2.	Sean	las	siguientes	${\it matrices}$	de	$3 \times 3$ :	

$$A = \begin{pmatrix} 1 & 3 & 0 \\ 0 & 1 & 2 \\ 1 & 0 & 1 \end{pmatrix} \quad B = \begin{pmatrix} 1 & 1 & 1 \\ 3 & 0 & 1 \\ 2 & 0 & 2 \end{pmatrix} \quad C = \begin{pmatrix} c_{11} & c_{12} & c_{13} \\ c_{21} & c_{22} & c_{23} \\ c_{31} & c_{32} & c_{33} \end{pmatrix}$$

Para cada una de las siguientes particiones en bloques, indicar si es realizable el producto C = AB en bloques. En caso de ser realizable, calcular cada bloque  $C_{ij}$  indicando sus dimensiones.

a) 
$$A_{11} = [a_{11}], A_{12} = [a_{12}, a_{13}], A_{21} = \begin{bmatrix} a_{21} \\ a_{31} \end{bmatrix}, A_{22} = \begin{bmatrix} a_{22} & a_{23} \\ a_{32} & a_{33} \end{bmatrix}$$
  
 $B_{11} = [b_{11}], B_{12} = [b_{12}, b_{13}], B_{21} = \begin{bmatrix} b_{21} \\ b_{31} \end{bmatrix}, B_{22} = \begin{bmatrix} b_{22} & b_{23} \\ b_{32} & b_{33} \end{bmatrix}$ 

b) 
$$A_{11} = \begin{bmatrix} a_{11} & a_{12} \end{bmatrix}$$
,  $A_{12} = \begin{bmatrix} a_{13} \end{bmatrix}$ ,  $A_{21} = \begin{bmatrix} a_{21} & a_{22} \\ a_{31} & a_{32} \end{bmatrix}$ ,  $A_{22} = \begin{bmatrix} a_{23} \\ a_{33} \end{bmatrix}$   
 $B_{11} = \begin{bmatrix} b_{11} \end{bmatrix}$ ,  $B_{12} = \begin{bmatrix} b_{12} & b_{13} \end{bmatrix}$ ,  $B_{21} = \begin{bmatrix} b_{21} \\ b_{31} \end{bmatrix}$ ,  $B_{22} = \begin{bmatrix} b_{22} & b_{23} \\ b_{32} & b_{33} \end{bmatrix}$ 

c) 
$$A_{11} = \begin{bmatrix} a_{11} \\ a_{21} \end{bmatrix}$$
,  $A_{12} = \begin{bmatrix} a_{12} & a_{13} \\ a_{22} & a_{23} \end{bmatrix}$ ,  $A_{21} = [a_{31}]$ ,  $A_{22} = [a_{32} \ a_{33}]$   
 $B_{11} = [b_{11}]$ ,  $B_{12} = [b_{12} \ b_{13}]$ ,  $B_{21} = \begin{bmatrix} b_{21} \\ b_{31} \end{bmatrix}$ ,  $B_{22} = \begin{bmatrix} b_{22} & b_{23} \\ b_{32} & b_{33} \end{bmatrix}$   
¿Qué otras particiones válidas son posibles?

a)															
A44	A	,		BH	BIZ	1			CH	Cla	2 ]				
							=	j.	[						
Azı	٨z	ح.		B21	Bzz				C1	Cz	2				
		•		- 1		_}		L	- 1		_1				
					2 ZX1	.,	\\\\								
C11	7	A11	Вн	+ A	12 B 21	εļ	<b>\</b>								
	_		ì		n	7		V			7				
A44 I	A	2		)	BIZ	1			C11 1	C12					
Azı	Az	<b>Z.</b>	•	B21	Bzz		=		ر ر ایک	Cz	2				
									, ,						
		1x1	1×2	1×	2 2X2										
C12	=	A <sub>11</sub>	B12	+ A	12 B22	el	1×2								
A44	A	2		BH	BIZ				CH	Cla	2_				
Azı	٨	_	•	D 1	Bzz		=		<21 ,						
724	Az	.2		1321	ואנו				ر 1 <sub>1</sub>	Cz	_				
		2×4	454		x2 zx1										
C					22 B21		IR <sup>2×1</sup>								
C21		M21	114	1 4	12 IJ21		0								
A44 ;	ı A.	,		Bul	BIZ				Car	<u> </u>	, ]				
						-	=								
Azı	Az	.ک		B21	Bzz		_		C21	C2	2				
						_}									
					xz zx:	2.	_2X2	2							
$C_{zz}$	=	Az1	S12	+ 4	22 B22	6	RZXZ								
-, ,			ì	- J					1		٦				
A44	A1:	2		B4 1	BIZ				C11 1	C12	2				
Azı	A.	7	•	B21	Bzz		=		C21 .	C2:					
	. 12														

<b>b</b> )															
_ <u>A</u> 1	1	A12			Biz				_						
- A <sub>z</sub>	:4 ! 	A <sub>22</sub>	•	B21   1	Bz	2	=			X	_				
		1x2 1											 1.		
C11	=	A11 P	244	+	A12 F	21								acio y B	
								cor				1			

<b>c</b> )			
A11 A12	BH BIZ =	C11 C12	
A11 A12 . A21 A22	B21 B22 -	C21	
2×1 1×1	zx2 zx1		
C11 = A11 B11	+ A12 Bz1 E RZX1		
Au Az	BH BIZ	C11 C12	
A11 A12 .	B21 B22 =	C21	
		C21 C22	
$C_{12} = A_{11} B_{12}$	+ A12B22 E RZXZ		
A11 A12 .	BH BIZ =	C11 C12	
Azi Azz	O21 Dzz	C21 C22	
	1x2 2x1 + A22 B21 E R1X1		
$C_{21} = A_{21}B_{11}$	+ A22 B21 E IK		
A11 A12	BH BIZ	C11 C12	
A <sub>21</sub> A <sub>22</sub>	BH   B12 =	C <sub>21</sub> C <sub>22</sub>	
		Czi Czz	
$C_{22} = A_{21} B_{12}$	1x2 2x2 + A22 B22 E R1x2		
- 1		<u> </u>	
	BH B12 =	C11 C12	
Azı Azz	D21 D22	Cz1 Cz2	