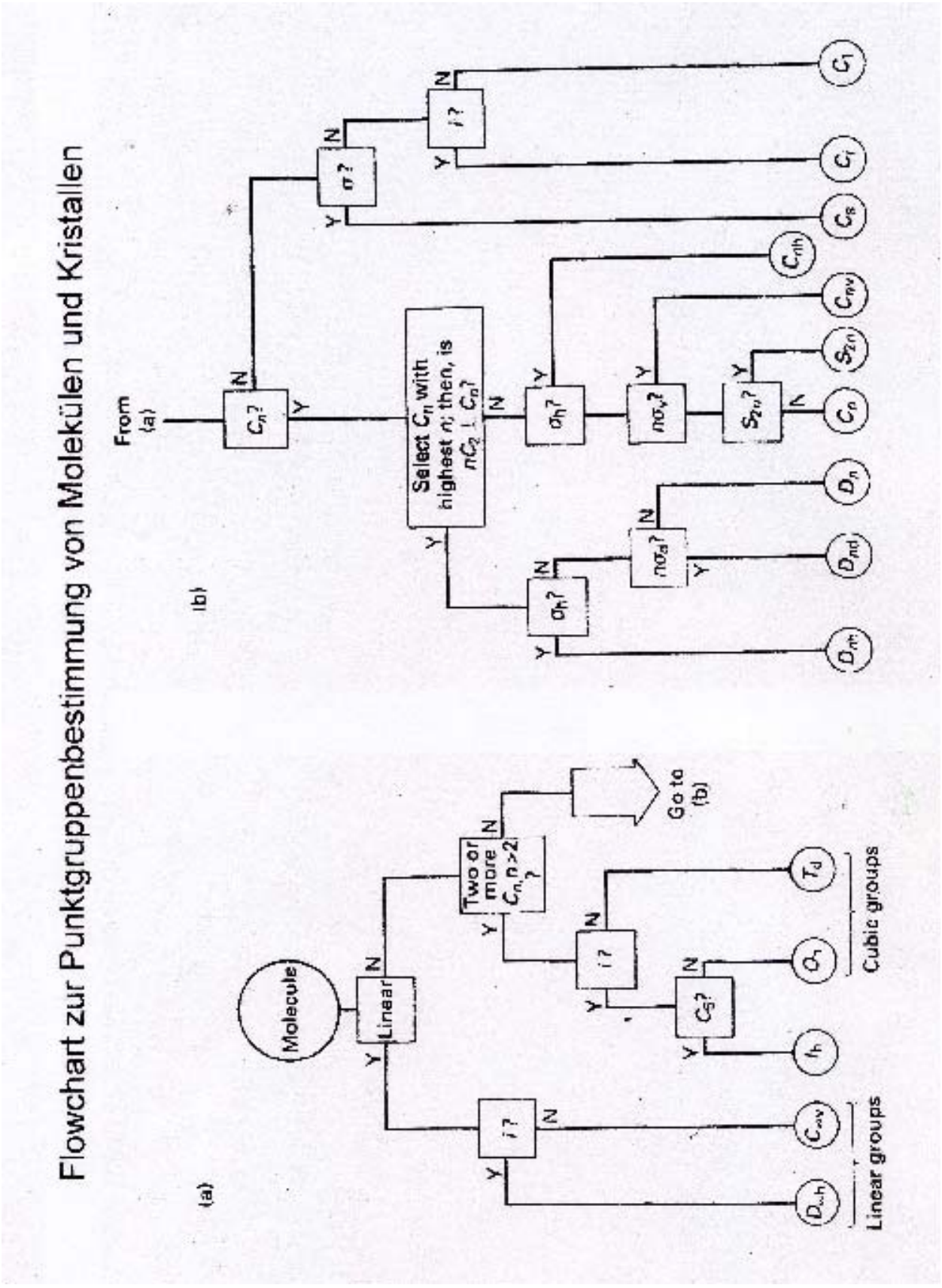
Anorganische Chemie 3 (ACIII) WS 2011/12, Übung 3

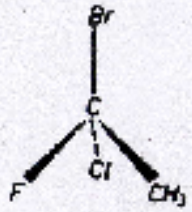
Bestimmen und nennen Sie unter Verwendung der beigefügten "Flowchart" und Beispiele die Punktgruppen der u.a. Moleküle nach Schönflies und Hermann/Mauguin (in Zweiergruppen).

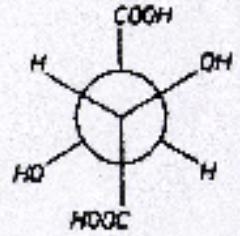
Namen, Vornamen:

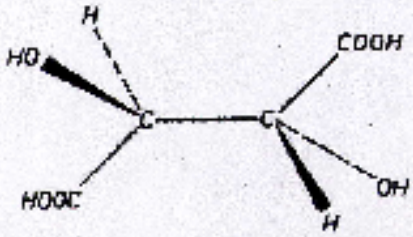
Molekül	Schönflies	Hermann/Maugin
1,1,1-Brom-Chlor-Fluorethan		
Mesoweinsäure		
Weinsäure		
trans-1,2-Dichlorethylen		
$PtCl_4^{--}$		
JO_3^-		
Cyclohexan (Sesselform)		
$B(OH)_3$		
Diphenylethin		
cis-1,2-Dichlorethylen		
Ethylen		
Tetrachlorcyclobutan		
Cuban		
Kohlenstoffdioxid		
Ferrocen		
S_8		
Hexaphenylbenzol		
Nitrat, Carbonat		
Benzol		
Methan		


Flowchart zur Punktgruppenbestimmung von Molekülen und Kristallen
(a)
Molecule
Linear
Two or more C_n, $n>2$?
Go to (b)
Linear groups
Cubic groups
(b)
From (a)
Select C_n with highest n; then, is $nC_2 \perp C_n$?

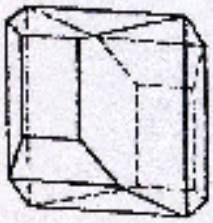
Bestimmen Sie die Punktgruppen der folgenden Moleküle bzw. Kristalle





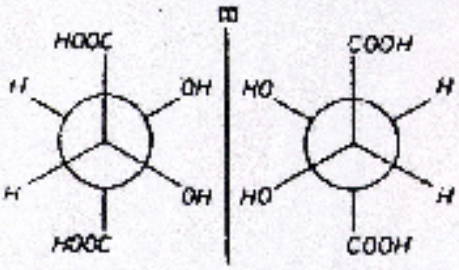


Mesoweinsäure

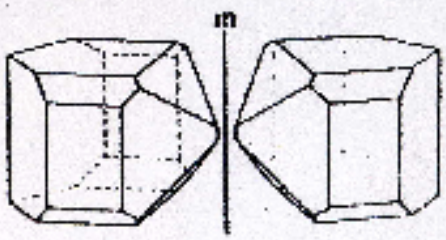


$CH_2(COOH)_2$ (Malonsäure)

H_3BO_3, $CuSO_4 \cdot 5H_2O$
$MnSiO_3$ (Rhodonit)
$NaAlSi_3O_8$ (Albit)

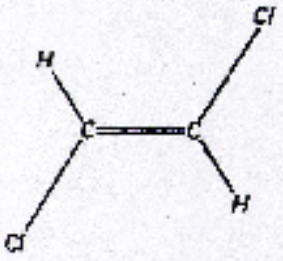


Die enantiomorphen Molekeln der Weinsäure



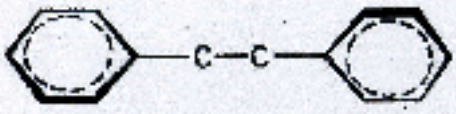
D- L-
Weinsäure

$Li_2SO_4 \cdot H_2O$
$C_{12}H_{22}O_{11}$ (Rohrzucker)
$C_{14}H_{10}$ (Phenanthren)

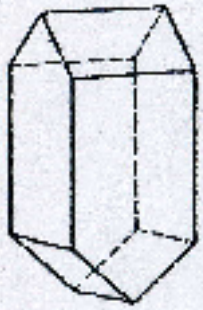


trans-1,2-Dichlorethylen

Bestimmen Sie die Punktgruppen der folgenden Moleküle bzw. Kristalle

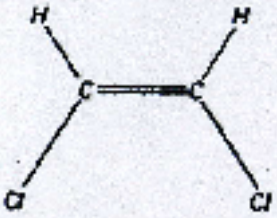


Diphenylethin

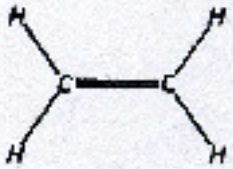


$MgSO_4 \cdot 7H_2O$ (Epsomit)

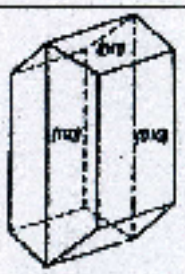
Vitamin B_{12} (Abb. 1.1b)
$KNaC_4H_4O_6 \cdot 4H_2O$
(Seignettesalz)



cis-1,2-Dichlorethylen

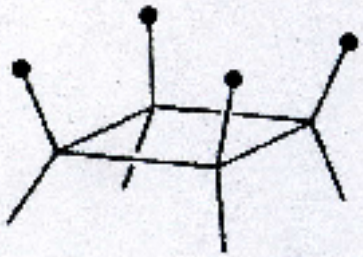


Ethylen



$CaCO_3$ (Aragonit)

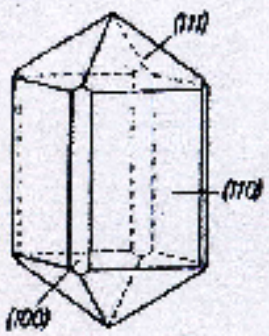
$CaSO_4$ (Anhydrit), $KClO_4$
$BaSO_4$ (Baryt), S
$(COOH)_2$ (Oxalsäure), C_6H_6, J_2



Tetrachlorocyclobutan

Bestimmen Sie die Punktgruppen der folgenden Moleküle bzw. Kristalle

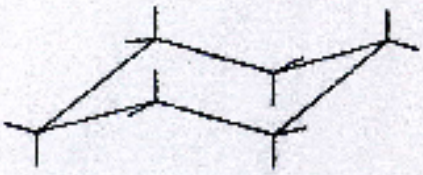
$PtCl_4^{--}$



TiO_2 (Rutil)

SnO_2 (Cassiterit)
TiO_2 (Anatas)
$ZrSiO_4$ (Zirkon)

JO_3^-, SeO_3^{--}, AsO_3^{---}



C_6H_{12} Cyclohexan (Sesselform)

$CaCO_3$ (Calcit)

As, Sb, Bi, $CdCl_2$, $NaNO_3$
Al_2O_3 (Korund)
Fe_2O_3 (Hämatit)
$Mg(OH)_2$ (Brucit)

$B(OH)_3$

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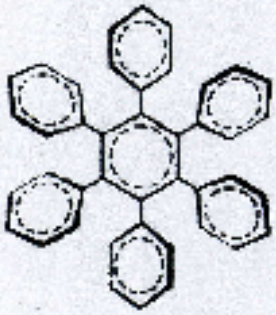
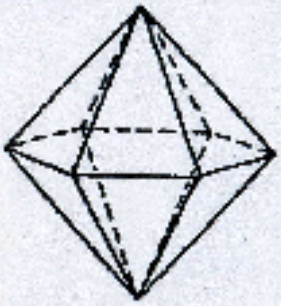


Hexaphenylbenzol

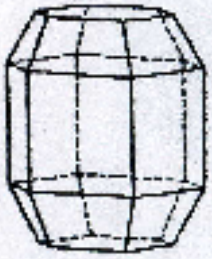


$KAlSiO_4$ (Kaliophilit)

SiO_2 (Hochquarz)

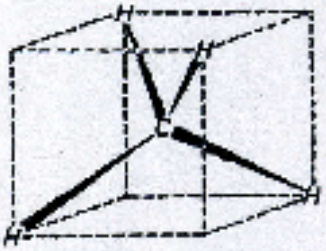
NO_3^-, CO_3^{--}

Benzol

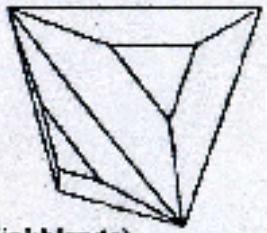


Mg

Be, Zn, CuS, NiAs,
$Be_3Al_2Si_6O_{18}$ (Beryll)
C (Graphit), MoS_2
C_2H_4



Methan



ZnS (Zinkblende)

CuCl, CuBr, CuJ
$Al(PO_3)_3$, Ag_3PO_4

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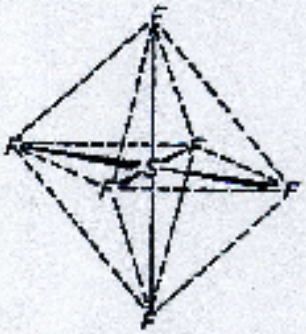
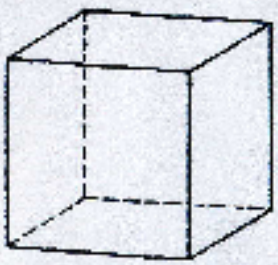


SF_6

C_8H_8 (Cuban)



NaCl, KCl, CaF_2, MgO

PbS (Abb. 4.1), CsCl
Granat (Abb. 1.1a)
Cu, Ag, Au, Pt, Fe, W, Si
C (Diamant)

H_2
O_2
Cl_2

CO_2

C_2H_2

Fe

Ferrocen
(verdeckte Konformation)

S_8