

Q2B. Forma de las moléculas y polaridad

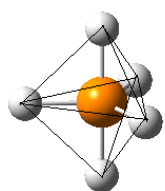
(Modelo VSPR de *Gillespie y Nyholm*) (o también de *Sidgwick y Powell*)

Moléculas que han salido en las PAU Valencia en los últimos 11 años

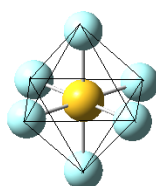
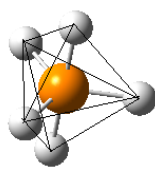
Molécula	Nº de veces	Forma	Polaridad
CO ₂	1	Lineal	Apolar
BeH ₂	1	Lineal	Apolar
BF ₃	1	Triangular plana	Apolar
BCl ₃	1	Triangular plana	Apolar
BI ₃	1	Triangular plana	Apolar
CCl ₄	3	Tetraédrica	Apolar
NH ₄ ⁺	1	Tetraédrica	Polar
NH ₃	1	Pirámide trigonal	Polar
NF ₃	1	Pirámide trigonal	Polar
NCl ₃	4	Pirámide trigonal	Polar
PCl ₃	1	Pirámide trigonal	Polar
PI ₃	1	Pirámide trigonal	Polar
H ₂ O	1	Angular	Polar
F ₂ O	1	Angular	Polar
Cl ₂ O	4	Angular	Polar
BF ₄ ⁻	1	Tetraédrica	Polar
F ₂ CO	1	Triangular plana	Polar
N ₂ H ₄ (*)	1		
N ₂ F ₂ (*)	1		

(*) Sólo se preguntaba la estructura de Lewis (Ver cuestión 22 resuelta)

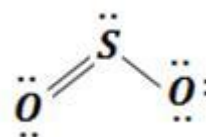
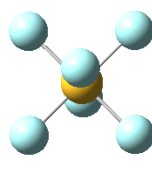
OTRAS MOLÉCULAS:



PCl₅ GEOMETRÍA BIPIRÁMIDE TRIGONAL
5 PARES ELECTRÓNICOS DE VALENCIA



SF₆ GEOMETRÍA OCTAÉDRICA
6 PARES ELECTRÓNICOS DE VALENCIA



AB₂E₀ : lineal = BeCl₂ , HgCl₂ , CO₂

AB₂E₁ : angular = SO₂ , O₃ , NO₂⁻

AB₂E₂ : angular = H₂O , OF₂

AB₂E₃ : lineal = XeF₂ , I₃⁻

AB₃E₀ : triangular plana = BF₃ , SO₃ , CO₃²⁻ , NO₃⁻

AB₃E₁ : pirámide trigonal = NH₃ , PCl₃

AB₃E₂ : forma de T = ClF₃ , BrF₃

AB₄E₀ : tetraédrica = CH₄ , CHCl₃ , PO₄³⁻ , SO₄²⁻ ,

ClO₄⁻

AB₄E₁ : balancín = SF₄

AB₄E₂ : cuadrada plana = XeF₄





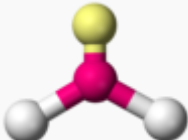

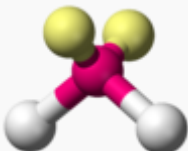

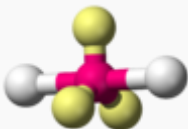

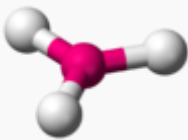
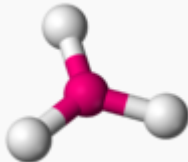
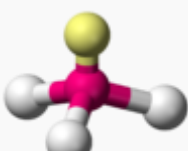
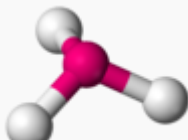
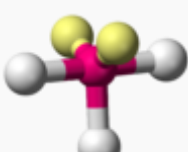
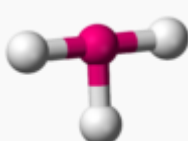
AB₅E₀ : bipirámide trigonal = PCl₅

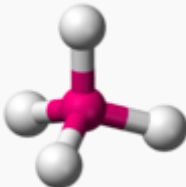
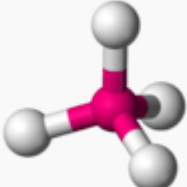
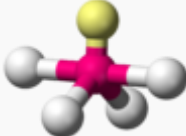
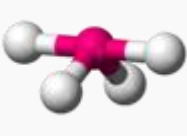
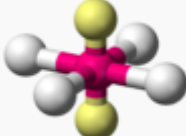
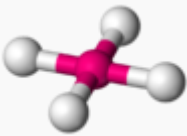
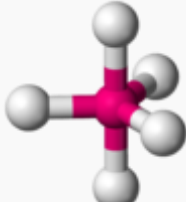
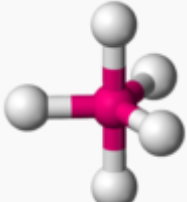
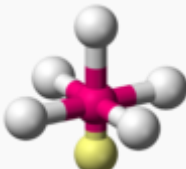
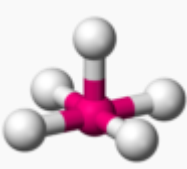

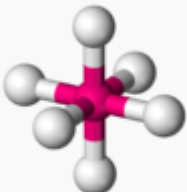

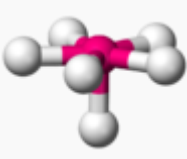
AB₅E₁ : pirámide cuadrada = ClF₅ , BrF₅


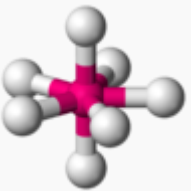
AB₆E₀ : octaédrica = SF₆

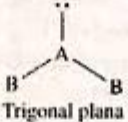
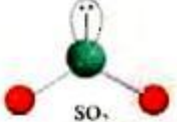
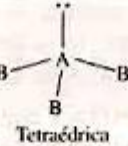
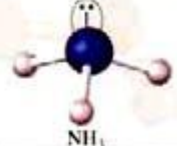
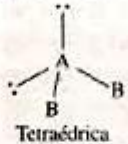
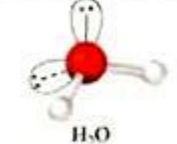
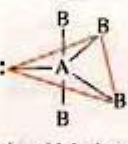


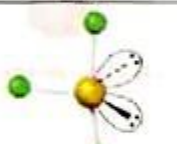

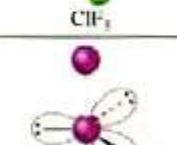

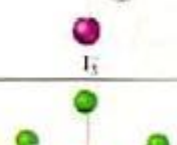
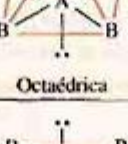
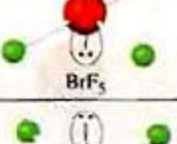
AB₆E₁ : pirámide pentagonal = XeOF₅

AB₇E₀ : bipirámide pentagonal = IF₇

Tipo de molécula	Forma	Disposición electrónica†	Geometría‡	Ejemplos
AB_1E_n	Molécula diatómica			HF, O ₂
AB_2E_0	Lineal			BeCl ₂ , HgCl ₂ , CO ₂
AB_2E_1	Angular			NO ₂ ⁻ , SO ₂ , O ₃
AB_2E_2	Angular			H ₂ O, OF ₂
AB_2E_3	Lineal			XeF ₂ , I ₃ ⁻
AB_3E_0	Triangular plana			BF ₃ , CO ₃ ²⁻ , NO ₃ ⁻ , SO ₃
AB_3E_1	Pirámide trigonal			NH ₃ , PCl ₃
AB_3E_2	Forma de T			ClF ₃ , BrF ₃

AB₄E₀	Tetraédrica			CH ₄ , PO ₄ ³⁻ , SO ₄ ²⁻ , ClO ₄ ⁻
AB₄E₁	Balancín			SF ₄
AB₄E₂	Cuadrada plana			XeF ₄
AB₅E₀	Bipirámide trigonal			PCl ₅
AB₅E₁	Pirámide cuadrada			ClF ₅ , BrF ₅
AB₆E₀	Octaédrica			SF ₆
AB₆E₁	Pirámide pentagonal			XeOF ₅ , IOF ₂ ⁻

AB_7E_0	Bipirámide pentagonal			IF_7
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Tipo de molécula	Número total de pares de electrones	Número de pares enlazantes	Número de pares libres	Distribución de pares de electrones*	Geometría	Ejemplos
AB_2E	3	2	1	 Trigonal plana	Angular	 SO_2
AB_3E	4	3	1	 Tetraédrica	Piramidal trigonal	 NH_3
AB_2E_2	4	2	2	 Tetraédrica	Angular	 H_2O
AB_4E	5	4	1	 Bipiramidal trigonal	Tetraedro distorsionado (o de "sube y baja")	 SF_4
AB_3E_2	5	3	2	 Bipiramidal trigonal	Forma de T	 ClF_3
AB_2E_3	5	2	3	 Bipiramidal trigonal	Lineal	 I_3
AB_5E	6	5	1	 Octaédrica	Bipiramidal cuadrada	 BrF_5
AB_4E_2	6	4	2	 Octaédrica	Cuadrada plana	 XeF_4