 years v	ost al 589 08 .10 im a hare vhic	<pre>WACC (K₀) (c) = (a)×(t) 0.010 0.006 0.069 0.085 as on 31st Ma (₹) 30,00 10,00 1,60,00 2,00,00 e is 50% of y ch is expecte PS (₹)</pre>
b) Calcula 10% Deben 5% Prefere: (₹ 110× 5,0) Equity shar WACC (K <sub>0</sub> ) ABC Ltd. Ha 20X10. The compare 20X0 Equity Shar Yea	= 0.07743 or tion of WA( Source of ca atures (₹ 105 nce shares 00) res (₹ 24× 1,0 = 0.0859 or 3 is the followi ntures rence shares ares (10,000 my share has Following is f future: ar	x 7.74% CC using market apital Crooming Ed × 5,000) 00,000) 8.59% ng capital structur shares) a market price the uniform tren EPS (₹)	valu N Control Value Va	e weights Market Value (₹) 5,25,000 24,00,000 34,75,000 which is con	We () nside	ights a) 0.151 0.158 0.691 1.000 ered to ered to ceding	After tax c of capita (b) 0.06 0.04 0. 0. be optimu be optimu lend per sl 10 years v	ost al .10 .10 .10 .10 	<pre>WACC (K₀) (c) = (a)×(t) 0.010 0.006 0.069 0.085 as on 31st Ma (₹) 30,00 10,00 1,60,00 2,00,00 e is 50% of y ch is expecte PS (₹) 1.6</pre>

20X2	1 21	2087	1 95			
2082	1.21	2089	2.15			
20X3	1.55	2070	2.13			
20X4	1.46	2089	2.36			
<ul> <li>The company issued new debentures carrying 16% rate of interest and the current market price of debenture is ₹ 96.</li> <li>Preference shares of ₹ 9.20 (with annual dividend of ₹ 1.1 per share) were also issued. The company is in 50% tax bracket.</li> <li>A) CALCULATE after tax: <ul> <li>i) Cost of new debt</li> <li>ii) Cost of new preference shares</li> <li>iii) Cost of new equity share (assuming new equity from retained earnings)</li> </ul> </li> <li>B) CALCULATE marginal cost of capital when no new shares are issued.</li> <li>C) DETERMINE the amount that can be spent for capital investment before new ordinary shares must be sold. Assuming that the retained earnings for next year's investment is 50 percent of 20X9.</li> <li>D) COMPUTE marginal cost of capital when the fund exceeds the amount calculated in ©, assuming new equity is issued at ₹ 20 per share?</li> </ul>						
	(ICAI SM	/ modified/May 2016/	RTP May 2021 modified)			
A) i) Cost of new debt $K_{d} = \frac{I(1-t)}{P_{0}}$ $= \frac{16(1-0.5)}{96} = 0.0833$ ii) Cost of new preference shares $K_{d} = \frac{PD}{P_{0}} = \frac{1.1}{9.2} = 0.12$						
iii) Cost of new	equity sharesg Educati	on Academy g Concepts				
$K_e = \frac{D_1}{P_0} + g$						
$=\frac{1.18}{23.60} + 0.10 = 0.05 + 0.10 = 0.15$ Calculation of g when there is a uniform trend (on the basis of EPS)						
$=\frac{EPS(2013)-EI}{EPS(201)}$	$\frac{PS(2012)}{2} = \frac{110 - 100}{100} = 0$	0.10 or 10%				
Calculation o	f D <sub>1</sub>	57				
$D_1 = 50\%$ of 2	2021 EPS = 50% of 2.36 =	= ₹ 1.18				
B) Calculation of ma	arginal cost of capital					
Type of Capital	Proportion	Specific Cost	Product			
(1)	(2)	(3)	(2) × (3) = (4)			
Debenture	0.15	0.0833	0.0125			
Preference Share	0.05	0.1200	0.0060			
Equity Share 📣	0.80	0.1500	0.1200			
Marginal cost of capi	tal	·	0.1385			

	<b>C)</b> The company can spend the following amount without increasing marginal cost of capital								
		and without s	elling the n	ew shares	S:	1			
		Retained earr	s = 50%	01 EPS 01	t 2021 X	outstandin	ig equity sha	ares	
		The ordinary	= 0.50	X X 2.30	× 10,000 rnings ir	$J$ shares = $\chi$	11,800 is 80% of t	otal ca	nital So. ₹ 11.800 -
		80% of Total	Capital	laineu eai	i iiiigs ii	i tills casej	15 00 % 01 t		ipital 50, ( 11,000 –
		∴ Capital inv	estment be	fore issuii	ng equit	y shares = $\frac{3}{4}$	$\frac{11,800}{0.80} = ₹$	14,750	0
	D)	If the compan	y spends in	excess of	f ₹ 14,75	50, it will ha	ive to issue i	new ec	quity shares at ₹20
	per share.								
		$\therefore$ the cost of	new issue o	f equity s	hares wi	ll be = $\frac{D_1}{P_2}$ +	$g = \frac{1.18}{20} +$	0.10	= 0.159
	The marginal cost of capital will be:								
		Type of Cap	oital	Propo	rtion	Specif	ic Cost		Product
		(1)		(2	)	(3	3)	(2	2) × (3) = (4)
	Deb	entures			0.15		0.0833	-	0.0125
	Pref	ference Shares			0.05		0.1200		0.0060
	Equ	ity Shares (Ne	w)		0.80		0.1590		0.1272
			-						0.1457
4.	PQR	LTD. has the fo	ollowing cap	oital struc	ture on	October 31,	, 20X1:		
	Equ	ity share capit	al						20,00,000
	(2,0	0,000 Shares 0	of ₹ 10 each	)					22.22.222
	Res	erves & Surplu	IS						20,00,000
	12%	o preference s	nares						10,00,000
	9%	debentures							30,00,000
	The n	narket price of	f equity sha	res is ₹ 30	). It is ex	pected the	company wi	ll pay	next year a dividend
	of ₹ 3	B per share, wh	ich will gro	w at 7% i	forever.	Assumes 40	0% income t	ax rate	e.
	You a	are required to	compute v	veighted a	overage (	cost of capit r 2010 / N	tal using ma	rket va 016/F	alue weights. Dec 2021 Modified)
Ans.	COST	OF EOUITY =	<u>D1</u> +g	(N	ovembe	.1 2010 / 11	100000	010/1	<u>, see 2021 Houmeuj</u>
			$P_0$				5		
		=	$\frac{3}{3}$ + 0.07 =	0.1 + 0.0	7 = 0.17	= 17% 🗬	5		
						<u></u>			
	COST	OF DEBENTU	RE = I(1-T)	= 9% x (1	0.4) =	0.0540R 5.4	4%		
	COST	OF PREFERE	NCE SHARE	= 12% 0	R.12	7			
		Computat	ion of Wai	abtad Au		act of Canit	al (Using M	larkot	Value)
		computat		gineu Av	er age C	ust of Capit	tai (Using M	iai ket	valuej
	S	OURCE OF	MARKET	VALUE	WI	EIGHT	COST O	F	WACC (%)
		CAPITAL	OF CAPI	ΓAL (₹)				L	
	Q0/2	Dobonturos				0.30	<u>(%)</u>	40	1.62
	$(K_d)$	)	S	,00,000		0.50	5	UT.	1.02
	12% Shar	6 Preference	10	),00,000		0.10	12	.00	1.2
	Equ	ity Capital	60	),00,000		0.60	17	.00	10.20
			<u>(</u> 30X)	200000)					
	TOT	TAL 🔍	1,00	),00,000					13.02

	<b>NOTE:</b> - While using MV, reserve such as share premium and retained earnings are ignored as they incorporated in the value of equity.									
5.	Kalyanam Ltd. Has an operating profit of ₹ 34,50,000 and has employed Debt which gives total Interest Charge of ₹ 7,50,000. The firm has an existing Cost of Equity and Cost of Debt as 16% and 8% respectively. The firm has a new proposal before it, which requires funds of ₹ 75 Lakhs and is expected to bring an additional profit of ₹ 14,25,000. To finance the proposal, the firm is expecting to issue an additional debt at 8% and will not be issuing any new equity shares in the market. Assume no tax culture.									
	You are required to CALCULATE the Weighted Average Cost of Capital (WACC) of Kalyanam Ltd.: i) Before the new Proposal ii) After the new Proposal									
A			In	terest			(RTP N	lovembe	er 2021/	/ ICAI SM)
Ans.	a) Value of D	Debt	$=\frac{m}{Cost of}$	f debt (K <sub>d</sub> )						
			$=\frac{17,50,0}{0.08}$	$\frac{2000}{3} = ₹93,7$	75,000					
	b) Value of e	quity capital	$=\frac{Operat}{C}$	ting profit–I ost of debt (K	Interest K <sub>e</sub> )					
			= ₹34,50	0,000-₹7,50,00 0.16	<u>00</u> = ₹2	1,68,75,0	00			
	c) New Cost	of equity $(K_{\rho})$	after pr	oposal						
	_ Increas	ed Operating pro	fit–Inter	rest on Increa	ased deb	t				
	=	Equ	ity capita	ıl		_				
	= <sup>(₹34,50,</sup>	000 +₹14,25,000)-	-(₹7,50,00	0+₹6,00,000)						
	₹40.7 <b>Г</b> 0	₹1,68,75	5,000 ₹25 25 0							
	$=\frac{(48,75,0)}{(1,75,0)}$	$\frac{00-313,50,000}{68,75,000} =$	₹1,68,75,	$\frac{000}{000} = 0.209$	9 or 20	).9%				
	₹1,68,75,000 ₹1,68,75,000 encoded average (ost of Capital (WACC) before the new proposal									
	i) Calcu	lation of Weig	ghted A	verage Co	st of Ca	apital (V	VACC) be	efore the	e new pr	oposal
	i) Calcu Sources	lation of Weig Amount (	ghted A ₹)	verage Co Weight	st of Ca	apital (V Cost of C	VACC) be Capital	efore the	e new pr WACC	oposal
	i) Calcu Sources Equity	lation of Weig Amount ( 1,68,75,	ghted A ₹) 000	verage Cos Weight 0.642	st of Ca	apital (W Cost of C ademy	VACC) be Capital 0.160	efore the	e new pr WACC	roposal 0.1029
	i) Calcu Sources Equity Debt	lation of Wei Amount ( 1,68,75, 93,75,	ghted A ₹) 000 000	verage Cos Weight 0.642 0.357	<b>st of C</b> a 29 71	apital (V Cost of C ademy	VACC) be Capital 0.160 0.080	efore the	e new pr WACC	oposal 0.1029 0.0286
	i) Calcu Sources Equity Debt Total	lation of Wei Amount (* 1,68,75, 93,75, 2,62,50,	ghted A ₹) 000 000 000	verage Cos Weight GEG 0.642	<b>st of Ca</b> 29 71 1	apital (W Cost of C ademy	VACC) be Capital 0.160 0.080	efore the	e new pr WACC	<b>oposal</b> 0.1029 0.0286 3.15 %
	i) Calcu Sources Equity Debt Total ii) Calcu	lation of Wei Amount ( 1,68,75, 93,75, 2,62,50, lation of Wei	ghted A ₹) 000 000 000 ghted A	verage Cos Weight 0.642 0.357 verage Cos	<b>st of C</b> a 29 71 1 <b>st of C</b> a	apital (W Cost of C ademy * apital (W	VACC) be Capital 0.160 0.080 VACC) af	0.1 ter the	e new pr WACC	oposal           0.1029           0.0286           3.15 %           posal
	i) Calcu Sources Equity Debt Total ii) Calcu Sources	lation of Wei Amount ( 1,68,75, 93,75, 2,62,50, lation of Wei Amount	ghted A ₹) 000 000 000 000 ghted A (₹)	verage Cos Weight Ed 0.642 0.357 verage Cos Weigh	st of Ca 29 71 1 st of Ca nt	apital (W Cost of C ademy apital (W Cost of (	VACC) be Capital 0.160 0.080 VACC) af Capital	0.1	e new pr WACC 1315 or 1 new proj WACC	oposal           0.1029           0.0286           3.15 %           posal
	i) Calcu Sources Equity Debt Total ii) Calcu Sources Equity	lation of Wei Amount ( 1,68,75, 93,75, 2,62,50, lation of Wei Amount 1,68,7	ghted A       000       000       000       000       000       000       ghted A       (₹)       75,000	verage Cos Weight 0.642 0.357 verage Cos Weigh 0.	st of Ca 29 71 1 st of Ca nt .5000	apital (W Cost of C ademy apital (W Cost of (	VACC) be capital 0.160 0.080 VACC) af Capital 0.209	0.1	WACC 315 or 1 new proj WACC	oposal           0.1029           0.0286           3.15 %           posal           0.1045
	i) Calcu Sources Equity Debt Total ii) Calcu Sources Equity Debt	lation of Wei Amount ( 1,68,75, 93,75, 2,62,50, lation of Wei Amount 1,68,7 1,68,7	ghted A       ₹)       0000       0000       0000       ghted A       (₹)       75,000       75,000	verage Cos Weight 0.642 0.357 verage Cos Weigh 0. 0.	st of Ca           29           1           st of Ca           nt           .5000	apital (W Cost of C ademy apital (W Cost of C	VACC) be Capital 0.160 0.080 VACC) af Capital 0.209 0.080	0.1	e new pr WACC 1315 or 1 new proj WACC	oposal         0.1029         0.0286         3.15 %         posal         0.1045         0.0400
	i) Calcu Sources Equity Debt Total ii) Calcu Sources Equity Debt Total	lation of Wei Amount ( 1,68,75, 93,75, 2,62,50, lation of Wei Amount 1,68,7 1,68,7 3,37,5	ghted A       000       000       000       000       000       000       ghted A       (₹)       75,000       75,000       50,000	verage Cos Weight 0.642 0.357 verage Cos Weigh 0. 0.	st of Ca           29           71           1           st of Ca           1           5000           5000           1	apital (W Cost of C ademy apital (W Cost of (	VACC) be Capital 0.160 0.080 VACC) af Capital 0.209 0.080	0.1 0.1 ter the 1	e new pro WACC 315 or 1 new pro WACC 1445 or 3	oposal         0.1029         0.0286         3.15 %         posal         0.1045         0.0400         14.45 %
6.	i) Calcu Sources Equity Debt Total ii) Calcu Sources Equity Debt Total A company iss	lation of Wei Amount ( 1,68,75, 93,75, 2,62,50, lation of Wei Amount 1,68,7 1,68,7 3,37,5	ghted A       ₹)     000       0000     000       0000     000       ghted A       (₹)       75,000       75,000       50,000	verage Cos Weight 0.642 verage Cos Weigh 0. 0.	st of Ca 29 1 1 st of Ca 5000 5000	apital (W Cost of C ademy apital (W Cost of C	VACC) be Capital 0.160 0.080 VACC) af Capital 0.209 0.080	0.1 0.1 ter the 1	e new pr WACC 1315 or 1 new proj WACC 1445 or 1	oposal         0.1029         0.0286         3.15 %         posal         0.1045         0.0400         14.45 %
6.	<ul> <li>i) Calcu</li> <li>Sources</li> <li>Equity</li> <li>Debt</li> <li>Total</li> <li>ii) Calcu</li> <li>Sources</li> <li>Equity</li> <li>Debt</li> <li>Total</li> <li>A company iss</li> <li>✓ 15% convertion</li> </ul>	lation of Wei Amount ( 1,68,75, 93,75, 2,62,50, lation of Wei Amount 1,68,7 1,68,7 3,37,5 sues: rtible debentu	ghted A       ₹)     000       000     000       000     000       000     000       ghted A       (₹)       75,000       75,000       50,000	verage Cos Weight 0.642 0.357 verage Cos Weigh 0. 0. 0.	st of Ca 29 71 1 st of Ca 5000 5000 1	apital (W Cost of C ademy apital (W Cost of (	VACC) be capital 0.160 0.080 VACC) af Capital 0.209 0.080 urity per	0.1 ter the r 0.1	e new pro WACC	oposal         0.1029         0.0286         3.15 %         posal         0.1045         0.0400         14.45 %
6.	<ul> <li>i) Calcu</li> <li>Sources</li> <li>Equity</li> <li>Debt</li> <li>Total</li> <li>ii) Calcu</li> <li>Sources</li> <li>Equity</li> <li>Debt</li> <li>Total</li> <li>A company isses</li> <li>✓ 15% converse each deben</li> </ul>	Iation of Weij           Amount (*           1,68,75,           93,75,           2,62,50,           Iation of Weij           Amount           1,68,7           1,68,7           3,37,5           Sues:           rtible debentu           ture will be c	ghted A         ₹)         000         000         000         000         ghted A         (₹)         75,000         75,000         50,000         res of ₹2         onverte	verage Cos Weight 0.357 verage Cos Weigh 0. 0. 100 each at d into 2 ec	st of Ca 29 71 1 st of Ca 5000 5000 1 t par wa quity sh	apital (W Cost of C ademy apital (W Cost of C Cost of C	VACC) be Capital 0.160 0.080 VACC) af Capital 0.209 0.080 urity per the comp	0.1 0.1 ter the r 0. iod of 6 y pany. Th	e new pr WACC 1315 or 1 new proj WACC 1445 or 1 years. On he risk-fr	oposal         0.1029         0.0286         3.15 %         posal         0.1045         0.0400         14.45 %         n maturity, ree rate of
6.	<ul> <li>i) Calcu</li> <li>Sources</li> <li>Equity</li> <li>Debt</li> <li>Total</li> <li>ii) Calcu</li> <li>Sources</li> <li>Equity</li> <li>Debt</li> <li>Total</li> <li>A company iss</li> <li>✓ 15% converse each deben return is 10 paid divides</li> </ul>	Iation of Weij           Amount (₹           1,68,75,           93,75,           2,62,50,           Iation of Weij           Amount           1,68,7           1,68,7           3,37,5           Sues:           rtible debentu           ture will be c           0%, market ris	ghted A         000         000         000         000         000         000         ghted A         (₹)         75,000         75,000         75,000         75,000         res of ₹1         onverte         k premi         on chore	verage Cos Weight 0.642 0.357 verage Cos Weigh 0. 0. 0. 100 each at d into 2 ec um is 18%	st of Ca 29 71 1 st of Ca 5000 5000 1 t par w quity sh a and be	apital (W Cost of C ademy apital (W Cost of ( Cost of ( cost of the hares of eta of the	VACC) be capital 0.160 0.080 VACC) af Capital 0.209 0.080 urity per the compan compan	0.1 iod of 6 ypany. They is 1.25	e new pro WACC	oposal         0.1029         0.0286         3.15 %         posal         0.1045         0.0400         14.45 %         n maturity, ree rate of npany has tation cost
6.	<ul> <li>i) Calcu</li> <li>Sources</li> <li>Equity</li> <li>Debt</li> <li>Total</li> <li>ii) Calcu</li> <li>Sources</li> <li>Equity</li> <li>Debt</li> <li>Total</li> <li>A company iss</li> <li>✓ 15% converse</li> <li>each debender</li> <li>return is 10</li> <li>paid divider</li> <li>is 5% of iss</li> </ul>	Amount (         Amount (         1,68,75,         93,75,         2,62,50,         lation of Weig         Amount         1,68,7         1,68,7         sues:         rtible debentu         ture will be c         0%, market ris         nd of ₹12.76 p         ue amount	ghted A         ₹)         000         000         000         000         000         ghted A         (₹)         75,000         75,000         50,000         res of ₹2         onverte         k premi         er share	verage Cos Weight 0.642 0.357 verage Cos Weigh 0. 0. 0. 100 each at d into 2 ec um is 18%	st of Ca           29           71           1           st of Ca           1           5000           5000           1           5000           1           5000           1           5000           1           5000           1           5000           1           st of Ca           ago, it	apital (W Cost of C ademy apital (W Cost of Cost cost	VACC) be Capital 0.160 0.080 VACC) af Capital 0.209 0.080 urity per the compan dend of ₹	iod of 6 ypany. Th y is 1.25	e new pr WACC U315 or 1 new proj WACC 1445 or 1 years. On the risk-fr the cor hare. Flot	oposal           0.1029           0.0286           3.15 %           posal           0.1045           0.0400           14.45 %           n maturity, ree rate of npany has tation cost
6.	<ul> <li>i) Calcu</li> <li>Sources</li> <li>Equity</li> <li>Debt</li> <li>Total</li> <li>ii) Calcu</li> <li>Sources</li> <li>Equity</li> <li>Debt</li> <li>Total</li> <li>A company iss</li> <li>✓ 15% converse each deben return is 10 paid divider is 5% of iss</li> <li>✓ 5% prefere</li> </ul>	lation of Wei Amount ( 1,68,75, 93,75, 2,62,50, lation of Wei Amount 1,68,7 1,68,7 3,37,5 sues: rtible debentu ture will be c 0%, market ris nd of ₹12.76 p ue amount.	ghted A         000         000         000         000         000         000         000         ghted A         (₹)         75,000         75,000         50,000         res of ₹1         onverte         k premi         er share         ₹100         ₹100	verage Cos Weight 0.642 0.357 verage Cos Weigh 0. 0. 0. 100 each at d into 2 ec um is 18% S. Five year a ch at prem	st of Ca 29 71 1 st of Ca 1 5000 5000 1 t par w quity sh and be ago, it j	apital (W Cost of C ademy apital (W Cost of ( Cost of ( Cost of the bares of eta of the paid divid	VACC) be capital 0.160 0.080 VACC) af Capital 0.209 0.080 urity per the compan dend of ₹ wese shar	iod of 6 ypany. They is 1.25	e new pro WACC	oposal         0.1029         0.0286         3.15 %         posal         0.1045         0.0400         14.45 %         n maturity, ree rate of npany has tation cost         tation cost         le after 10
6.	<ul> <li>i) Calcu</li> <li>Sources</li> <li>Equity</li> <li>Debt</li> <li>Total</li> <li>ii) Calcu</li> <li>Sources</li> <li>Equity</li> <li>Debt</li> <li>Total</li> <li>A company iss</li> <li>✓ 15% converse</li> <li>each debender</li> <li>return is 10</li> <li>paid divider</li> <li>is 5% of iss</li> <li>✓ 5% prefere</li> <li>years at pair</li> </ul>	Iation of WeijAmount (₹1,68,75,93,75,2,62,50,Iation of WeijAmount1,68,71,68,73,37,5sues:rtible debentuture will be c0%, market risnd of ₹12.76 pue amount.nce shares of fr. Flotation cos	ghted A         000         000         000         000         000         000         ghted A         (₹)         75,000         75,000         75,000         50,000         res of ₹2         onverte         k premi         er share         ₹100 ea         st is 6%	verage Cos Weight 0.642 0.357 verage Cos Weigh 0. 0. 0. 100 each at d into 2 ec um is 18% . Five year a ch at prem of issue am	st of Ca 29 71 1 st of Ca 1 5000 5000 1 t par w quity s and be ago, it j ium of nount.	apital (W Cost of C ademy apital (W Cost of C Cost of C C Cost of C C Cost of C C Cost of C C Cost of C C C C C C C C C C C C C C C C C C C	VACC) be Capital 0.160 0.080 VACC) af Capital 0.209 0.080 urity per the compan dend of ₹ sese shar	iod of 6 y pany. Th y is 1.25 10 per sl es are re	e new pr WACC U315 or 1 new proj WACC 1445 or 1 years. On the risk-fr the risk-fr thare. Flot edeemable	oposal         0.1029         0.0286         3.15 %         posal         0.1045         0.0400         14.45 %         n maturity, ree rate of npany has tation cost         tation cost         le after 10
6.	<ul> <li>i) Calcu</li> <li>Sources</li> <li>Equity</li> <li>Debt</li> <li>Total</li> <li>ii) Calcu</li> <li>Sources</li> <li>Equity</li> <li>Debt</li> <li>Total</li> <li>A company iss</li> <li>✓ 15% converse each deben return is 10 paid divider is 5% of iss</li> <li>✓ 5% prefere years at part Assuming corr</li> </ul>	Iation of WeijAmount (₹1,68,75,93,75,2,62,50,Iation of WeijAmount1,68,71,68,73,37,5Sues:rtible debentuture will be c0%, market risnd of ₹12.76 pue amount.nce shares ofr. Flotation cosporate tax rate	ghted A ₹) 000 000 000 ghted A (₹) 75,000 75,000 75,000 50,000 res of ₹? onverte k premi er share ₹100 ea st is 6% e is 40%	verage Cos Weight 0.642 0.357 verage Cos Weigh 0. 0. 0. 0. 100 each at d into 2 ec um is 18% . Five year a ch at prem of issue am	st of Ca 29 71 1 st of Ca 5000 5000 1 t par w quity sh and be ago, it p ium of nount.	apital (W Cost of C ademy apital (W Cost of ( Cost of ( Cost of the hares of eta of the paid divid	VACC) be capital 0.160 0.080 VACC) af Capital 0.209 0.080 urity per the compan dend of ₹ sese shar	iod of 6 ypany. They is 1.25 10 per sl	e new pro WACC	oposal         0.1029         0.0286         3.15 %         posal         0.1045         0.0400         14.45 %         a maturity, ree rate of npany has tation cost         tation cost         le after 10
6.	<ul> <li>i) Calcu</li> <li>Sources</li> <li>Equity</li> <li>Debt</li> <li>Total</li> <li>ii) Calcu</li> <li>Sources</li> <li>Equity</li> <li>Debt</li> <li>Total</li> <li>A company iss</li> <li>✓ 15% converse</li> <li>each debender</li> <li>return is 100</li> <li>paid divider</li> <li>is 5% of iss</li> <li>✓ 5% prefere</li> <li>years at pain</li> <li>Assuming corr</li> <li>i) Calculate</li> </ul>	Iation of WeijAmount (1,68,75,93,75,2,62,50,Iation of WeijAmount1,68,71,68,73,37,5sues:rtible debentuture will be c0%, market risnd of ₹12.76 pue amount.nce shares ofc. Flotation cosporate tax ratethe cost of con	ghted A         000         000         000         000         000         000         ghted A         (₹)         75,000         75,000         75,000         50,000         res of ₹2         onverte         k premi         er share         ₹100 ea         st is 6%         e is 40%         vertible	verage Cos Weight 0.642 0.357 verage Cos Weigh 0. 0. 0. 100 each at d into 2 ec um is 18% Sive year a ch at prem of issue am	st of Ca 29 71 1 st of Ca 1 5000 5000 1 t par w quity s and be ago, it j ium of nount.	apital (W Cost of C ademy apital (W Cost of C Cost of C C Cost of C Cost of C C Cost of C C Cost of C C Cost of C C C Cost of C C C C C C C C C C C C C C C C C C C	VACC) be Capital 0.160 0.080 VACC) af Capital 0.209 0.080 urity per the compan dend of ₹ esse shar roximati	iod of 6 y pany. Th y is 1.25 10 per sl es are re	e new pr WACC U315 or 1 new proj WACC 1445 or 1 1445 or 1 years. On he risk-fr 5. The cor hare. Flot edeemabl od.	oposal         0.1029         0.0286         3.15 %         posal         0.1045         0.0400         14.45 %         a maturity, ree rate of mpany has tation cost         le after 10
6.	<ul> <li>i) Calcu</li> <li>Sources</li> <li>Equity</li> <li>Debt</li> <li>Total</li> <li>ii) Calcu</li> <li>Sources</li> <li>Equity</li> <li>Debt</li> <li>Total</li> <li>A company iss</li> <li>✓ 15% converse</li> <li>each deben return is 10 paid divider is 5% of iss</li> <li>✓ 5% prefere years at part Assuming correst</li> <li>i) Calculate</li> <li>ii) Use YTM b</li> </ul>	lation of Wei Amount ( 1,68,75, 93,75, 2,62,50, lation of Wei Amount 1,68,7 1,68,7 3,37,5 sues: rtible debentu ture will be c 0%, market ris nd of ₹12.76 p ue amount. nce shares of r. Flotation cos porate tax rate the cost of con method to calc	ghted A         000         000         000         000         000         000         ghted A         (₹)         75,000         75,000         75,000         75,000         75,000         75,000         75,000         75,000         75,000         75,000         75,000         75,000         60,000         res of ₹1         onverte         k premi         er share         ₹100 ea         st is 6%         e is 40%         overtible         culate co	verage Cos Weight 0.642 0.357 verage Cos Weigh 0. 0. 0. 0. 100 each at d into 2 ec um is 18% S. Five year s ch at prem of issue am e debenture st of prefer	st of Ca 29 71 1 st of Ca 1 5000 5000 1 t par w quity sh and be ago, it p nium of nount. es using rence s	apital (W Cost of C ademy apital (W Cost of ( Cost of (	VACC) be capital 0.160 0.080 VACC) af Capital 0.209 0.080 urity per the compan dend of ₹ roximati	iod of 6 ypany. They is 1.25 10 per sloes are reformed at the second sec	e new pr WACC 315 or 1 new proj WACC 1445 or 3 years. On the risk-fr thare. Flot edeemable od.	oposal         0.1029         0.0286         3.15 %         posal         0.1045         0.0400         14.45 %         a maturity, ree rate of npany has tation cost         tation cost         le after 10

PVIF<sub>0.05,t</sub>

N

0.952

0.907

0.864

0.784

0.746

0.711

0.677

0.645

0.823

0.614



	Year	Cash Flows (₹)	PVF @ 3%	6 PV (*	₹)	PVF @ 5	%	PV (₹)	
	0	103.40		1 10	3.40		1	103.40	
	1-10	-5	8.5	530 -4	2.65	7.	722	-38.61	
	10	-100	0.7	-7	4.40	0.	614	-61.40	
				-1	3.65			3.39	
	K <sub>p</sub> =3% +	$-\frac{5\%-3\%}{\{3.39-(-13.65)\}} \ge 13.65$							
	$= 3\% + \frac{2}{17}$	$\frac{770}{7.04}$ x 13.65							
	K <sub>p</sub> = <b>4.60</b>	021%							
7.	The follo	wing details are provided	are by the GF	PS Limited:					1
	Equity s	share capital						65,00,000	
	12% pr	eference share capital						12,00,000	
	15% Re	deemable Debentures						20,00,000	
	10% Co	nvertible Debentures						8,00,000	l
	The cost You are r	of equity capital for the correction of equity capital for the correction of the second	ompany is 16. veighted avera	30% and inco age cost of ca	ome ta pital ( (	ix rate for th WACC) of th <b>May 2014</b> /	ne con ne con <b>ICAI S</b>	npany is 30% npany. S <b>M modified</b>	ό. Ι)
Ans.	Computa	ation of WACC:				_			
		Statem	ent Showing	Weighted Co	ost & (	Cost			
		Particulars		Cost	V	Veight	W	eighted Cost	
	Equity S	Share Capital		65,00,000		16.30%		10,59,500	
	12% Pr	eference Share Capital		12,00,000	-22	12.00%		1,44,000	
	15% Re	deemable Debentures		20,00,000	80	(W.N.1)		2,10,000	
	10% Co	nvertible Debentures	na Educatio	8,00,000	) <sup>2</sup>	10.50%		56,000	
		Pion	eer in Developing (	Concepts		(W.N.2)			
						7.00%			
				0.		(W.N.3)			
			Total	1 05 00 000		((((((())))))))))))))))))))))))))))))))		14 69 500	
			Total	1,03,00,000				14,07,500	
	Weighted	l Average Cost of Capital	$=\frac{Weight}{Tota}$	ted Cost l Cost					
			= 14,69,5	500					
		S.	1,05,00	,000					
			= 0.139	9 or					
		2	= 13.99	%					
	Working	Notes:							
	1) Calci	ulation of Cost of Prefer	ence Shares:						
	$K_p =$	$\frac{D_p}{NP} = \frac{1,44,000}{12,00,000} = 0.12 = 129$	6						
	~5	8							
	2) Calc	ulation of Cost of 15% R	edeemable I	Debentures:					
	$K_d =$	$\frac{l(1-t)}{NP} = \frac{3,00,000(1-0.30)}{20,00,000} = 0$	0.105 = 10.5%	1					
	<b>3) Calc</b> <i>K<sub>d</sub></i> =	ulation of Cost of 10% C $\frac{I(1-t)}{NP} = \frac{80,000(1-0.30)}{20,00,000} = 0.0$	onvertible D )7 = 7%	ebentures:					

	8.	A company issued 10,000, 10% debentures of $₹$ 1 and 14.20¥11. The company wants to know the c	00 each at par on 1.4.20X1 to be matured
		the market price of the debentures is ₹ 80. COMPU	TE the cost of existing debentures assuming
		35% tax rate.	(May 2015 BTP/ ICAI SM modified)
	Ans.	Control data set $(U_{-})$ $1(1-t) + \frac{(RV-NP)}{n}$	(May 2013 KTT / TCAT SM mounteu)
		$Cost of debenture (K_d) = \frac{(RV+NP)}{2}$	
		I = Interest on debenture = $10\%$ of $₹100$	= ₹10
		NP = Net Proceeds =	= ₹80
		RV = Redemption value	= ₹100
		n = Period of debenture	= 5 years
		t = Tax rate	= 35% or 0.35
		$\overline{10(1-0.35)} + \frac{(\overline{100}-\overline{80})}{\overline{100}}$	
		$K_{d} = \frac{5 \text{ years}}{((100+780))}$	
		Or $K_{1} = \frac{10 \times 0.65 + 1}{10 \times 0.65 + 1}$	
		₹90	
		= <del>(10.5</del> ₹90	
		= 0.1166 or 11.67%	
	9.	ABC Company's equity share is quoted in the market a dividend of ₹ 2 per share and the investors market	at ₹25 per share currently. The company pays expects a growth rate of 6% per years.
		You are required to:	
		i) Calculate the company's cost of equity capital.	calculate the indicate market price per share
		iii) If the company issues 10% debentures of face val	Lue of $\gtrless$ 100 and 19 ealizes $\gtrless$ 96 per debenture
		while the debentures are redeemable after year	s at a premium of 12%, what will be the cost
		of dependure? Assume tax to be 50%	(November 2016/ ICAI SM)
	Ans.	i) Calculation of Cost of Equity Capital:	
		$K_e = \frac{D_0(1+g)}{P_0} + g$	
		$=\frac{2\times 1.06}{25} + 0.06$	
		= 0.0848 + 0.06	
		= 0.1448	
		= 14.48%. ii) Calculation the indicated Market price per sh	are
		$K_{a} = \frac{D_{1}}{1} + g$	
		$p_0 = 0.14$ $-\frac{2}{2} \pm 0.08$	
		$-\frac{1}{x} + 0.00$	
	R	$\therefore 0.14 - 0.08 = \frac{1}{x}$	
		x = 33.33.	
S		iii) Calculation of Cost of Debenture:	
		$K_d = \frac{l(1-t) + \left(\frac{RV - NP}{N}\right)}{\frac{RV + NP}{2}}$	
		$=\frac{10(1-0.50)+\left(\frac{112-96}{12}\right)}{\frac{112+96}{12}}$	
		$=\frac{5+1.33}{2}$	
		104	

	$=\frac{6.33}{2}$
	= 0.0608
1.0	= 6.08%
10.	Answer the following:
	A company issues 25,000, 14% debentures of $₹$ 1,000 each. The debentures are redeemable after
	the expiry period of 5 years. Tax rate application to the company is 35% (include surcharge and
	education cess). Laiculate the cost of debt after tax if depentures are issued at 5% discount with
Ang	2% notation cost. (November 2015)
Alls.	Calculation of Cost of Debt after Tax:
	Lost of Debt $(K_d)$
	$\frac{I(1+t)+\left(\frac{I(V,W)}{n}\right)}{DV(N)D}$
	$=\frac{RV+NP}{2}$
	Where, l = Interest payment i.e. 14% of ₹1,000 = ₹140
	t = Tax rate applicable to the company i.e. 35%
	RV = Redeemable value of debentures i.e. ₹1,000
	NP = Net proceeds per debentures
	$=$ ₹1 000 × {1 - (0.05 + 0.02)}
	$= 1000 \times 0.03 = 1000 \text{ J}$
	- Redemption period of depentures i.e. 5 years
	= Recentificial period of dependence i.e. 5 years $\frac{1}{100} \frac{1}{100} \frac{1}$
	Therefore, $K_d = \frac{\sqrt{140} (1-0.35) + \left[\frac{5}{5} Year\right]}{\sqrt{140} (1-0.35) + \left[\frac{5}{5} Year\right]} \times 100$
	$=\frac{391+314}{3045} \times 100 = 10.88\%$
	The Cost of Debt can also be calculated using the formula, where first Cost of Debt before
	tax is calculated and then tax adjustment is made
	Accordingly: -
	Cost of Debt = $\frac{I + \lfloor N \rfloor}{IRV + NP1} \times (1 - t) \times 100$
	Grooming Education Academy
	$=\frac{\underbrace{140+\underbrace{14}}{1}(1-0.35)\times100}{1}$
	₹965
	= 10.37%
11.	Answer the following:
	A company issued 40,000, 12% redeemable after 10 years at a premium of $\gtrless$ 10 each.
	The floatation cost of each share is $\gtrless 2$ .
	You are required to calculate cost of preference share capital ignoring dividend tax.
	(May 2013)
Ans.	Computation of Cost of Preference Shares $(K_p)$
	Preference Dividend (PD) = 0.12 × 40,000 × 100
	= 4,80,000
	Floatation Cost = 40,000 × 2 = ₹80,000
	Net Proceeds (NP) $= 42,00,000 - 80,000 = 41,20,000$
	Redemption Value (RV) = $40.000 \times 110 = 44.00.000$
	$\frac{PD+(RV-NP)/N}{PD+(RV-NP)/N}$
	Cost of Redeemable Preference Shares = $\frac{RV+NP}{2}$
	4,80,000+(44,00,000-41,20,000)/10
	$K_p = \frac{44,00,000+41,20,000}{2}$
	$=\frac{4,80,000+(2,80,000)/10}{10}$
	85,20,000/2
	$=\frac{4,80,000+28,000}{42,60,000}=\frac{5,08,000}{42,60,000}$
	= 0 1192
	VILIA

	$K_p = 11.92\%$					
	Alternative Treatment:					
	$K_p$ may be computed alte	rnatively by taking th	e RV and NP fo	r one unit of pre	ference shares.	
	Final figure would remain	n unchanged.				
12.	Answer the following:					
	Z ltd.'s operating income (before interest and tax) is ₹ 9,00,000. The firm's cost of debts is 10 %					
	and currently firm employs ₹ 30,00,000 of debts K <sub>0</sub> is 12%					
	<b>Requireu:</b> Calculate cost of equity					
	(November 2007)					
Ans.	Total Value of Firm	$=\frac{Oper}{Oper}$	ating Income			
			K <sub>0</sub>			
		$=\frac{19,00}{0.1}$	,000			
		= 75.0	0.000			
	Debt capital:	= <u>30,0</u>	0,000			
	Equity capital	= 45,0	0,000			
	$0.12 = 0.10 \left(\frac{30,00}{2}\right)$	$\frac{000}{1000}$ × $K_{-}$ ( $\frac{45,00,000}{1000}$ )				
	0.12 0.10 (75,00)	$(000) = R_e (75,00,000)$				
	0.12 = 0.10(.4) +	$K_e$ (.6)				
	$0.12 = .04 + K_e$ .6					
	$0.08 = K_e .6$					
	$K_e = \frac{.08}{.6}$					
	= 0.1333					
	= 13.33%			2		
13.	Y ltd. retains ₹ 7,50,000 o	ut of its current earn	ing. The expecte	ed rate of return	to the shareholders	
	if they had invested the f	unds elsewhere is 10	%. The brokera	ge is 3% and the	e shareholders came	
	in 30% tax bracket. Calcu	late the cost of retain	ed earning.	2	(November 2000)	
Ans.	Computation of Cost of	Retained Earnings (	<u>(</u> , )	36-	(November 2009)	
	$K_r = K(1 - T)$	p) – Brokerage	-''' o`			
	$K_r = 0.10 (1)$	-0.30) - 0.03	-A			
	= 0.04 Or	4%	c <sup>o</sup> '			
	<b>Cost of Retained Earnin</b>	gs = 4%	N			
14.	SK limited has obtained f	unds from the follow	ing sources, the	e specific cost ar	e also given against	
	them:				6 11 1	
	Source of funds	An 20	nount	cost	of capital	
	Equity shares	30,		15 8 r	percent	
	Retained earnings	12.0	0,000	11	nercent	
	Debentures	10,0	00,000	9 percen	t (before tax)	
	You are required to calcu	late weighted to calc	ulate average co	ost of capital. Ass	sume that corporate	
	tax rate is 30 percent.	<i>v</i>			(May 2010)	
Ans.	Calculation of Weighted	Average Cost of Ca	pital (WACC)		(May 2010)	
	Sources	Amount	Weight	Cost of	WACC %	
		(₹)	0	Capital		
				(after tax)		
				%		

	Equity Shares	30,00	),000	0.500	-	15	7.50
	Preference Shares	8,00	),000	0.133		8	1.06
	<b>Retained Earnings</b>	12,00	),000	0.200	-	11	2.20
	Debentures	10,00	),000	0.167	6.	3*	1.05
	Total	60,00	,000				11.81%
	Weighted Average Cost of Capital = <b>11.81%</b>						
	*Cost of Debentures $(K_d)$	(after tax) = $K_d$	l (before	tax) × (I - T)			
		= 99	% (1 – 0.3	3) = 6.3%			
15.	RST Ltd. is expecting an	EBIT of ₹ 4 la	kh for F.	Y. 20X1-X2.	Presently th	e compai	ny is financed
	entirely by equity share c	apital of ₹ 20 la	kh with	equity capita	lization rate	of 16% Tł	he company is
	contemplating to redeem	the part of the	e capital	by introducii	ig debt finan	cing. The	company has
	financing unto 30% the r	to the extent of	1 30% 01 will be 11	30% of the to	v canitalizati	on rate w	vill increase to
	17%. If the company opts	for 50% debt. t	then the i	nterest rate v	vill be 12% a	nd equity	capitalization
	rate will be 20%. You ar	e required to c	ompute	the value of	company; it's	s overall of	cost of capital
	under difference option a	nd also state w	hich is th	ne best option	1.		-
						(Nov	ember 2015)
Ans.	Value of the Company:						
	Market Value of Equity	=	₹	25,00,000			
	(+) Market Value of Deb	t =		-			
	Value of Company		₹:	25,00,000			
	Working Note:						
	1) Calculation of Mark	et Value of Equ	uity:				
	Equity Capitalisation	Rate = $\frac{EBI}{Market}$	Value				
		PIUL NCC	value				
	16%	$=\frac{4,00,0}{1000}$	000				
	16% Market Value	$=\frac{\frac{4,00}{4,00}}{\frac{4,00}{Market}}$ Groon= 25.00.	Value 000 Value 000	Academy			
	16% Market Value <b>Computation of Value o</b>	$=\frac{\frac{4,00}{Market}}{25,00}$	value 000 Value 000 v <b>and Ov</b>	Academy erall Cost of	Capital und	er the tw	o options:
	16% Market Value Computation of Value o Particulars	$=\frac{\frac{4,00}{4,00}}{\frac{Market}{25,00}}$ Groom= 25,00, f the Company s	value value 000 v and Ov	Academy erall Cost of Option I	Capital und	er the tw Optio	o options:
	16% Market Value <b>Computation of Value o</b> Particulars Debt	$=\frac{4,00,}{Market}$ Groom= 25,00, f the Company s	Value Value 000 v and Ov	Academy erall Cost of Option I	Capital und	er the tw Optio	o options: on II 50%
	16% Market Value <b>Computation of Value o</b> <b>Particulars</b> Debt Equity (existing)	$=\frac{\frac{4,00,}{Market}}{5,00,}$ Groon= 25,00, f the Company s	Value Value 000 V and Ov	Academy erall Cost of Option I ₹20,0	Capital und 30% 0,000	er the tw Optio	<b>70 options:</b> on II 50% ₹20,00,000
	16% Market Value <b>Computation of Value o</b> <b>Particular</b> Debt Equity (existing) Debt	$=\frac{\overset{Market}{4,00,}}{\overset{Market}{25,00,}}$	Value Value 000 V and Ove	Academy erall Cost of Option I ₹20,0 ₹6,0	Capital und 30% 0,000 0,000	er the tw Optio	<b>70 options:</b> on II 50% ₹20,00,000 ₹10,00,000
	16% Market Value <b>Computation of Value o</b> <b>Particulars</b> Debt Equity (existing) Debt Equity capitalization rat	$=\frac{\overset{Market}{4,00,}}{\overset{Market}{25,00,}}$	Value Value 000 v and Ov	Academy erall Cost of Option I ₹20,0 ₹6,0	Capital und           30%           0,000           0,000           17%	er the tw Optio	<b>70 options:</b> <b>9n II</b> 50% ₹20,00,000 ₹10,00,000 20%
	16% Market Value Computation of Value o Particulars Debt Equity (existing) Debt Equity capitalization rat Interest on Debt	$=\frac{\frac{4,00,}{4,00,}}{\frac{4,00}{Market}}$ Groom= 25,00, f the Company s	Value Value 000 v and Ove	Academy erall Cost of Option I ₹20,0 ₹6,0	Capital und 30% 0,000 0,000 17% 10%	er the tw Optio	<b>70 options:</b> <b>50%</b> ₹20,00,000 ₹10,00,000 20% 12%
	16% Market Value Computation of Value o Particulars Debt Equity (existing) Debt Equity capitalization rat Interest on Debt EBIT	$=\frac{\overset{Market}{4,00,}}{\overset{Market}{25,00,}}$	Value Value 000 v and Ov	Academy erall Cost of Option I ₹20,0 ₹6,0	Capital und       30%       0,000       0,000       17%       10%       0,000	er the tw Optio	<b>To options:</b> <b>IN</b> <b>50%</b> ₹20,00,000 ₹10,00,000 20% 12% ₹4,00,000
	16% Market Value Computation of Value o Particulars Debt Equity (existing) Debt Equity capitalization rat Interest on Debt EBIT Less: Interest on Debt	$=\frac{\frac{4,00,}{Market}}{\frac{4,00,}{Market}}$ Groom= 25,00, f the Company s	Value Value 000 v and Ove	Academy erall Cost of Option I ₹20,0 ₹6,0 ₹4,0 ₹4,0	Capital und       30%       0,000       0,000       17%       10%       0,000       0,000	er the tw Optio	<b>o options: on II</b> 50%         ₹20,00,000         ₹10,00,000         20%         12%         ₹4,00,000         ₹1,20,000
	16% Market Value Computation of Value o Particulars Debt Equity (existing) Debt Equity capitalization rat Interest on Debt EBIT Less: Interest on Debt Earnings to equity share	$=\frac{4,00,}{Market}$ Groom= 25,00, f the Company s e.e.	Value Value 000 v and Ove	Academy erall Cost of Option I ₹20,0 ₹6,0 ₹4,0 ₹4,0 ₹3,4	Capital und       30%       0,000       0,000       17%       10%       0,000       0,000       0,000       0,000       0,000       0,000	er the tw Optio	x0 options:         m II         50%         ₹20,00,000         ₹10,00,000         20%         12%         ₹4,00,000         ₹1,20,000         ₹2,80,000
	16% Market Value Computation of Value o Particulars Debt Equity (existing) Debt Equity capitalization rat Interest on Debt EBIT Less: Interest on Debt Earnings to equity share Market Value of equity	$= \frac{4,00,}{Market}$ $= 25,00,$ f the Company s e holders	Value Value 000 v and Ove	Academy erall Cost of Option I ₹20,0 ₹6,0 ₹4,0 ₹4,0 ₹3,4 ₹20,0	Capital und       30%       0,000       0,000       17%       10%       0,000       0,000       0,000       0,000       0,000       0,000       0,000	er the tw Optio	<b>o options: n II</b> 50%         ₹20,00,000         ₹10,00,000         20%         12%         ₹4,00,000         ₹1,20,000         ₹2,80,000         ₹14,00,000
	16% Market Value Computation of Value o Particulars Debt Equity (existing) Debt Equity capitalization rat Interest on Debt EBIT Less: Interest on Debt Earnings to equity share Market Value of equity	$=\frac{4,00,}{Market}$ Groom= 25,00, f the Company s e holders	Value Value 000 v and Ove	Academy erall Cost of Option I ₹20,0 ₹6,0 ₹4,0 ₹4,0 ₹4,0 ₹20,0	Capital und       30%       0,000       0,000       17%       10%       0,000       0,000       0,000       0,000       0,000       0,000       0,000	er the tw Optio	o options:         on II         50%         ₹20,00,000         ₹10,00,000         ₹10,00,000         ₹10,00,000         ₹4,00,000         ₹1,20,000         ₹2,80,000         ₹14,00,000         ₹14,00,000
	16% Market Value Computation of Value o Particulars Debt Equity (existing) Debt Equity capitalization rat Interest on Debt EBIT Less: Interest on Debt Earnings to equity share Market Value of equity	= $\frac{4,00,}{Market}$ Groo = 25,00, f the Company s e holders	Value Value 000 v and Ove	Academy erall Cost of Option I ₹20,0 ₹6,0 ₹4,0 ₹4,0 ₹4,0 ₹20,0 (3,40,000	Capital und       30%       0,000       0,000       17%       10%       0,000       0,000       0,000       0,000       0,000       0,000       0,000       0,000       0,000       0,000       0,000	er the tw Optio	<b>o options: n II</b> 50%         ₹20,00,000         ₹10,00,000         ₹10,00,000         ₹1,20,000         ₹1,20,000         ₹1,20,000         ₹1,20,000         ₹1,20,000         ₹1,20,000         ₹1,20,000         ₹1,20,000         ₹1,20,000
	16% Market Value Computation of Value o Particulars Debt Equity (existing) Debt Equity capitalization rat Interest on Debt EBIT Less: Interest on Debt Earnings to equity share Market Value of equity	= $\frac{4,00,}{Market}$ Groo = 25,00, f the Company s	Value Value 000 v and Ove	Academy erall Cost of Option I ₹20,0 ₹6,0 ₹4,0 ₹4,0 ₹4,0 ₹4,0 ₹6,0 ₹3,4 ₹20,0 (3,40,000 ±	Capital und $30\%$	er the tw Optio	To options:         50%         ₹20,00,000         ₹10,00,000         20%         12%         ₹4,00,000         ₹1,20,000         ₹1,20,000         ₹1,20,000         ₹14,00,000         ₹14,000,000         \$10,000 × $\frac{100}{20}$ ₹10,000,000
	16% Market Value Computation of Value o Particulars Debt Equity (existing) Debt Equity capitalization rat Interest on Debt EBIT Less: Interest on Debt Earnings to equity share Market Value of equity Value of Debt	= $\frac{4,00,}{Market}$ Groo = 25,00, f the Company s e holders	Value Value 000 v and Ove	Academy erall Cost of Option I ₹20,0 ₹6,0 ₹4,0 ₹4,0 ₹4,0 ₹6,0 ₹3,4 ₹20,0 (3,40,000 ₹6,0 ₹26,0	Capital und       30%	er the tw Optio	<b>o options: on II</b> $50\%$ ₹20,00,000         ₹10,00,000         ₹10,00,000         ₹4,00,000         ₹1,20,000         ₹1,20,000         ₹1,20,000         ₹1,4,00,000         ₹14,00,000         ₹10,00,000         ₹10,00,000         ₹24,00,000
	16% Market Value Computation of Value o Particulars Debt Equity (existing) Debt Equity capitalization rat Interest on Debt EBIT Less: Interest on Debt Earnings to equity share Market Value of equity Value of Debt Value of the company (E Overall Cost of Capital	= $\frac{4,00,}{Market}$ Groo = 25,00, f the Company s ce e holders cquity + Debt)	Value Value 000 v and Ove	Academy erall Cost of Option I ₹20,0 ₹6,0 ₹4,0 ₹4,0 ₹3,4 ₹20,0 (3,40,000 ₹6,0 ₹26,0 1	Capital und         30%         0,000         0,000         17%         10%         0,000         0,000         0,000         0,000         0,000         0,000         0,000         0,000         0,000         0,000         0,000         0,000         0,000         0,000         0,000         0,000         0,000	er the tw Optio	To options:         50% $50\%$ $₹20,00,000$ $₹10,00,000$ $₹10,00,000$ $₹1,20,000$ $₹1,20,000$ $₹1,20,000$ $₹1,20,000$ $₹1,20,000$ $₹1,20,000$ $₹1,20,000$ $₹1,20,000$ $₹1,20,000$ $₹1,20,000$ $₹14,00,000$ $₹10,00,000$ $₹10,00,000$ $₹24,00,000$
	16% Market Value Computation of Value o Particulars Debt Equity (existing) Debt Equity capitalization rat Interest on Debt EBIT Less: Interest on Debt Earnings to equity share Market Value of equity Value of Debt Value of the company (E Overall Cost of Capital	= $\frac{4,00,}{Market}$ Groome 25,00, f the Company s ce e holders Equity + Debt)	Value Value 000 v and Ove	Academy erall Cost of Option I ₹20,0 ₹6,0 ₹4,0 ₹4,0 ₹20,0 (3,40,000 ₹6,0 ₹26,0 (15 ₹26,0 (15) ₹4,00,000	Capital und $30\%$	er the tw Optio	To options:         50%         \$20,00,000         ₹20,00,000         ₹10,00,000         20%         12%         ₹4,00,000         ₹1,20,000         ₹1,20,000         ₹1,20,000         ₹14,00,000         ₹14,00,000         ₹14,00,000         ₹10,00,000         ₹24,00,000         ₹24,00,000         16.67%         0,000       × 100)
	16% Market Value Computation of Value o Particulars Debt Equity (existing) Debt Equity capitalization rat Interest on Debt EBIT Less: Interest on Debt Earnings to equity share Market Value of equity Value of Debt Value of the company (E Overall Cost of Capital	= $\frac{4,00,}{Market}$ Groe = 25,00, f the Company s e holders e holders	value Value 000 v and Ove	Academy erall Cost of Option I ₹20,0 ₹6,0 ₹6,0 ₹4,0 ₹6,0 ₹3,4 ₹20,0 (3,40,000 ₹26,0 1! ( <sup>₹4,00,000</sup> / <sub>₹26,00,000</sub> × and overall	Capital und         30%         0,000         0,000         0,000         17%         10%         0,000         0,0	er the tw Optio	To options:         m II         50%         ₹20,00,000         ₹10,00,000         20%         12%         ₹4,00,000         ₹1,20,000         ₹1,20,000         ₹1,20,000         ₹1,20,000         ₹1,20,000         ₹1,20,000         ₹14,00,000         ₹10,00,000         ₹24,00,000         16.67%         0,000       × 100
	16% Market Value Computation of Value o Particulars Debt Equity (existing) Debt Equity capitalization rat Interest on Debt EBIT Less: Interest on Debt Earnings to equity share Market Value of equity Value of Debt Value of the company (E Overall Cost of Capital Since, in Option I value of Option II, hence Option I	= $\frac{4,00,}{Market}$ Groom = 25,00, f the Company s ce e holders cquity + Debt) of the Company is better.	value Value 000 v and Ove v and Ove v is more	Academy erall Cost of Option I ₹20,0 ₹6,0 ₹4,0 ₹4,0 ₹4,0 ₹3,4 ₹20,0 (3,40,000) ₹6,0 ₹26,00 $(\frac{₹4,00,000}{₹26,00,000})$ x e and overall	Capital und         30%         0,000         0,000         0,000         17%         10%         0,000         0,000         0,000         0,000         0,000         0,000         0,000         0,000         0,000         0,000         5.38%         100)         cost of Capi	er the tw Optio	To options:         on II         50%         ₹20,00,000         ₹10,00,000         20%         12%         ₹4,00,000         ₹1,20,000         ₹1,20,000         ₹1,20,000         ₹14,00,000         ₹2,80,000         ₹14,00,000         ₹24,00,000         ₹24,00,000         ₹24,00,000         ₹24,00,000         \$20,000         \$16.67%         \$0,000         \$0,000         \$100)
	16% Market Value Computation of Value o Particulars Debt Equity (existing) Debt Equity capitalization rat Interest on Debt EBIT Less: Interest on Debt Earnings to equity share Market Value of equity Value of Debt Value of Debt Value of the company (E Overall Cost of Capital Since, in Option I value of Option II, hence Option I	= $\frac{4,00,}{Market}$ Groo = 25,00, f the Company s e holders e holders f the Company is better.	value Value 000 v and Ove	Academy erall Cost of Option I ₹20,00 ₹6,00 ₹4,00 ₹4,00 ₹6,00 ₹20,000 ₹6,00 ₹26,00 ₹26,00 1 ₹4,00,0000 ₹26,00 1 ₹4,00,0000 ₹26,000 ₹26,00000 ₹26,00000 ₹26,00000 ₹26,00000 ₹26,000000 ₹26,000000 ₹26,000000 ₹26,000000 ₹26,0000000 ₹26,000000000000	Capital und $30\%$	er the tw Optio	<b>o options: n II</b> 50%         ₹20,00,000         ₹10,00,000         ₹10,00,000         ₹4,00,000         ₹1,20,000         ₹1,20,000         ₹14,00,000         ₹14,00,000         ₹14,00,000         ₹14,00,000         ₹2,80,000         ₹14,00,000 $0,000 \times \frac{100}{20}$ ₹24,00,000         16.67% $0,000 \times 100$ $0,000 \times 100$ $0,000 \times 100$
	16% Market Value Computation of Value o Particulars Debt Equity (existing) Debt Equity capitalization rat Interest on Debt EBIT Less: Interest on Debt Earnings to equity share Market Value of equity Value of Debt Value of the company (E Overall Cost of Capital Since, in Option I value of Option II, hence Option I	= $\frac{4,00,}{Market}$ = 25,00, f the Company s e holders Equity + Debt) of the Company is better.	value Value 000 v and Ove v and Ove	Academy erall Cost of Option I $\overline{20,00}$ $\overline{20,00}$ $\overline{20,00}$ $\overline{20,00}$ $\overline{20,00}$ $\overline{20,00}$ $\overline{20,000}$ $\overline{20,000}$ $\overline{20,000}$ $\overline{20,0000}$	Capital und         30%	er the tw Optio	To options: $50\%$ ₹20,00,000         ₹10,00,000         20%         12%         ₹4,00,000         ₹1,20,000         ₹1,20,000         ₹1,20,000         ₹14,00,000         ₹14,00,000         ₹14,00,000         ₹24,00,000         ₹24,00,000         16.67%         0,000       × 100)         s compared to
	16% Market Value Computation of Value o Particulars Debt Equity (existing) Debt Equity capitalization rat Interest on Debt EBIT Less: Interest on Debt Earnings to equity share Market Value of equity Value of Debt Value of the company (E Overall Cost of Capital Since, in Option I value o Option II, hence Option I	= $\frac{4,00,}{Market}$ Groo = 25,00, f the Company s ce e holders cquity + Debt) cquity + Debt) of the Company is better.	value Value 000 v and Ove v and Ove v is more	Academy erall Cost of Option I $\overline{20,00}$ $\overline{6,00}$ $\overline{6,00}$ $\overline{44,00}$ $\overline{84,00}$ $\overline{84,00,000}$ $\overline{86,00}$	Capital und         30%	er the tw Optio	To options:         on II         50%         ₹20,00,000         ₹10,00,000         ₹10,00,000         ₹4,00,000         ₹1,20,000         ₹1,20,000         ₹14,00,000         ₹14,00,000         \$10,00,000         ₹2,80,000         ₹14,00,000         \$0,000 × $\frac{100}{20}$ \$10,00,000         \$16.67%         \$0,000
888 88	16% Market Value Computation of Value o Particulars Debt Equity (existing) Debt Equity capitalization rat Interest on Debt EBIT Less: Interest on Debt Earnings to equity share Market Value of equity Value of Debt Value of the company (E Overall Cost of Capital Since, in Option I value o Option II, hence Option I	= $\frac{4,00,}{Market}$ = 25,00, f the Company s = e e holders 	Value Value 000 v and Ove v and Ove v is more @eschola	Academy erall Cost of Option I $\overline{20,00}$ $\overline{20,00}$ $\overline{20,00}$ $\overline{20,00}$ $\overline{20,00}$ $\overline{20,00}$ $\overline{20,000}$	Capital und         30%         0,000         0,000         17%         10%         0,000         0,000         0,000         0,000         0,000         0,000         0,000         0,000         0,000         0,000         0,000         5.38%         100)         cost of Capi	er the tw Optio	To options: $50\%$ ₹20,00,000         ₹10,00,000         20%         12%         ₹4,00,000         ₹1,20,000         ₹1,20,000         ₹1,20,000         ₹14,00,000         ₹14,00,000         ₹10,00,000         ₹24,00,000         16.67%         0,000       × 100)         compared to

16.	Five years ago, Sona Limited issued 12 per cent irredeemable debentures at ₹ 103, at ₹ 3 premium to their par value of ₹ 100. The current market price of these debentures is ₹ 94. If the company pays corporate tax at a rate of 35 per cent calculate its current cost of debenture capital? (ICAI SM)
Ans.	Cost of irredeemable debenture:
	$K_{d} = \frac{I}{NP} (1 - t)$
	$K_{1} = \frac{\overline{12}}{1}(1 - 0.35)$
	$n_{\rm d} = \frac{1}{394} (1 - 0.03)$
17	= 0.08297 01 8.30% Institutional Development Bank (IDB) issued Zero interest deep discount bonds of face value of
1/1	₹ 1,00,000 each issued at ₹ 2,500 & repayable after 25 years. COMPUTE the cost of debt if there
	is no corporate tax. (ICAI SM)
Ans.	Here,
	Redemption Value (RV)= ₹1,00,000
	Net Proceeds (NP) = ₹ 2,500
	Interest = 0
	Life of bond = 25 years
	There is huge difference between RV and NP therefore in place of approximation method we
	should use trial & error method.
	$FV = PV \times (1+r)^n$
	$1,00,000 = 2,500 \text{ X} (1+r)^{23}$
	$40 = (1+1)^{23}$ Trial 1: r = 1504 (1.15)25 = 22.010
	Trial 1: $r = 15\%$ , $(1.15)^{25} = 32.919$ Trial 2: $r = 16\%$ (1.16)25 = 40.874
	Here.
	L = 15% H = 16%
	$NPV_{L} = 32.919-40 = -7.081$
	$NPV_{H} = 40.874 = \pm 0.874$
	IBB = I +NPVL (H ) Grooming Education Academy
	$\frac{1}{NPV_{I-NPV_{H}}} = \frac{1}{D} \qquad \text{Pioneer in Developing Concerned}}$
	$= 15\% + \frac{-7.081}{-7.081 - (0.874)} \times (16\% - 15\%) = 15.89\%$
18.	RBML is proposing to sell a 5-year bond of ₹ 5,000 at 8 per cent rate of interest per annum. The
	bond amount will be amortised equally over its life. CALCULATE the bond's present value for an
	investor if he expects a minimum rate of return of 6 per cent? (ICAI SM)
Ans.	First year: $(5,000 \times 0.08 = (400))$
	Second year: $(35,000 - 31,000) \times 0.08 = 320;$ Third year: $(34,000 - 31,000) \times 0.08 = 3240;$
	Fourth year: $(₹4,000 - ₹1,000) \times 0.08 - ₹240;$
	Fifth year: $(₹2,000 - ₹1,000) \times 0.08 - ₹80$
	The outstanding amount of hond will be zero at the end of fifth year
	Since RBML will have to return ₹1.000 every year, the outflows every year will
	consist of interest payment and repayment of principal:
	First year: ₹1,000 + ₹400 = ₹1,400;
	Second year: ₹1,000 + ₹320 = ₹1,320;
	Third year: ₹1,000 + ₹240 = ₹1,240;
	Fourth year: ₹1,000 + ₹160 = ₹1,160; and
	Fifth year: ₹1,000 + ₹80 = ₹1,080.
32	The above cash flows of all five years will be discounted with the cost of capital.Here the
2.	expected rate i.e. 6% will be used.
	Value of the bond is calculated as follows:

	$V_{\rm B} = \frac{\overline{1,400}}{(1,06)}$	$\frac{1}{1}, \frac{1}{(1,06)^2}, \frac{1}{(1,06)^3}, \frac{1}{(1,06)^3}, \frac{1}{(1,06)^3}, \frac{1}{(1,06)^3}$	$1,160$ $\overline{1080}$						
	(1.06) _ ₹1,400	1,320 ₹1,240	1.06) <sup>1</sup> (1.06) <sup>5</sup> {1,160						
	- 1.06 ₹1.22	$-\frac{1}{1.1236}$ $+\frac{1}{1.1910}$ $+\frac{1}{1.1910}$	1.2624 $1.3382$	0.00 . 3007		(2)(2)			
19	= $1,32$	$\frac{0.75 + 1.174.80}{0.15 + 1.00}$	+ {1,041.14 + {918 rred stock at ₹1(	8.88 + 1807 10 ner shai	.05 = <del>15,</del> 2 e with a	stated (	lividend o	f₹12 and	
17.	a floatation cost of 3% then. CALCULATE the cost of preference share? (ICALSM)								
Ans.	$K_{P} = \frac{1}{1}$	Preferred stock of	lividend	•					
	Market price of preferred stock (1-floatation cost) ₹12								
	= ₹100 (1	-0.03)							
	= <del>₹12</del> ₹97 = (	).1237 or 12.37%							
20.	XYZ Ltd. Iss	ues 2,000 10% pr	eference shares of	₹100 each	at ₹ 95	each. Th	e company	v proposes	
	to redeem t	the preference sh	ares at the end of	10 <sup>th</sup> year fi	rom the d	ate of iss	sue. CALCU	JLATE the	
	cost of pref	erence share?						(ICALSM)	
Ans.	$PD + \frac{(RV)}{(RV)}$	/-NP)						(ICAI SM)	
	$K_P = -\frac{(RV+N)}{(RV+N)}$	n NP)							
	$10 + \frac{(100)}{(100)}$	0-95)							
	$K_P = -\frac{(100+9)}{2}$	10 95)							
	= 0.1077	' (approx.) = 10.7'	7%						
21.	Mr. Mehra l	had purchased a	share of Alpha L	imited for	₹1,000.	He rece	eived divid	end for a	
	period of fi	ve years at the i	rate of 10 percent	t. At the en	d of the f	fifth year	, he sold th	e share of	
	Alpha Limit	ed for ₹1,128. Yo	ou are required to	COMPUTE	the cost o	of equity	as per rea	lised yield	
	approach.						(	ICAI SM)	
Ans.	. We know that as per the realised yield approach, cost of equity is equal to the realised rate of								
	This realise	d rate of return is	the discount rate	e internal r which equa	tes the pr	rn by tria resent va	lue of the	or metnoa. dividends	
	received in	the past five yea	arsplus the presen	t value of sa	le price of	₹ 1,128	to the purc	hase price	
	of ₹1,000. T	he discount rate v	vhich equalises the	ese two is i	12 percen	t approx	imately. L	et us look	
	at the table	given for a bette	understanding:		ny	at a r	waaant Va	lue (3)	
	rear	Dividend(X)	Sale Proceeds		@12%		resent va	lue (x)	
	1	100	97	-	(	).893		89.3	
	2	100	-S	-	(	).797		79.7	
	3 4	100	00	-	(	)./12		/1.2 63.6	
	5	100	5	-	(	0.567		56.7	
	6	Beginning	¢* :	1,128	(	).567	e	39.576	
		29			74.000	1.1	1,(	000.076	
	We find that	t the purchase pri	ce of Alpha limited	is snare wa	ls ₹ 1,000	and the	e present v	alue of the	
	past live yea	ars of dividends p	ro the realised r	toof roturr	ne price a	t the disc	12 norcor	of 12 per	
	nercent is t	he cost of equity	re, the realised h		i illay be	lakell as	12 percer	II. 11115 12	
22.	CALCULATI	E the cost of equit	y from the follow	ving data u	sing reali	ized viel	d approac	1:	
	Year 🔗	1	5	1	2	3	4	5	
	Dividend p	er share		1.00	1.00	1.20	1.25	1.15	
	Price per s	hare (at the begi	nning)	9.00	9.75	11.50	11.00	10.60	
	)" <u> </u>			l	·		·	(ICAI SM)	
Ans.	In this ques	tion we will first o	alculate yield for l	ast 4 years a	and then c	alculate	it geometr	ic mean as	
	follows:								
1	$1 + Y_1 = \frac{\nu_1 + \gamma_2}{2}$	$\frac{1}{1} = \frac{179.75}{1} = 1.19$	14						

	$1 + Y_2 = \frac{D_2 + P_2}{P} = \frac{1 + 11.50}{0.75} = 1.2821$
	$P_1 = 9.75$ 1 + V = $D_3 + P_3 = 1.2 + 11 = 1.0600$
	$1 + I_3 - \frac{P_2}{P_2} - \frac{11.5}{11.5} - 1.0009$
	$1 + Y_4 = \frac{D_4 + P_4}{P_2} = \frac{1.25 + 10.60}{11} = 1.0772$
	Geometric mean:
	$K_e = [(1 + Y_1) \times (1 + Y_2) \times \dots \dots \dots (1 + Y_n)]^{1/n-1}$
	$K_{a} = [1.1944 \times 1.2821 \times 1.0609 \times 1.0772]^{1/4-1} = 0.15 = 15\%$
	Note: to calculate power <sup>1</sup> / <sub>4</sub> simply press square root switch, two times on your calculator.
23.	CALCULATE the cost of equity capital of H Ltd., whose risk-free rate of return equals 10%. The
	firm's beta equals 1.75 and the return on the market portfolio equals to 15%.
	(ICAI SM)
Ans.	$K_e = R_f + \beta (R_m - R_f)$
	$K_e = 0.10 + 1.75 (0.15 - 0.10)$
	= 0.10 + 1.75 (0.05) = 0.1875 or 18.75%
24.	Face value of equity shares of a company is $\gtrless$ 10, while current market price is $\gtrless$ 200 per
	share. Company is going to start a new project and is planning to infance it partially by new issue and partially by retained earnings. You are required to CALCULATE cost of equity
	shares as well as cost of retained earnings if issue price will be $\gtrless 190$ per share and floatation
	cost will be₹ 5 per share. Dividend at the end of first year is expected to be ₹ 10 and growth
	rate will be 5%.
	(ICAI SM)
Ans.	$K_r = \frac{D_1}{P_0} + g$
	$-\frac{10}{10}$ + 05 - 10%
	$K_{e} = \frac{p_{1}}{p_{0}} + g$
	$=\frac{10}{10}+.05=10.41\%$
	190-5 100 1011170 NOW 1006 TAY WILL IMPOSED ON FOURTY SHADEHOLDED IL/S 104N FOR THE SAME YOU CAN
	USE BOTH FORMULA FOR SAFETY OF EQUITION ACCOUNT
	$K_r = k_0 (1-tn) (1-t)$
25.	ABC Company provides the following details:
	$D_0 = \neq 4.19$ $P_0 = \neq 50$ $g = 5\%$
	CALCULATE the cost of retained earnings.
Ana	$\frac{1}{D_{1}} = \frac{D_{2}(1+a)}{D_{2}(1+a)}$
AIIS.	$K_r = \frac{p_1}{p_0} + g = \frac{p_0(1+g)}{p_0} + g$
	$=\frac{4.19(1+0.05)}{1}+0.05$
	$50 = 0.088 \pm 0.05 = 13.8\%$
26.	ABC Company provides the following details:
_	$R_f = 7\%$ $\beta = 1.20$ $R_m - R_f = 6\%$
	CALCULATE the cost of retained earnings based on CAPM method. (ICAI SM)
Ans.	$K_r = R_f + \beta (R_m - R_f)$
	=7% + 1.20(6%) = 7% + 7.20
	$K_r = 14.2\%$
27.	Cost of equity of a company is 10.41% while cost of retained earnings is 10%. There are 50,000
	equity shares of $10$ each and retained earnings of $15,00,000$ . Market price per equity share
~	(ICALSM)
Ans.	Book value of paid-up equity capital = ₹5.00.000
	Book value of retained earnings = $15,00,000$
	Ratio of Paid-up equity capital & retained earnings = 5,00,000:15.00.000 = 1:3

	Market valu	e of paid	equity	y capital & reta	ained earnir	lgs = ₹	₹50,000 x ₹50	= ₹25,00,000
	Market valu	e of paid-u	ip equ	uity capital = ₹2	5,00,000 × 3	/4 = ₹6	6,25,000	
	Market valu	e of retaine	ed ear	mings = ₹25,00,	000 × ¾ = ₹	18,75	,000	
	Calculation	of WACC	using	market value	weights			
	Source of	f capital	Ма	arket Value	Weights		Cost ofcapital	WACC (K <sub>0</sub> )
				(₹)	(a)		(b)	(c) = (a)×(b)
	Equity shar	es		6,25,000	0.2	5	0.1041	0.0260
	Retained ea	rnings		18,75,000	0.7	5	0.1000	0.0750
				25,00,000	1.00	0		0.1010
	WACC (K <sub>0</sub> )	= 0.1010 o	r 10.1	0%.				
28.	Gamma Limi	ited has in i	ssue 5	5,00,000 ₹ 1 ordi	nary shares	whose	e current ex- divi	dend market price
	is ₹ 1.50 per	share. The	comp	any has just pai	d a dividend	l of 2	7 paise per sha	re, and dividends
	are expected	d to contin	ue at i	this level for son	he time. If the	e comp	any has no debt	capital, COMPUTE
Δns	Market valu	a average c	- F = 1	$\frac{capital}{5.00,000}$ shares	x₹150 - ₹'	7 50 00		
1115.	Market valu	e of deht D	) = Nil	5,00,000 51101 05		,50,00		
		ty canital <i>i</i>	$V = D_1$	× 100 - <sup>₹0.27</sup> ×	100 - 0.10			
	cost of equi	ty capital, I	$r_e - \frac{1}{P_0}$	$- \times 100 - \frac{1.50}{1.50}$	100 - 0.10			
	Since there	is no debt	capita	$I, WACC = K_e =$	18 per cent			.) [[]]
29.	ABC Compai	ny's equity	share	e is quoted in the	ie market at	₹25 j	per share curre	ntly. The company
	You are requ	uired to		are and the live	Stor S marke	t expe	cts a growth fat	e of 6% per year.
	i) CALCUL	LATE the co	ompai	ny's cost of equ	ity capital.			
	ii) If the co	ompany iss	sues 1	0% debentures	of face valu	ie of ₹	100 each and	realises ₹ 96 per
	debentu	are while t	the de	ebentures are a	redeemable	after	12 years at a	premium of 12%,
	CALCUL	ATE cost o	f debe	enture Using YI	'M?			
Anc	Assume Tax	Rate to be	: 50%. mital					(ICAI SM)
Alls.	U = U = Ex	r Equity Ca cpected divide	end per	$(\mathbf{N}_{e})$ share $(D_{1})$	tion Acade	my		
	$K_e = -$	Market price	e per sh	$(P_0)$				
	= <sup>₹2</sup>	$\frac{1}{25} \times 1.06}{25} + 0.06$	6 = 0.1	448 or 14.48%				
	ii) Cost o	<sup>25</sup> f Debentui	re (Ka	):				
	Using I	Present Val	ue me	ethod or (YTM)		_0	·	
	0					.00	-	
	Identificatio	on of relev	ant ca	ash flows	.4	0		
	Year				Cash	flows		
	0	Curr	ent m	arket price (P0	) = ₹96			
	1 to 12	Inter	rest ne	et of tax [I(1-t)]	= 10% of ₹	100 (1	. – 0.5) = ₹5	
	12	Rede	emptio	on value (RV) =	₹100 (1.12)	= ₹12	12	
				~0 <sup>%*</sup>				
	Calculation	of Net Pr	esent	Values (NPV)	at two dise	count	rates	
	Year	Cash flo	ws	Discount facto	or Prese	ent	Discount	Present
				@ 5%(L)	Val	ıe	factor @10%	Value
			<u> </u>	<i>w</i>			(H)	
	0	-	(96)	1.00	00 (9	6.00)	1.000	(96.00)
	1 to 12	S.	5	8.8	63	44.32	6.814	34.07
	12	~	112	0.5	57	62.38	0.319	35.73
	NPV	5				+10.7		-26.2
	8	S						
	5							

	Calculation of IRR									
	$IRR = L + \frac{NPV_L}{NPV_{L-} NPV_H} (H - L)$									
	$=5\% \frac{10.7}{10.7 - (-26.2)} (10\% -$	- 5%) = 5	$\% + \frac{53.5}{36.9} =$	6.45%						
	Therefore, $K_d = 6.45\%$									
30.	DETERMINE the cost of	capital of	Best Luc	k Limited using	the book value(	BV) and market				
	value (MV) weights from t	the follow	ing inform	ation:						
	Sour	ces		Book Va	alue Mar	ket Value				
				(₹)		(₹)				
	Equity shares			1,20,	00,000	2,00,00,000				
	Retained earnings			30,	00,000	—				
	Preference shares			36,	00,000	33,75,000				
	Debentures			9,	00,000	10,40,000				
	Additional information:									
	1) Equity: Equity shares are quoted at ₹130 per share and a new issue priced at ₹125 per									
	share will be fully	subscribe	d; flotation	n costs will be₹5	per share.	F				
	2) Dividend: During the	ne previou	ıs 5 years,	dividends have	steadily increas	ed from ₹ 10.60				
	to ₹ 14.19 per sha	re. Dividei	nd at the e	nd of the current	year is expected	d to be ₹15 per				
	Share. 2) Proforonco sharos:	1506 Drof	oronco cha	ros with face valu	o of ₹100 would	roalico ₹105 por				
	share.	13701100				realise (105 per				
	4) Debentures: The company proposes to issue 11-year 15% debentures but the yield on									
	debentures of similar maturity and risk class is 16%; flotation cost is 2%.									
	5) Tax: Corporate tax	rate is 35	5%. Ignore	dividend tax. Flo	batation cost wou	ld be calculated				
	on face value.					(ICAI SM)				
Ans.	<b>1)</b> Cost of Equity $(K_{a}) = \frac{D}{2}$	<u>1</u> + g =₹	$\frac{15}{15}$ + 0.06	(refer to working	Note)					
	Market price of deba	125	5-₹5 pprovimati	on mothod)	, , , , , , , , , , , , , , , , , , ,					
	- ₹15 ÷ 0 16 - ₹93 75	Pioneer	in Developing	Concepts						
			20							
	Market value (P0) of	debenture	es can also	be found out us	ing the present v	alue method:				
	$P_0$ = Annual Interest >	· PVIFA (1	l6%, 11 ye	ars) + Redemptio	on value × PVIF(	16%, 11 years)				
	P <sub>0</sub> = ₹15 × 5.029 + ₹1	00 × 0.19	5							
	$P_0 = ₹75.435 + ₹19.5$	= ₹94.935	5							
	Net Proceeds = ₹94.93	35 – 2% o	f ₹100 = ₹	92.935						
	Accordingly, the cost	of debt ca	n be calcul	ated						
	Cost of capital 🖉			(4	Amount in lakh	of rupees)				
	[BV weights and MV w	veights]								
		Wai	ahta	SpacificCost	Total	act				
	Source of canital	BV	giits MV	(K)	$(\mathbf{RV} \times \mathbf{K})$	$(MV \times K)$				
	Fauity Shares	120	160*	0 1850	( <b>DV ^ K)</b> 22.2	20.6				
	Retained Earnings	30	40*	0.1050	5 <u>4</u>	7.2				
	Preference Shares	36	33 75	0.1000	5.4 5.1 <i>1</i> .	Δ. Q2				
100	Dehentures	9	10.4	0.1425	0.986	1 1 3 9				
2	Total	195	244 15	0.1075	33 73	42 76				
2ª	*Market Value of equity h	as been a	pportioned	l in the ratio of F	Book Value of equ	ity and retained				
E.	earnings		rrontionet		ieen tulue orequ	and retuined				
	Weighted Average Cost of	Capital C	WACC):							
		Supitui (								

58

	Using Book Value = $\frac{33.73}{195}$ = 0.1729 or	· 17.29%							
	Using Market Value = $\frac{342.76}{324445}$ = 0.1751	or 17.51%							
	Working Note: Calculation of 'g'								
	₹10.6 $(1 + g)^5 = $ ₹14.19 Or, $(1 + g)^5$	$=\frac{14.19}{100}=1.338$							
	Table (FVIF) suggests that $\overline{1}$ compounds to $\overline{1.338}$ in 5 years at the compound rate of 6								
	percent. Therefore, g is 6 per cent.								
	2) Cost of Retained Earnings $(K_r) = \frac{D_1}{r} + g = \frac{15}{100} + 0.06 = 0.18$								
	<b>3)</b> Cost of Preference Shares $(K_p) = \frac{PD}{P_p} = \frac{\overline{125}}{\overline{1105}} = 0.1429$								
	4) Cost of Debenture $(K_d) = K_P = \frac{I(1-t) + \frac{(RV-NP)}{n}}{\frac{(RV+NP)}{2}}$								
	$\frac{1}{2} = \frac{1}{15(1-0.35) + \frac{(100-191.75^{*})}{11 \text{ years}}}$								
	31	$\frac{(100+191.75*)}{2}$	-						
	= 1	$\frac{5 \times 0.65 + 0.75}{\$95.875} = \frac{10}{\$95.8}$	$\frac{15}{375} = 0.1095$						
	*Since yield on similar type of debe	ntures is 16 per	cent, the co	ompany would	d be required to				
31	offer debentures at discount. PK Ltd Has the following book-value	canital structure	as on March ?	31 2081					
51.		capital structure		(	₹)				
	Equity share capital (10,00,000 share	es)			2,00,00,000				
	11.5% Preference shares	,			60,00,000				
	10% Debentures				1,00,00,000				
					3,60,00,000				
	<ul> <li>year a dividend of ₹ 10 per equity share, which is expected to grow by 5% p.a. forever. Assume a 35% corporate tax rate. Grooming Education Academy Required:</li> <li>i) COMPUTE weighted average cost of capital (WACC) of the company based on the existing capital structure.</li> <li>ii) COMPUTE the new WACC, if the company raises an additional ₹50 lakhs debt by issuing 12% debentures. This would result in increasing the expected equity dividend to ₹12.40 and leave the growth rate unchanged but the price of equity chara will fall to ₹ 160 per chara.</li> </ul>								
				(	RTP May 2020)				
Ans.	ij Computation of Weighted Aver	rage Cost of Capi	tal based on	existing capi					
	and r	Existing	Weights	After tax	WACC				
	Source of Capital	capital		cost of	(%)				
	100	(₹)		(%)					
	200		(a)	(70) (b)	(a) × (b)				
	Fquity share capital (W N 1)	2 00 00 000	0.555	10.00	5 55				
	Equity share capital (W.N.1)         2,00,000         0.555         10.00           11 E00 Declarance chara capital         60.00,000         0.167         11 E00								
	11.5% Preference share canital	11.5%         Preference snare capital         60,00,000         0.167         11.50         1.92           10%         Depentures (WN 2)         1.00.00.000         0.270         6.70         1.01							
	11.5% Preference share capital	1.00.00.000	0.107	6.50	1.81				
	11.5% Preference share capital10% Debentures (W.N.2)	1,00,00,000	0.278	6.50	<u>1.81</u> 9.28				
	11.5% Preference share capital 10% Debentures (W.N.2)	1,00,00,000 3,60,00,000	0.278	6.50	1.81 9.28				
~	11.5% Preference share capital 10% Debentures (W.N.2)	1,00,00,000 3,60,00,000	0.278	6.50	1.81 9.28				
1	11.5% Preference share capital 10% Debentures (W.N.2)	1,00,00,000 3,60,00,000	0.278	6.50	1.81 9.28				

		Working Note (W. N.):								
		1) Cost of equity capital:								
		$K = Expected Dividend (D_1)$	) + Growth (c	r)						
		$R_e = \frac{1}{Current}$ Market Price per Sho	$re(P_0)$ + Growth (g	5)						
		$=\frac{310}{3200}+0.05=10\%$								
		2) Cost of Debenture:								
		$=\frac{I(1-t)}{1-t} = \frac{1}{10,00,000} = 0.065 \text{ or } 6.5\%$								
		NP  \$\$1,00,00,000								
		11) Computation of Weighted Av	erage Cost of Cap	oital based or	new capital st	ructure				
		Source of Capital	New Capital	Weights	After tax cost	WACC (%)				
			structure (₹)		of capital					
				<b>(</b> 1-)	(%)	(a) × (b)				
			2 0 0 0 0 0 0 0	(D)	(a)	( ))				
		Equity share capital (W.N. 3)	2,00,00,000	0.488	12.75	6.22				
		Preference share	60,00,000	0.146	11.50	1.68				
		10% Debentures (W.N. 2)	1,00,00,000	0.244	6.50	1.59				
		12% Debentures (W.N.4)	50,00,000	0.122	7.80	0.95				
			4,10,00,000	1.00		10.44				
		Working Note (W. N.):								
		3) Cost of equity capital:	<b>`</b>							
		$K_e = \frac{Expected Dividend (D_1)}{Current Market Price per Sho$	$\frac{P_{o}}{P_{o}}$ + Growth (g	g)						
		$=\frac{12.4}{12.4} + 0.05 = 0.1275 $ or	r 12 75%							
		$\overline{160} = 0.00 = 0.1275 \text{ or }$	12.7570							
		4) Cost of Debenture: 3600,000,(1-0.35)								
		$= \frac{(3,00,000)}{(10,000)} = 0.078 \text{ or } 7.8$	3%							
		$K_d = \frac{\{2,40,000 \ (1-0.35)}{\{2,20,000 \ (2-0.35)\}} = 0.078 \ or \ 7$	.8%							
	32	The information relating to book va	ulue (BV) and marl	xet value (MV	) weights of Ex I	imited is given				
	01	below:	er in Duveloping Concept	s	)					
		Sources	6	Book Value (	(₹) Market	Value (₹)				
		Equity shares	9	2,40,00	,000	4,00,00,000				
		Retained earnings		60,00	,000	-				
		Dehentures		/2,00	,000	67,50,000				
		Additional information:		10,00	,000	20,80,000				
		1) Equity shares are quoted at ₹1	130 per share and	a new issue n	riced at ₹125 pe	er share will be				
		fully subscribed; flotation cost	s will be ₹5 per sh	are on face va	alue.					
		2) During the previous 5 years, di	vidends have stea	dily increased	from ₹10 to	₹16.105				
		per share. Dividend at the end	of the current yea	ar is expected	to be	₹17.716 per				
		Share.	a value of ₹100 v	would realize	₹105 por chara					
		4) The company proposes to iss	sue 11-vear 15%	debentures h	out the vield on	debentures of				
		similar maturity and risk class	s is 16%; flotation	cost is 2% on	face value.					
		5) Corporate tax rate is 30%.								
	÷.	You are required to DETERMINE th	e weighted averag	ge cost of capi	tal of Ex Limited	using both the				
2	A. 22. 2	weights.	₹17.716		(May 2	022 RTP)				
55	Ans.	<b>1)</b> Cost of Equity $(K_e) = \frac{\nu_1}{P_0 - F} + g =$	$= \frac{(17.710)}{(125 - (15))} + 0.10 *$							
		$K_e = 0.2476$								
		* Calculation of g:								
		₹10 (1 + <i>g</i> ) <sup>5</sup> = ₹16.105								

Or,  $(1+g)^5 = \frac{16.105}{10} = 1.6105$ Table (FVIF) suggests that ₹ 1 compounds to ₹ 1.6105 in 5 years at the compound rate of 10 percent. Therefore, g is 10 per cent. 2) Cost of Retained Earnings  $(K_f) = \frac{D_1}{P_0} + g = \frac{\overline{11.716}}{\overline{1130}} + 0.10 = 0.2363$ 3) Cost of Preference Shares  $(K_p) = \frac{PD}{P_0} = \frac{\overline{115}}{\overline{1105}} = 0.1429$ 4) Cost of Debentures  $(K_d) = \frac{l(1-t) + (\frac{RV - NP}{n})}{\frac{RV + NP}{2}}$  $\underbrace{\$15 (1-0.30) + \left(\frac{\$100 - \$91.75*}{11 \, years}\right)}$ ₹100+₹91.75\*  $=\frac{\frac{15\times0.70+0.75}{10}}{\frac{1}{3}95.875}=\frac{\frac{111.75}{10}}{\frac{1}{3}95.875}=0.1173$ \*Since yield on similar type of debentures is 16 per cent, the company would be required to offer debentures at discount. Market price of debentures (approximation method) = ₹ 15 ÷ 0.16 = ₹ 93.75 Sale proceeds from debentures = ₹ 93.75 – ₹2 (i.e., floatation cost) = ₹91.75 Market value ( $P_0$ ) of debentures can also be found out using the present value method: P<sub>0</sub> = Annual Interest × PVIFA (16%, 11 years) + Redemption value × PVIF (16%, 11 years) P<sub>0</sub> = ₹ 15 × 5.0287 + ₹ 100 × 0.1954 P<sub>0</sub> = ₹ 75.4305 + ₹ 19.54 = ₹ 94.9705 Net Proceeds = ₹ 94.9705 – 2% of ₹ 100 = ₹ 92.9705 Accordingly, the cost of debt can be calculated Total Cost of capital [BV weights and MV weights] (Amount in  $(\mathbb{R})$  lakh) Weights **Specific Total cost** Source of capital omi<mark>BV Equcati</mark> Cost (K) MV Co (BV × K) (MV × K) **Equity Shares** 240 320\*\* 59.4240 79.2320 0.2476 80\*\* **Retained Earnings** 60 0.2363 14.1780 18.9040 **Preference Shares** 72 67.50 0.1429 10.2888 9.6458 18 20.80 0.1173 2.1114 2.4398 Debentures Total 390 488.30 86.0022 110.2216 \*\*Market Value of equity has been apportioned in the ratio of Book Value of equity and retained earnings i.e., 240:60 or 4:1. Weighted Average Cost of Capital (WACC): Using Book Value =  $\frac{\overline{86,0022}}{\overline{390}}$  = 0.2205 or 22.05% Using Market Value =  $\frac{\overline{110.2216}}{\overline{4488.30}}$  = 0.2257 or 22.57% 33. Kalyanam Ltd. has an operating profit of ₹34,50,000 and has employed Debt which gives total Interest Charge of ₹7,50,000. The firm has an existing Cost of Equity and Cost of Debt as 16% and 8% respectively. The firm has a new proposal before it, which requires funds of ₹75 Lakhs and is expected to bring an additional profit of ₹14,25,000. To finance the proposal, the firm is expecting to issue an additional debt at 8% and will not be issuing any new equity shares in the market. Assume no tax culture. You are required to CALCULATE the Weighted Average Cost of Capital (WACC) of Kalyanam Ltd.: **1)** Before the new Proposal 2) After the new Proposal (Nov. 2021 RTP) a) Value of Debt =  $\frac{Interest}{Cost of debt(K_e)}$ Ans.

		= <sup>₹7,50,000</sup> = ₹0	3.75.000							
		0.08	3,73,000							
	b) Value of e	equity capital = <sup>Ope</sup>	rating profit–Intere Cost of equity (K <sub>e</sub> )	<u>ist</u>						
		= ₹34,	50,000-₹7,50,000 = ₹	1.68.75.000						
			0.16	1,00,7 5,000						
	c) New Cost	of equity (K <sub>e</sub> ) afte	r proposal							
	= Increased	Operating profit –Intere	st on Increased deb							
	_	Equity capital								
	$=\frac{348,75,000}{31,68}$	$\frac{-13,50,000}{75,000} = \frac{135,25}{1,68,75}$	$\frac{000}{000}$ = 0.209 or 20	.9%						
	i) Calculation of Weighted Average (ast of Capital (WACC) before the new proposal									
	I) Calculation	Amount (₹)	Woight	Cost of Canital						
	Fauity	1 68 75 000	0.6429	0.160	0 1029					
	Debt	93,75,000	0.3571	0.080	0.0286					
	Total	2.62.50.000	1	01000	0.1315 or 13.15 %					
		,- ,, 0								
	ii) Calculatio	on of Weighted Av	erage Cost of Cap	oital (WACC) after	the new proposal					
	Sources	Amount (₹)	Weight	Cost of Capital	WACC					
	Equity	1,68,75,00	0 0.500	0 0.209	0.1045					
	Debt	1,68,75,00	0 0.500	0 0.080	0.0400					
	Total	3,37,50,00	0	1	0.1445 or 14.45 %					
34.	A company has	s paid dividend of ₹	l per share (of fac	e value of ₹10 each)	last year and it is expected					
	to grow @ 109	6 every year. CALCU	JLATE the cost of	equity if the market	t price of share is $₹55$ .					
Δns	<u> </u>	L (1+0.1) + 0.1 - 0.1	120/		(ICAI SM)					
<b>MI3</b> .	$K_e = \frac{1}{P_0} + g = -$	$\frac{1}{355}$ + 0.1 = 0.12	2 or 12%							
35.	Answer the fo	ollowing:								
	The Capital str	ucture of a Compan	y is given below:	cademy						
	Source of ca	pital Pior	eer in Developing Conc	30	Book Value (₹)					
	Equity shares	s@ ₹100 each	0.7400		24,00,000					
	9% Cumulati	ve preference share	s @ ₹100 each		4,00,000					
	11% Debenti	ires	6~		12,00,000					
	The company l	and paid aquity divi	dand @ 25% for t	ho last voar which i	40,00,000					
	vear. The curre	ant market price of	the company is early	me last year which is mity share is ₹200	Slikely to grow @ 5% every					
	y can the carry									
	Considering co	orporate tax @30%,	you are required	to CALCULATE:						
	i) Cost of cap	pital for each source	e of capital							
	ii) Weighted	average cost of cap	ital.							
					(Sept. 2022 MTP)					
Ans.	i) Calculation	of Cost of Capital	for each source	of capital:						
	a) Cost of	Equity share capita	ıl:							
	$K_e = \frac{1}{M}$	$\frac{D_0 (1+g)}{D_0 (1+g)}$	$\frac{1}{100} + g = \frac{25\% \times 100}{100}$	$\frac{(1+0.05)}{2} + 0.05$						
	₹26.2	<sup>5</sup> · O O C · O 1012C								
	₹200	-+0.05=0.18125	18.125%							
	<b>b)</b> Cost of	Preference share c	apital ( $K_p$ ) = 9	9%						
1	<b>c)</b> Cost of	Debentures (K <sub>d</sub> )	= 1	· (1 – t)						
192 N			=	11% (1 – 0.3) = 7.79	/o					
1	1									

	IIJ weighted Average Cost	or capital								
	Source	Amount (₹)	Weigh	ts Afte	er tax Cost	WACC (%)				
				of C	apital (%)					
			(a)		(b)	(c) = (a) × (b)				
	Equity share	24,00,000	0	.60	18.125	10.875				
	9% Preference share	4,00,000	0	.10	9.000	0.900				
	11% Debentures	12,00,000	0	.30	7.700	2.310				
		40,00,000	1	.00		14.085				
36.	ABC Limited has the followin	g book value cap	ital struc	ture.						
	Equity Share Capital (1 croi	re shares @ ₹10 e	ach)			₹1,000 lakh				
	Reserves Surplus					₹2,250 lakh				
	9% Preference Share Capital (5 lakh shares @ ₹100 each) ₹500 lakh									
	8.5% Debenture (1.5 lakh debentures @ ₹1,000 each) ₹1,500 lakh									
	12% Term Loans from Financial Institutions ₹500 lakh									
	✓ The debentures of ABC L	imited are redeer	mable at	par after five	years and are	quoting at ₹985				
	per debenture			-	-					
	✓ The current market price per equity share is ₹60. The prevailing default-risk free interest rate									
	on 10 year GOI Treasury Bonds is 5.5%. The average market risk premium is 7%. The beta of									
	the company is 1.85									
	✓ The preference shares of	of the company a	are rede	emable at 1	0% premium	after 5 years is				
	currently selling at ₹102	per share.								
	The applicable income tax ra	te for the compar	ny is 35%	)						
				69						
	Required:		6	30						
	CALCULATE weighted average	ge cost of capital	of the co	npany using	market value	weights.				
			2		(	May 2020 MTP)				
Ans.	Working Notes: Gro	ooming Educat	ton Aca	demy						
	1) Computation of cost of (1000-985)	debentures $K_d$ ):								
	$K_d = \frac{\frac{35(1-0.35)+(1,000-905)}{5}}{(1,000+005)}$	$=\frac{55.25+3}{0.058}$	$385(1-0.35)+\frac{(1,000-985)}{55,25+2}$ 55,25+2							
	$K_d = \frac{(100 (1 - 0.05))^{1-5}}{(1,000 + 985)} = \frac{55.25 + 3}{992.5} = 0.0586 \text{ or } 5.86\%$									
1	2) Computation of cost of term loans $(K_m)$ :									
	2) Computation of cost of	term loans $(K_T)$ :	86 or 5.8	6%						
	2) Computation of cost of $t = (1 - t)$	$_{992.5} = 0.030$ term loans ( $K_T$ ):	86 or 5.8	6%						
	2) Computation of cost of t = $(1 - t)$ = $0.12 (1 - 0.35) = 0.078$	$K_{7}^{992.5} = 0.030$	86 or 5.8	6%						
	2) Computation of cost of t = $(1 - t)$ = 0.12 $(1 - 0.35) = 0.078$ 3) Computation of cost of j	term loans ( $K_T$ ): or 7.8% preference capit	86 or 5.8 Tal (K <sub>P</sub> ):	6%						
	2) Computation of cost of t = $(1 - t)$ = 0.12 $(1 - 0.35) = 0.078$ 3) Computation of cost of t $K_P = \frac{Preference Dividend + (K_P)}{(RV+NP)/2}$	term loans ( $K_T$ ): or 7.8% preference capit	86 or 5.8 al (K <sub>P</sub> ):	6%						
	2) Computation of cost of t = (1 - t) = 0.12 (1 - 0.35) = 0.078 3) Computation of cost of f $K_P = \frac{Preference Dividend + (R)}{(RV+NP)/2}$ $\overline{\xi}9 + \frac{(110-102)}{9+1.6}$	term loans ( $K_T$ ): or 7.8% preference capit	86 or 5.8 al (K <sub>P</sub> ):	6%						
	2) Computation of cost of t = (1 - t) = 0.12 (1 - 0.35) = 0.078 3) Computation of cost of f $K_P = \frac{Preference Dividend + (R)}{(RV+NP)/2}$ $= \frac{\frac{39 + \frac{(110 - 102)}{5}}{\frac{110 + 102}{5}} = \frac{9 + 1.6}{106} =$	term loans ( $K_T$ ): or 7.8% preference capit	86 or 5.8 ral (K <sub>P</sub> ):	6%						
	2) Computation of cost of t = (1 - t) = 0.12 (1 - 0.35) = 0.078 3) Computation of cost of f $K_P = \frac{Preference\ Dividend + (R)}{(RV+NP)/2}$ $= \frac{\frac{59 + \frac{(110 - 102)}{5}}{\frac{(110 + 102)}{2}} = \frac{9 + 1.6}{106} =$ 4) Computation of cost of f	term loans ( $K_T$ ): or 7.8% preference capit $\frac{V-NP}{n}$ = 0.1 or 10% equity ( $K_a$ ):	86 or 5.8 al (K <sub>P</sub> ):	6%						
	2) Computation of cost of t = (1 - t) = 0.12 (1 - 0.35) = 0.078 3) Computation of cost of t $K_P = \frac{Preference Dividend + (R)}{(RV+NP)/2}$ $= \frac{\xi_9 + \frac{(110-102)}{5}}{\frac{(110+102)}{2}} = \frac{9+1.6}{106} =$ 4) Computation of cost of t $= R_{\varepsilon} + \beta (R_m - R_{\varepsilon})$	term loans ( $K_T$ ): or 7.8% preference capit $\frac{(V-NP)/n}{2}$ = 0.1 or 10% equity ( $K_e$ ):	86 or 5.8 Fal (K <sub>P</sub> ):	6%						
	2) Computation of cost of t = (1 - t) = 0.12 (1 - 0.35) = 0.078 3) Computation of cost of t $K_P = \frac{Preference Dividend + (R)}{(RV+NP)/2}$ $= \frac{39 + \frac{(110 - 102)}{5}}{\frac{(110 + 102)}{2}} = \frac{9 + 1.6}{106} =$ 4) Computation of cost of t $= R_f + \beta (R_m - R_f)$ Or = Bick free rate + (Bet	term loans $(K_T)$ : or 7.8% preference capit (V-NP)/n = 0.1 or 10% equity $(K_e)$ :	86 or 5.8	6%						
0.	2) Computation of cost of t = (1 - t) = 0.12 (1 - 0.35) = 0.078 3) Computation of cost of f $K_P = \frac{Preference\ Dividend + (R)}{(RV+NP)/2}$ $= \frac{\frac{59 + \frac{(110 - 102)}{5}}{\frac{(110 + 102)}{2}} = \frac{9 + 1.6}{106} =$ 4) Computation of cost of t = $R_f + \beta (R_m - R_f)$ Or, = Risk free rate + (Bet = 0.055 + (1.85 × 0.07)	term loans ( $K_T$ ): or 7.8% preference capit $\frac{V-NP}{n}$ = 0.1 or 10% equity ( $K_e$ ): a × Risk Premium ) = 0.1845 or 1845	86 <i>or</i> 5.8 ral ( <i>К</i> <sub>Р</sub> ): 1) 45%	6%						
Sc	2) Computation of cost of t = (1 - t) = 0.12 (1 - 0.35) = 0.078 3) Computation of cost of f $K_P = \frac{Preference Dividend + (R)}{(RV+NP)/2}$ $= \frac{\sqrt[3]{9+\frac{(110-102)}{5}}}{\frac{(110+102)}{2}} = \frac{9+1.6}{106} =$ 4) Computation of cost of t = $R_f + \beta (R_m - R_f)$ Or, = Risk free rate + (Bet = 0.055 + (1.85 × 0.07) Calculation of Weight	term loans ( $K_T$ ): or 7.8% preference capit (V-NP)/n = 0.1 or 10% equity ( $K_e$ ): a × Risk Premium ) = 0.1845 or 18.4 while Average co	n) 1) 25% 26 <i>of ca</i>	6% bital Using r	narket value	weights				
S.	2) Computation of cost of t = (1 - t) = 0.12 (1 - 0.35) = 0.078 3) Computation of cost of f $K_P = \frac{Preference\ Dividend+(R)}{(RV+NP)/2}$ $= \frac{\overline{\$9+\frac{(110-102)}{5}}}{\frac{(110+102)}{2}} = \frac{9+1.6}{106} =$ 4) Computation of cost of f = $R_f + \beta (R_m - R_f)$ Or, = Risk free rate + (Bet = 0.055 + (1.85 × 0.07) Calculation of Weig	term loans $(K_T)$ : or 7.8% preference capit (V-NP)/n = 0.1 or 10% equity $(K_e)$ : a × Risk Premium ) = 0.1845 or 18.4 ghted Average co Market value	n) 45% <b>ost of ca</b>	6% Dital Using r Weights	narket value After tay	weights				
S.	2) Computation of cost of t = (1 - t) = 0.12 (1 - 0.35) = 0.078 3) Computation of cost of f $K_P = \frac{Preference Dividend + (R)}{(RV+NP)/2}$ = $\frac{\overline{39} + \frac{(110-102)}{5}}{\frac{(110+102)}{2}} = \frac{9+1.6}{106} =$ 4) Computation of cost of f = $R_f + \beta (R_m - R_f)$ Or, = Risk free rate + (Bet = 0.055 + (1.85 × 0.07) Calculation of Weig Source of Capital	$\frac{992.5}{P} = 0.000$ term loans ( $K_T$ ): or 7.8% preference capit $\frac{V-NP}{n}$ = 0.1 or 10% equity ( $K_e$ ): a × Risk Premium ) = 0.1845 or 18.4 ghted Average co Market value capital structure	al ( <i>K</i> <sub>P</sub> ): al ( <i>K</i> <sub>P</sub> ): 45% ost of caj of re (₹	6% <u>pital Using r</u> Weights	narket value After tax cost of	weights WACC (%)				
.8	2) Computation of cost of t = $(1 - t)$ = $0.12 (1 - 0.35) = 0.078$ 3) Computation of cost of t $K_P = \frac{Preference Dividend + (R)}{(RV+NP)/2}$ $= \frac{\overline{39} + \frac{(110 - 102)}{5}}{\frac{(110 + 102)}{2}} = \frac{9 + 1.6}{106} =$ 4) Computation of cost of t = $R_f + \beta (R_m - R_f)$ Or, = Risk free rate + (Bett = $0.055 + (1.85 \times 0.07)$ Calculation of Weig Source of Capital	term loans $(K_T)$ : or 7.8% preference capit V - NP)/n = 0.1 or 10% equity $(K_e)$ : a × Risk Premium ) = 0.1845 or 18.4 ghted Average co Market value capital structu jn lakh)	n) Fal ( <i>K</i> <sub>P</sub> ): 45% ost of caj e of ure (₹	6% <u>pital Using r</u> Weights	narket value After tax cost of capital (%)	weights WACC (%)				
29.	2) Computation of cost of t = (1 - t) = 0.12 (1 - 0.35) = 0.078 3) Computation of cost of f $K_P = \frac{Preference Dividend + (R)}{(RV+NP)/2}$ $= \frac{\frac{59+(110-102)}{5}}{(110+102)} = \frac{9+1.6}{106} =$ 4) Computation of cost of f = $R_f + \beta (R_m - R_f)$ Or, = Risk free rate + (Bett = 0.055 + (1.85 × 0.07) Calculation of Weig Source of Capital Equity share capital	$\frac{V-NP}{n} = 0.1845$ equity ( $K_e$ ): a × Risk Premium ) = 0.1845 or 18.4 ghted Average co Market value (in lakh)	al ( <i>K</i> <sub>P</sub> ): al ( <i>K</i> <sub>P</sub> ): 45% ost of car e of ure (₹	6% <u>pital Using r</u> Weights 0.71	narket value After tax cost of capital (%)	weights WACC (%)				

	9% Preference share					
	capital (5 lakh shares ×	510	0.06		10.00	0.60
	₹102)					
	8.5 % Debentures (1.5	1,477.5	0.17		5.86	0.99
	lakh × ₹985)					
	12% Term loans	500	0.06		7.80	0.47
		8,487.50	1.000			15.15
37.	Annova Ltd is considering ra	aising of funds of about ₹2	250 lakhs by a	ny of two a	lternat	ive methods,
	viz, 14% institutional term lo	oan and 13% non-convert	ible debentur	es. The teri	m loan	option would
	attract no major incidental o	cost and can be ignored. T	The debenture	es would ha	ave to l	be issued at a
	discount of 2.5% and would	involve cost of issue of 2%	% on face valu	ıe.		
	ADVISE the company as to	the better option based o	on the effective	ve cost of o	capital	in each case.
	Assume a tax rate of 50%.					
					(May	y 2019 MTP)
Ans.		Calculation of Effective	Cost of Capit	al		
	Particu	lars	Option	1	Op	tion 2
			14% institut	tional	13%	% Non-
			Term loa	an	conv	ertible
			(₹ in Laki	nsj	Deb(	entures
	A) Effortivo conital to bo	raigad Eaga valua		250.00	(3 11	250.00
	A) Effective capital to be	raised Face value		250.00 Nil		250.00
	Less. Discount			250.00		243.75
	Less: Cost of issue			230.00 Nil		5.00
	Eess. Cost of issue	nt of canital	2	250.00		238.75
	B) Annual interest charges	on face value of $₹ 250$	8-	230.00		230.75
	lakhs	ooming Education Aca	ademy	35.0		32.50
	Less: Tax benefit on inte	erest @ 50%	5	17.5		16.25
		. 90		17.5		16.25
	C) Effective cost of capital a	after tax 🔊	B	x 100 A	16.25	x100 238.75
		J.		= 7.0%	= 6.81	l% (approx)
		0		•		
	So, the better option is raisir	ng of funds of ₹250 lakhs l	by issue of 13	% Non-con	vertib	e Debenture
38.	Bounce Ltd. evaluates all its	s capital projects using di	scounting rat	te of 15%,	its cap	ital structure
	consists of equity share capi	ital, retained earnings, ba	nk term loan	and debent	tures r	edeemable at
	par.		C 1 1 .			C 1 1 .
	Rate of interest on bank ter	m Ioan IS 1.5 times that o	f debenture, i	remaining i	tenure	of depenture
	allu Dallk Idali is 5 years at	$0.00000 \neq 15.00000$ and	500K value of 1 ₹10 00 000 r	equity sile	are cap	nturos which
	are having book value of $\mathbb{F}^1$	5 00 000 are currently tra	ding at ₹97 n	espectively er debentu	y. Debe re The	ongoing P/F
	multiple for the shares of t	the company stands at 5	You are red	uired to C	ALCIII.	ATE the rate
	interest on bank loan and de	bentures if tax rate applie	cable is 25%.			ine rute
1					(Nov	7. 2022 RTP)
Ans.	Let the rate of Interest on de	benture be x				,
	$\therefore$ Rate of Interest on loan = 1	1.5x				
	K on dependence - Int (1-	$t) + \frac{RV - NP}{n}$				
	$\cdot \cdot \Lambda_d$ on dependures = $\frac{R}{R}$	<u>V+NP</u> 2				

	$100 \times (1-0.25) + \frac{100-97}{3}$								
	$-\frac{100+97}{2}$								
		$=\frac{75x+1}{085}$							
	$\therefore K_d$ on bank loar	n = 1.5x (1 - 0.25)	= 1.125x						
	$K_e = \frac{EPS}{1} = \frac{1}{1} = \frac{1}{1} = \frac{1}{1} = 0.2$								
	$\sim MPS MPS/EPS P/E 5$ K = K = 0.2								
	$R_{Y} = R_{e} = 0.2$								
	Capital	Amount (₹)	Weights	Cost		Product			
	Equity	10,00,000	0.2	0.2		0.04			
	Reserves	15,00,000	0.3	0.2		0.06			
	Debentures	15,00,000	0.3	(75x+1)/98.5	(22.	.5x + 0.3)/98.5			
	Bank Loan	10,00,000	0.2	1.125x	-	0.225x			
		50,00,000	1		0.	1+0.225x+22.5x+0.3			
						98.5			
	WACC = 15%								
	∴ 10.1 + 0.225x +	$\frac{22.5x}{2} + \frac{0.3}{2} = 0.1$	5						
	∴ 9.85+22.1625x	98.5 98.5 +22.5x+0.3 = (0.1)	5) (98.5)						
	$\therefore 44.6625x = 14.3$	775 – 9.85 – 0.3	5) (50.5)						
	$\therefore 44.6625x = 4.623x$	25							
	$\therefore x = \frac{4.625}{100}$								
	$\frac{1000}{44.6625}$								
	$\therefore X = 10.30\%$	on dobonturos – 1	7	- 10 2604					
	$\therefore \text{ Kate of interest on debentures} = x = 10.36\%$								
39.	The following is the extract of the Balance Sheet of M/s KD Ltd $\cdot$								
	Amount (₹)								
	Ordinary shares	(Face value ₹10/-	per share)	oncepts		5,00,000			
	Share Premium	· · ·		0		1,00,000			
	Retained Profits			66		6,00,000			
	8% Preference S	Shares (Face Value	₹25/- per sh	are)		4,00,000			
	12% Debenture:	s (Face value ₹100	/- each)	S.		6,00,000			
			~S <sup>2</sup>			22,00,000			
	The ordinary share	res are currently p	riced at ₹39 e	ex-dividend and pr	eference s	hare is priced at ₹18			
	cum-dividend. Th	e debentures are	selling at 120	percent ex-intere	st. The app	plicable tax rate to D			
	Ltd. is 30 percent	. KD Ltd.'s cost of e	equity has bee	en estimated at 19	percent.				
	Calculate the WA	CC (weighted aver	age cost of ca	pital) of KD Ltd. or	the basis	of market value.			
						(Nov. 2022)			
Ans.	Computation of	WACC on the bas	is of market	value					
	VV.N. I Cum-dividend pri	ce of Preference s	hares – ₹ 18						
	Less Dividend (0	$(100) \sim 25 = \frac{32}{2}$	iiui us – N 10						
	Markot Drice of	$\frac{100}{100} \wedge 23 = \frac{1}{16}$	c _ <b>∓</b> 1.6						
	$\frac{1}{2}$ Market Price of $\frac{1}{2}$	12 = 12 = 10	5 - 10						
	$KP = \frac{1}{16} = 0.125 (0)$	shares = $\left(\frac{4,00,000}{2}\right)$	= 16,000						
		25	_0,000						
2	-								

	W.N. 2									
	Market price of Debent	ures = $\left(\frac{120}{100}\right)$	$\times 100 = 100$	₹120						
	$K_{d} = \left[\frac{12(1-0.3)}{120}\right] = 0.07$ (	(or)7%								
	No. of Debentures = $\left(\frac{6.0}{10}\right)$	$\left(\frac{00,000}{100}\right) = 6,00$	00							
	W.N.3									
	Market Price of Equity shares = ₹39									
	K <sub>e</sub> (given) 19% or 0.19									
	No. of Equity shares = $\frac{3,00,000}{10}$ = 50,000									
	Sources Market Nos. Total Weight Cost of Product									
	valueMarketCapital $(\overline{x})$ value $(\overline{x})$									
	Equity Shares	39	50.000	19.50.0	00 0.66	64 0.19	0.1266			
	Preference Shares	16	16,000	2,56,0	00 0.08	75 0.125	0.0109			
	Debentures	120	6,000	7,20,0	00 0.24	61 0.07	0.0172			
						WACC =	0.1547			
	WACC = 0.1547 or 15.4	7%					1			
40.	TT Ltd. issued 20,000, 1	10% convert	ible deben	ture of ₹10	0 each with	a maturity peri	od of 5 years.			
	At maturity the debent	ure holders	will have t	the option	to convert d	ebentures into	equity shares			
	of the company in ratio	of 1:5 (5 sha	res for eac	h debentur	e). The curre	ent market price	e of the equity			
	share is ₹20 each and hi	istorically th	e growth 1	rate of the s	hare is 4% p	er annum. Assu	iming tax rate			
	is 25%. Compute the co	st of 10% cor	nvertible o	lebenture u	ising Approx	imation Methoo	d and Internal			
	Rate of Return Method.									
	PV Factor are as under:									
	Year	1		2	3	4	5			
	PV Factor @ 10%	0.909	<del>g Educat</del>	0.826	0.751	0.683	0.621			
	PV Factor @ 15%	0.870	r in Developii	0.756	0.658	0.572	0.497			
						II	(Nov. 2020)			
Ans.	Determination of Red	emption val	lue:		D.					
	Higher of –				00					
	i) The cash value	e of debentur	es =	₹100	2					
	ii) Value of equity	/ shares	=	5 shares ×	₹20 (1+0.04 ₹24 222	)5				
			-	5 snares × ₹121 665	124.333 rounded to	₹121.67				
	₹121.67 will be take	en as redemr	otion value	e as it is hig	her than the	cash option and	d attractive to			
	the investors.	1								
			0							
	Calculation of Cost	t of 10% Col	nvertible	debenture	9					
	I) USING Approx		<b>LNOU:</b>	0)						
	$K_{d} = \frac{I(1-t) + \frac{n}{m}}{\frac{RV + NP}{2}}$	$-+\frac{10(1-0.25)}{(121)}$	(.67+100)	$\frac{1}{110.835} = \frac{7.5 + 4.334}{110.835}$	<sup>±</sup> = 10.676%	1				
		. P. (-	2 J	0000						
	ii) Using interna	l Rate of Re	turn Metł	nod						
	Year	Cash flows	D	iscount	Present	Discount	Present			
	" Street	(₹)	factor	r @10%	Value	factor @15%	Value (₹)			
	0	100		1,000	(100.00)	1.000	(100.00)			
							· · · ·			

	1 to 5	7.5	3.790	28.425	3.353	25.148
	5	121.67	0.621	75.557	0.497	60.470
	NPV			+3.982		-14.382
	NDV		2.002			
	$IRR = L + \frac{NPV_L}{NPV_L - N}$	$\frac{1}{PV_{H}}$ (H-L) = 10% +	$\frac{3.982}{3.982-(-14.382)}$ (2	5% - 10%)		
	= 0.1	11084 or 11.084%	% (approx.)			
41.	Alpha Ltd. has furnis	hed the following i	nformation:			
	✓ Earnings Per Sh	are (EPS)				₹4
	✓ Dividend navou	t ratio				25%
	✓ Market price pe	r share				₹50
	✓ Rate of tax					30%
	✓ Growth rate of	dividend				10%
	The company wants	to raise additional	capital of ₹10 k	akhs including	debt of ₹4 la	khs. The cost of
	debt (before tax) is 1	0% up to ₹2 lakhs	and 15% bevor	d that. Compu	ite the after ta	ax cost of equity
	and debt and also we	ighted average cos	st of capital.	I		1 9
						(May 2019)
Ans	i) Cost of Fauity S	hare Canital (K)				(114) =017)
1115.	IJ COSt OI Equity 5	$are capital (R_e)$	31.40			
	$K_e = \frac{D_0 (1+g)}{P_e} + g$	$=\frac{25\%  of  (1+0.10)}{\$_{50}} +$	$+ 0.10 = \frac{31.10}{350} +$	• 0.10 = <b>0.122</b>	2 or 12.2%	
	- 0					
	ii) Cost of Debt (K	ı)				
	Interest					
	$K_d = \frac{11000000}{Net Procedds}$	$\times 100 \times (1-t)$				
	Interest on first	₹2,00,000 @ 10%	= ₹20,000			
	Interest on nex	t ₹2,00,000 @ 15%	= ₹30,000			
	50,000					
	$K_d = \frac{1}{4,00,000} \times (1)$	1 - 0.3) = 0.0875 (	or 8.75%			
		Pioneer in I	Developing Concepts	aemy		
	iii) Weighted Avera	ge Cost of Capital	(WACC)			
	Source of capita	l Amount (₹	t) Weight	s Cost of Ca	apital (%)	WACC (%)
	Equity shares	6,00,	,000 0.0	50	12.20	7.32
	Debt	4,00,	,000	40	8.75	3.50
	Total	10,00,	,000 _ 6 1.	00		10.82
	Alternatively Cost o	f Equity Share Ca	pital (K <sub>e</sub> ) can	be calculated	as	
	D 25% of ₹4	₹1.00	8 <sup>9</sup>			
	$K_e = \frac{1}{P_0} + g = \frac{1}{1}$	$+0.10 = \frac{1}{300} + 0.00$	10 = 0.120 or 1	2.00%		
	Accordingly	-9				
	Accordingly	.8				
	Weighted Average	Cost of Capital (W	ACC)			
	Source of capital	Amount (₹)	Weights	Cost of	Capital	WACC (%)
	Fauity charge	( 00 00)	0 0	(%	/0 <b>J</b>	7 20
	Equity shares	6,00,00		.00	12.00	7.20
	Debt	4,00,00		.40	8.75	3.50
	Total	10,00,00	0 1	.00		10.70
42.	Amrit Corporation	has the following	book value ca	oital structur	e:	
	Equ	ity Capital (50 lakh	shares of $10$	each).		₹5,00,00000
	15% Pi	eference share (50	),000 shares ₹1	00 each)		₹50,00,000
	e la	Retained e	earnings			₹4,00,00,000
			-			

		Debentures 14% (2,50,000 debentures ₹100 each)	₹2,50,00,000
		Term loan 13%	₹4,00,00000
			,,
	The 60% rede year	companies last year earnings per share was ₹5, and it maintains a divide and returns on equity is 10%. The market price per share is ₹20.8 emable after 10 years is currently selling for ₹90 per share. Debentures s are currently selling for ₹75 per debenture. The income tax rate is 40%.	nd pay-out ratio of . Preference share redeemable after 6
	<b>a)</b> (	ALCULATE the Weighted Average Cost of Capital (WACC) using market va	alue proportions.
	<b>b)</b> [	ETERMINE the Marginal Cost of Capital (MACC) if it needs ₹5,00,00000 r	next year assuming
	t	the amount will be raised by 60% equity, 20% debt and 20% retained earn will be table and $514$ and east of debt will be $120\%$ before the second effective $514$ and	nings. Equity issues
	V	/ill fetch a net price of $₹14$ and cost of debt will be 13% before tax up to $₹40$ ,	,00,000 and beyond
	1	40,00,000 It will be 15% before tax.	(DTD Mar 2022)
A			(RTP May 2023)
Ans.	a) (	Calculation of Cost of Equity	
	1	$D_0 = 35 \times 60\%$	
		$D_0 = \overline{3}$	
		$g = b \times r$	
		$= (1-0.6) \times 10\% = 4\%$	
		$D_1 = D_0 x (1 + g)$	
		$= 3 \times (1 + 4\%)$	
		$= 3 \times 1.04 = 3.12$	
		$K_e = \frac{D_1}{P} + g$	
		$V_{-} = \frac{3.12}{2} + 0.04$	
		$K_e = \frac{1}{20.8} + 0.04$	l.
		K <sub>e</sub> = 19%	
	i	i) Calculation of Cost of Preference Shares Academy	
		N =10 years	
		NP = ₹90	
		PD = ₹15	
		RV = ₹100	
		$K_{\rm P} = \frac{\rm PD + (RV - NP)/N}{\rm (DV + NP)} \times 100$	
		(RV+NP)	
		$K_{\rm P} = \frac{1}{(100+90)/2} \times 100$	
		$K_p = 16/95 \ge 100$	
		K <sub>p</sub> = 16.84%	
	i	ii) Calculation of Cost of Debentures	
		N = 6 years $\bigcirc$	
		NP = ₹75	
		Interest = ₹14	
		RV = ₹100	
		T = 40%	
		$Kd = \frac{int(1-t) + (RV-NP)/N}{(DV-NP)/2} \times 100$	
		(RV+NP)/2 14×(1-0.4)+(100-75)/6	
		$Kd = \frac{1}{(100+75)/2} \times 100$	
		$Kd = \frac{84 - 4.17}{27 - 7} \times 100$	
		87.5 Kd=14 37%	

	iv) Cost of Ter Kd = Intere Kd = 13% ( Kd = 7.8%	m Loan est rate (1-t) [1-40%)							
	Calculation of Weig	hted Average	Cost of Capi	tal (WACC) (	using mark	et weights)			
	Capital	Cost of Capital		Market Va	Market Value Weights	Product (Cost x weights)			
	Equity	19.00%	20.8 x 50,00,	000 ₹10,	40,00,000	0.6218	11.81%		
	Preference Shares	16.84%	90 x 50,	000 ₹	45,00,000	0.0269	0.45%		
	Debentures	14.37%	75 x 2,50,	000 ₹1,	87,50,000	0.1121	1.61%		
	Term Loan	7.80%		₹4,	00,00,000	0.2392	1.87%		
	Total			₹16,	72,50,000	1	15.74%		
	b) Calculation of Marginal Cost of Capital (MACC) The required capital of ₹50,000,000 will be raised as follows: Equity = 60% of ₹50,000,000 = ₹30,000,000 Deby = 20% of ₹50,000,000 = ₹10,000,000 Retained Earnings= 20% of ₹50,000,000 = ₹10,000,000 Marginal Cost of Equity = $\frac{3.12}{1.4}$ + 0.04 = 26.28% Marginal Cost of Debt Cost of Debt (before tax) = $\frac{13\% \text{ of } ₹40,00,000 + 15\% \text{ of } ₹60,00,000}{₹1,00,00,000}$ = 14.2% Cost of Debt (after tax). = 14.2% (1-t) = 14.2% (1-0.4) = 8.52%								
	Capital	Capital Cost of Capital			Weights	Pro	duct		
	Equit	26 2004		2 00 00 000		(Cost x	weights)		
	Equity Reserves	20.28% 26.20%	₹.: ⇒		0.6	) 15 ) E	260%		
	Deht	20.20% Q 570%	۲. ج		0.2	· 5 • 1	.20%		
	Total	0.5270	₹.		0.2	<u> </u>	730/		
	Marginal Cost of Ca	nital (MACC)	= 22 73%	,00,00,000			.7570		
43.	Canital structure of D	Ltd. as on 31s	<sup>st</sup> March 202	3 is given held	ow:				
101	Pa	rticulars	1.10101, 202		₹				
	Equity share capital	(₹10 each)	S.			3	0.00.000		
	8% Preference shar			11	0.00.000				
	12% Debentures (₹100 each) 10,00,000								
	<ul> <li>i) Current market p</li> <li>₹14.07 per share.</li> </ul>	price of equity . Seven years a	y share is ₹8 ago, it paid di <sup>v</sup>	0 per share. vidend of ₹10	The compared per share. F	ny has paid ( Expected divid	dividend of dend is ₹16		
888 88	38 0402	suț	oport@escho	lars.in			28		



Ste	ep: 5 Calculation of WAC	C using Book Values	•							
	Particulars	Amount	Weight	Cost	WACC					
E	quity share capital	30,00,000	30/50 = 0.60	25%	15					
P	reference share capital	10,00,000	10/50 = 0.20	8%	1.60					
D	Debentures	10,00,000	10/50 = 0.20	9.02%	1.804					
		50,00,000	Book Values.         Amount         Weight         Cost         WACC           30,00,000         30/50 = 0.60         25%         10,00,000         10/50 = 0.20         8%         1.           10,00,000         10/50 = 0.20         9.02%         1.8         50,00,000         1         18.404           re	18.404%						
Ca	se 2: Revised Capital St	ructure								
Ste	ep 1: Revised K <sub>e</sub>									
	$K_e = \frac{D_1}{P} + g$									
	$-\frac{18}{10} \pm 0.05 - 300$	)/								
	$-\frac{1}{72} + 0.03 - 30$	70								
Ste	ep 2: Cost of long-term lo	an (K <sub>T</sub> )								
	$K_{\rm T} = I (I - t)$									
	= 15(1-0.40)									
C+	= 9%	on plan using bools	values							
	Porticulars		Values.	Cost	WACC					
	Falticulars	20.00.000	$\frac{1}{20/90} = 0.275$	2504	11.25					
	quity share capital	10,00,000	30/80 = 0.375	25%	11.23					
	reference share capital	10,00,000	10/80 = 0.125	8%	1 1 2 7 1					
		10,00,000	10/80 = 0.125	9.02%	1.12/3					
	ong Term Loan	30,00,000	30/80 = 0.375	9%	3.373					
		80,00,000	1		16.75%					
Ke	llowing and the informati	ion of TT I td.	_							
44. 10	Particulars									
	Farnings nor share									
	Dividend per chare Pienes in Device Frances									
	Synacted growth rate in D	ividend	Concepts		6%					
	Surrent market price per	share			0%0 					
	ar Data				2004					
	ax rate	l Financo			₹20 lakbs					
	Nobt Equity Patio (For ad	ditional financo)								
	Cost of Dobt				2.1					
					1004					
	E 00 001 10 00 000				10%					
	3,00,001 - 10,00,000				9%					
	Above 10,00,000	acomic and Cumplus	available in TT I td		0.40					
AS	summing that there is no w	leserve and Surpius	avallable ili i i Ltu.							
Yo	ou are required to:									
a)	Find the pattern of fina	nce for additional r	equirement							
b)	Calculate post tax avera	age cost of addition	al debt							
c)	Calculate cost of equity									
<b>d</b> )	Calculate the overall we	eighted average afte	er tax cost of addition	al finance.						
					(July 202					
Ans. a)	Pattern of raising add	litional finance								
	Equity 1/3 of ₹30,	00,000 = ₹10,	00,000							



			Debt (Interest at	8% p.a.)			20,00,000			
			Total Funds				30,00,000			
		<b>b)</b> Determination of post-tax average cost of additional debt								
			$K_{d} = I (1 - t)$	-	-					
			Where,							
			I = Interest Ra	ite						
			t = Corporate	tax-rate						
			$K_d = 8\% (1-0.5)$	3) = 5.6%						
		C)	Determination of $D_1$	cost of equity a	ipplying Divide	end growth model:				
			$K_e = \frac{P_1}{P_0} + g$							
			Where,							
			$K_e = Cost of ed$	quity						
			$D_1 = D_0 (1+g)$							
			$D_0 = Dividend$	paid						
			g = Growth ra	puity paid te = 6% harket price per share = ₹120 $\frac{6}{2} + 0.06 = \frac{₹6.36}{₹120} + 0.06 = 0.113 \text{ or } 11.3\%$ verall weighted average after tax cost of additional finance (₹) Weights Cost of funds Weighted Cost (%) 10,00,000 1/3 11.3% 3.767 20,00,000 2/3 5.6% 3.733 30,00,000 7.50 olution single internal rate have been considered for Debt) price additional finance of ₹5 graves in the next year. The generator support to						
			$P_0 = Current r$	narket price pe	er share = ₹120					
			Then, $K_e = \frac{\frac{1}{6}(1+0.0)}{\frac{1}{2}(1+0.0)}$	$\frac{6}{2}$ + 0.06 = $\frac{16.36}{120}$	+ 0.06 = <b>0.11</b> 3	3 or 11.3%				
			(120	(120						
		d)	Computation of o	verall weighted	l average after	tax cost of additiona	l finance			
			Particulars	(₹)	Weights	Cost of funds	Weighted Cost (%)			
			Equity	10,00,000	1/3	11.3%	3.767			
			Debt	20,00,000	2/3	5.6%	3.733			
			WACC	30,00,000	ay		7.50			
		(No	ote: In the above s	olution single	internal rate	have been conside	ered for Debt)			
	45.	AC	ompany wants to i	aise additional	finance of ₹5	crore in the next yea	r. The company expects to			
		ret	ain 31 crore earnin	g next year. Fu	rther details a	re as follows:				
		1)	The additional ice	be raised by equ	area will regult	i ule l'auto ol 5: 1.	oing fixed at ₹25			
		11) ;;;)	The debt capital is	aisod by way	after loop w	ill cost 10% for the	first ₹75 labb and 12% for			
		111)	the next ₹50 lakh.	aiseu by way (						
		iv)	the next (50 lakin. a) The net expected dividend on equity shares is $₹2.00$ per share. The dividend is expected to							
			grow at the rate of 5%.							
		<b>v</b> )	Income tax rate is	25%.						
		You	u are required:							
		a)	To determine the	amount of equ	ity and debt fo	r raising additional f	inance.			
	2	b)	To determine the	post-tax avera	ge cost of addit	tional debt.				
	2	C)	To determine the	cost of retaine	d earnings and	cost of equity.	_			
.1	÷	d)	To compute the o	verall weighted	d average cost (	of additional finance	after tax.			
2	<b>A</b> m a	->	Determination	6 41	- 6 <del>:</del> <b>:</b>		(November 2019)			
3	AIIS.	aj	Determination o	I the amount of	of equity and (	ditional financo	intional finance:			
			Equity $3/4 \text{ of}^{\pm}$	Tatten 5 Crore = ₹	3.75 Crore	unional infance				
			Debt $1/4 \text{ of}^{\ddagger}$	₹5 Crore = ₹	1.25 Crore					

	The Capi	tal structure aft	er raising ad	ditional finance	:
	Particulars		-		(₹ in crore)
	Shareholders' Funds				
	Equity Capital	(3.75-1.00)			2.75
	Retained earnings				1.00
	Debt (Interest at 10% p.a.)				0.75
	(Interest at 12% p.a.)	(1.25 -0.75)			0.50
	Total Funds				5.00
	b) Determination of a set		- 6 - 1 1:4:	1	
	b) Determination of post-	ax average cost	oradditiona	l debt	
	$K_d = I(1-t)$				
	where,				
	I = Interest Rate				
	t = Corporate tax-rate				
	On ₹75,00,000 =	10%(1-0.25) =	= 7.5% or 0.0	75	
	On ₹50,00,000 =	12% (1-0.25)=	= 9% or 0.09		
	Average Cost of Debt				
	$=\frac{(375,00,000\times0.075)+(350,00,00)}{1.25,00,000}$	$\times 100 \times 0.09) \times 100$			
	_ ₹5,62,500+₹4,50,000 × 100 -	- 0 1004			
	1,25,00,000	- 0.10%			
	c) Determination of cost of	f retained earnin	gs and cost o	of equity (Applyi	ng Dividend growth
	mode)				
	$K_e = \frac{D_1}{R} + g$				
	P <sub>0</sub>				
	V = Cost of aquity				
	$R_e = Cost of equity$				
	$D_1 = D0 (1+g)$ $D_2 = Dividend noid (i)$	o = ₹2)			
	$D_0 = Dividend paid (in$	$e_1 - \chi_2$			
	g = Glow fill fall Groups	poining Educati	On Academ	y ed	
	10 - Current market j $10 - Current market j$				
	Then, $K_e = \frac{1}{325} + \frac{1}{325}$	$0.05 = \frac{1}{10000000000000000000000000000000000$	= 0.084 + 0.0	5 = 0.134 = 13.4%	0
	Cost of retained earnings	equals to cost Eq	uity i.e. 13.4%	6.5	
			6	3	
	d) Computation of overall w	eighted average a	after tax cost	of additional finar	nce
	Particular	(₹)	Weights	Cost of funds	Weighted Cost
					(%)
	Equity (including retained	3,75,00,000	3/4	13.4%	10.05
	earnings)			<b>A</b> 4 4 4	
	Debt	1,25,00,000	1/4	8.1%	2.025
16		5,00,00,000	1	· · · · · · · · · · · · · · · · · · ·	
46.	Genzy Ltd. is planning to in	troduce a new p	roduct with	a project life of	10 years. The initial
	equipment cost will be $< 2.5$	crores. At the end	or to years, t	ne equipment wi	II have a resale value
	of 50 lakes. A working capital	01 X 30,00,000 W	ill be needed a	and it will be relea	ased at the end of the
	tenth year. The project will b		le lonowing c	apital sources.	
	Par	ticulars		Amount (₹)	Issue Price
	Ollin				(Market price)
	Equity Share Capita	l of Face value ₹ 1	10 each	1.50.00.000	₹30
	Debentures of face value ₹	100 each with an	maturity of 10		₹90
		vears	inaturity of 10	,00,000	
	Preference shares of ₹ 100	each with a matur	rity of 10 year	rs 60.00.000	₹96
		mara mata	, 51 <b>1</b> 5 yeu	- 00,00,000	

	The existing yield of project is 1.6. NSE	on T-bills is av NIFTY is expe	eraging 8% p. ected to yield	a. The s 14% p	systematio .a. on ave	c risk measure rage for the fo	for the reseea	e proposed Ible future.		
	Debenture holders committed a divide	Debenture holders have been promised a coupon of 12% and preference shareholders have been committed a dividend of 15%.								
	The sales volumes over 10 years have been estimated as follows:									
	Year	1	2		3-5	6-8		9-10		
	Units per year	70,000	98,000	2,1	0,000	2,50,000	1,	20,000		
	A sales price of ₹ 3	300 per unit is	expected and	l variat	ole expens	ses will amount	to 60	% of sales		
	revenue. Fixed cash be set off from the p	operating cos profits of subse	ts will amount quent years.	to ₹ 40	),00,000 p	er year. The los	s of ar	ıy year will		
	The company is su depreciation which	bject to a 30 p is to be assum	er cent tax ra ed to be admis	te. The sible fo	company or tax purp	follows straigh oose also.	it line	method of		
	CALCULATE the ne	t present value	e of the project	for the	e company	y and advise the	e mana	agement to		
	take appropriate de	ecision.								
	The PV factors are	to be taken as	rounded figur	es upto	o 2 decima	als. Use market	value	weights to		
	COMPUTE overall c	ost of capital.				(МТР Ма		2 Corriga I)		
Ans	Cost of Equity					(MIP Ma	iy 202	s series IJ		
	Ke = Rf + Beta * (Rn	n – Rf)								
	Ke = 8% + 1.6 * (14	% – 8%)								
	Ke = 8% + (1.6 * 6%	ó)								
	Ke = 17.6%									
	1) Cost of Redeem	nable Debentu	ures (Post-Ta	x)						
	$Kd = \frac{Int(1-t) + \frac{K}{K}}{(RV+NP)}$	n n								
	$\frac{(1111)}{2}$	-30%)+((1 00 00 00	0-80.00.000)/10)	1 Acad	lemv					
	$Kd = \frac{12,00,000*(1-)}{(1-)}$	.,00,00,000+90,00,0	000)/2							
	$Kd = \frac{8,40,00+1,00}{05,00,000}$	000								
	95,00,000 Kd = 9.89%					29				
	2) Cost of Redeemable Preference Shares									
	$PD + \frac{(RV-NP)}{PD}$									
	$Kp = -\frac{n}{(RV+NP)}$									
	$Kn = \frac{(62,50,000*15\%) + ((62,50,000-60,00,000)/10)}{62,50,000-60,00,000)/10}$									
	1 P - (62,50,000+60,00,000)/2									
	Kp = 5000000000000000000000000000000000000			A						
	Kp = 15.71%		6	9						
	3) Weighted Aver	rage Cost of Ca	ipital (WACC)	- Bool	K Value M	ethod	Cost	MACC		
	Source of	Capital	Market v	alue	weights	s After Tax	LOST	WALL		
	Fauity Shara Cani	tal	1 50 00	000	0	5 17	ai 60/2	0 088		
	Debentures		90,00	000	0	3 98	.070 39%	0.000		
	Preference Share	Capital	60.00	.000	0	.2 15.7	71%	0.031		
		20	3.00.00	,000	1.00	0	- /0	0.149		
	WACC = 14.9%	S.		,	2.50	-				
	S.									

-S<sup>e</sup>

Sr	Particulars / Year	1	2		3-5		6-8	9-10
No.		-	-		00			, 10
А	Sale Price p.u.	30	0	300		300	300	3
	Sale units	70,00	0 98,	000	2,10,	000	2,50,000	1,20,0
С	Sales (A x B)	2,10,00,00	0 2,94,00,	000	6,30,00,	000	7,50,00,000	3,60,00,0
D	Variable Cost p.u.	18	0	180		180	180	1
Е	Variable Cost (B x D)	1,26,00,00	0 1,76,40,	000	3,78,00,	000	4,50,00,000	2,16,00,0
F	Contribution (C - E)	84,00,00	0 1,17,60,	000	2,52,00,	000	3,00,00,000	1,44,00,0
G	Less: Fixed Cost	40,00,00	0 40,00,	000	40,00,	000	40,00,000	40,00,0
Н	PBDT (F-G)	44,00,00	0 77,60,	000	2,12,00,	000	2,60,00,000	1,04,00,0
Ι	Less: Depreciation (2,50,00,000- 50,00,000) / 10	20,00,00	0 20,00,	000	20,00,	000	20,00,000	20,00,0
J	PBT	24,00,00	0 57,60,	000	1,92,00,	000	2,40,00,000	84,00,0
К	Less: Taxes @ 30%	7,20,00	0 17,28,	000	57,60,	000	72,00,000	25,20,0
L	РАТ	16,80,00	0 40,32,	000	1,34,40,	000	1,68,00,000	58,80,0
М	Add: Depreciation	20,00,00	0 20,00,	000	20,00,	000	20,00,000	20,00,0
Ν	CFAT	36,80,00	0 60,32,	000	1,54,40,	000	1,88,00,000	78,80,0
5) Co Sr. No.	omputation of NPV Particulars / Year	1	2		3-5		6-8	9-10
I	CFAT	36.80.000	60.32.000	1.54	1.40.000		1.88.00.000	78.80.0
II	PVAF @ 14.9%	0.87	0.76	(0.6	6+0.57+	(0.43	3+0.38+0.33)	(0.29+0.)
	Gi	ooming E	ducation A	0.50	) = 1.73	= 1.14		= 0
III	PV of CFATs (I x II)	32,01,600	45,84,320	2,67	7,11,200		2,14,32,000	42,55,2
IV	Salvage + Release of WC		~S	9				80,00,0
V	PVF @ 14.9%		.80					0
VI	PV of Salvage (IV x V)		5					20,00,0
PV of	Inflows = $32,01,600 +$	45,84,320 +	- 2,67,11,20	0 + 2	,14,32,00	0 + 4	2,55,200 + 20	,00,000

NPV = PV of Inflows - PV of Outflows

NPV = 6,21,84,320 - 2,80,00,000

NPV = 3,41,84,320

The management should consider taking up the project as the Net Present Value of the Project is Positive.

-5<sup>2</sup>